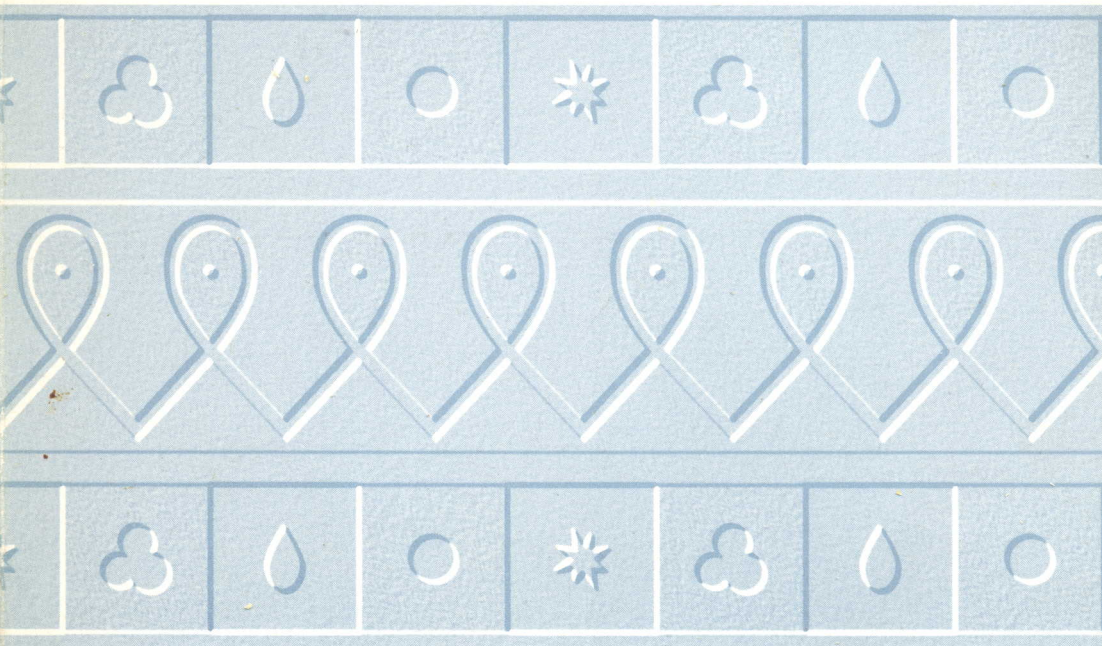


Division 423

Plant Production, Plant Protection,
Agricultural Research, Farming Systems



Privatization of the Seed Industry in the West Asia and North Africa Region



International Center for Agricultural Research
in the Dry Areas (ICARDA)



Deutsche Gesellschaft für
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Agricultural Research, Farming Systems

International Center for Agricultural Research
in the Dry Areas (ICARDA)
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Abbreviations used throughout this book*

DM	Deutsche Mark
DUS	Distinctness, Uniformity and Stability
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FIS	International Seed Trade Federation
GATT	General Agreement on Tariffs and Trade
GNIS	National Interprofessional Association for Seeds and Plants
GTZ	Gesellschaft für Technische Zusammenarbeit (German Technical Cooperation)
ICARDA	International Center for Agricultural Research in the Dry Areas
ISTA	International Seed Testing Association
NGOs	Non-Governmental Organizations
OECD	Organization for Economic and Social Development
PBRs	Plant Breeders' Rights
UPOV	International Convention for the Protection of New Varieties of Plants
VCU	Value for Cultivation and Use
WANA	West Asia and North Africa

* Other abbreviations are used and explained in individual chapters.

Foreword

As developing countries throughout the world move towards free-market economies, privatization of formerly state-dominated activities is high on the governments' agendas. This is certainly the case for some of the countries of West Asia and North Africa (WANA).

The International Center for Agricultural Research in the Dry Areas (ICARDA), Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) and the Tunisian Ministry of Agriculture organized a workshop on 'Privatization of the Seed Industry in the WANA Region' in Tunis from 16 to 20 November 1995, which drew together senior managers from both public and private sector seed organizations in WANA and Europe, along with technical staff from GTZ and ICARDA. The workshop was financially supported by the German Government.

The objectives of the Workshop were to discuss the status of seed-industry privatization within WANA, to identify constraints to (further) privatization, and to make recommendations to facilitate the privatization process. This book draws upon the information presented and the discussion sessions held at that workshop. One of the recommendations of the workshop was that the findings of the meetings should be made known to senior governmental decision-makers in the countries of WANA. The publication of this book is to fulfill that task. One of the aims of most of these countries is to attain food-security. The quality of seed and planting material is vital to this aim, and the role of the private sector in producing or distributing such material should be considered by each government.

I would like to draw the attention of the reader to the first chapter of the book, 'Seed sector scientists' perceptions of and recommendations for privatization of the seed industry in West Asia and North Africa', which summarizes the perceptions of the workshop participants of seed-industry privatization and liberalization, and also includes the recommendations of the workshop.

I hope that the information contained in this book will be used and adapted by those responsible for guiding and directing the seed industry in the countries of WANA.

Adel El-Beltagy
Director General
ICARDA

Abstracts

Abstracts

Seed Sector Scientists' Perceptions of Privatization of the Seed Industry in West Asia and North Africa

The views of participants at a Workshop on seed-industry privatization in West Asia and North Africa (WANA) were obtained through both a structured questionnaire and open-discussion sessions. The privatization of the seed sector is seen as an integral part of the overall drive of most WANA countries towards a market economy. Perceived advantages include increased efficiency in the seed industry and a reduced burden on the state treasury. Major constraints to privatization include lack of political will and consequent lack of legal framework for private-sector investment (especially variety protection), state involvement (especially in subsidizing the industry), high initial investment costs, and lack of skill in the private sector. Lifting the legal constraints would be a first step in the process of privatization, followed by incentives for private investment (especially reduced taxation). Large public-sector operations should first be decentralized, to operate as independent, efficient and profit-oriented seed centres, and eventually be sold off to the private sector. In general, the public sector was less supportive of privatizing the individual parts of the industry than their private counterparts. However, an overall majority of respondents supported privatization of plant breeding (even of strategic crops), seed production and marketing; while the majority supported state control of variety testing and evaluation, and quality control.

Model for Privatization of the Seed Sector

This model for seed-sector privatization is based on a wholly government-run operation where all the units are state-owned. From practical experience, the sector should be liberalized and privatized gradually. A planning team is needed to co-ordinate the effort, having first established the objectives. The team will develop the criteria for suitability for privatization, and then search for likely candidates. Step 2 is to understand the basic economic differences between the old systems and the proposed one. The liberalized market requires a selling approach instead of a distributing one. The seed

unit must become an efficient and effective business, with professional management and adequate financial reporting. Step 3 is to decide on the form (e.g. sell-off, joint venture, or asset sale) and structure (e.g. government department, state-owned corporation, corporation partly owned by the state, or private corporation) of the seed unit. To survive in a commercial world, the new company needs to project its image professionally (step 4). This will involve company brochures, and financial statements, drawing on the past successes in terms of professionalism and customer-acceptability. Lawyers, bankers, auditors and other advisors should be called upon to help with this step (4). Step 5 is to evaluate the assets and income of the seed unit, separating non-essential assets from the profit-oriented unit. Finally (step 6), management need motivating and adequate compensation for their services. The privatization exercise must be completely open, so that managers do not lose confidence; clarification of long-term staffing levels by issuing contracts to senior staff helps here. Once these 6 steps have been followed, it should be possible to achieve the goal of a profit-oriented private seed company, which can hold its place in the market economy.

Seed Trade in West Asia and North Africa, the European Union and Other Countries

Few data are available on the seed market in West Asian and North African (WANA) countries. However, data from FAO, the United Nations Data Bank and some received direct from the countries concerned, show that the international market within WANA countries is significant and that much less seed is exported than is imported (about US\$ 30 million vs about US\$ 200 million). The main crops involved are vegetables and potato. Figures on the domestic markets show that, in quantity, the major crops concerned are wheat, barley and potato and, to a certain extent, cotton.

With some exceptions, WANA countries generally have little involvement in the international seed organizations.

There is much more data on European countries. The total domestic market of the European Union (EU) is US\$ 6.3 billion and international seed movement among EU countries of US\$ 1.2 billion. Exports from the EU to WANA countries are estimated at US\$ 150 million and imports from WANA countries into the EU at US\$ 15 million.

The value of world seed use is estimated at US\$ 50 billion, of which US\$ 30 billion is in commercial transactions. Global seed movement is estimated at US\$ 3 billion, the most important crops being vegetables (1 billion), maize (400 million), herbages (350 million) and potato (340 million).

Plant Breeders' Rights as an Incentive for Investment in the Seed Industry

Plant breeders' rights enable breeding companies to determine the supply and cost of their product(s). Since the 1960s, most countries which offer plant breeders' rights have agreed to follow the principles set out in the International Convention for the Protection of New Varieties of Plants (the UPOV Convention). The principles cover the uniqueness (novelty), and distinctness, uniformity and stability (DUS) of the variety to be protected, and the scope of that protection. The granting of proprietary status to crop varieties encourages private-sector involvement in the industry, as it has legal protection from fraud, i.e. illegal multiplication and marketing. Since investment in breeding usually leads to improved varieties and consequently improved harvests, farmers can be expected to increase their economic returns even after paying a market price for their seed. So, plant breeders' rights encourage private investment and agricultural productivity.

Cyprus

Most of the seed industry in Cyprus is firmly in the public sector; so far the private sector *per se* is only involved in processing and exporting food-legume (faba bean) seed and in importing and marketing vegetable and forage seeds. A seed law which will align Cyprus with OECD and EU standards has been drafted. No effort has been made to privatize the industry, but as Cyprus seeks full membership of the EU and the effects of GATT are felt, it is expected that the private sector will play a larger role. The government believes, however, that research (especially cereal breeding) should remain in the public sector, with production and marketing being handled by the private sector.

Egypt

The Government of Egypt has adopted a policy of privatization for the seed sector. A gradual process is being implemented, whereby quality control activities will be separated from those of production, government involvement and investment will be reduced, and the seed industry should be responsive to open-market forces. A National Seed Council has been set up to oversee this process, and a new seed law and plant breeders' rights are being prepared for legislation. Although seed production and marketing has been offered to franchises, the price of Certified Seed is being maintained artificially low to encourage its use by farmers. The government credit and distribution agency is withdrawing from seed supply, so co-operatives and the private sector have taken over much of the seed distribution. As a forerunner of future developments, the cotton seed industry has been completely liberalized, so that farmers are free to make all their own decisions.

Ethiopia

The seed industry in Ethiopia has only been supported since 1992, when a national seed policy and strategy were introduced. The Government seeks to encourage private investment (domestic and foreign) in the industry, but Plant Breeders' Rights have yet to be enacted. To date, only one private company is active in the country, which concentrates mostly on hybrid maize. The Ethiopian Seed Corporation was converted into the Ethiopian Seed Enterprise, an autonomous profit-oriented enterprise. A National Seed Industry Agency has been established to guide the development of the industry. Concurrent with efforts to encourage private-sector involvement in the seed industry, the Government is also working on a number of projects to promote seed use by farmers throughout the country.

Jordan

There is currently no private investment in the Jordanian seed industry of self-pollinated crops. The Jordan Cooperative Organization multiplies

Basic Seed through contracts with private farmers. It is proposed that the private sector could handle profitable crops and be primarily involved in the multiplication and distribution of Certified Seed.

Lebanon

The public sector in Lebanon produces seed for the major crops of cereals, lentil and chickpea. The private sector imports and produces the seed and other propagating material of vegetables, fruit trees, ornamental and other crops. However, the bulk of Lebanese seed production is in the informal sector (farm-saved seed and farmer-to-farmer diffusion). There are no restrictions on private investment in the seed business in Lebanon, but there is no enforced seed law or policy.

Morocco

The Moroccan Government has been gradually deregulating the seed sector since 1989. Deregulation has enabled both national and foreign seed companies to be set up. Although the share of these companies in the seed market is small, they are likely to play an increasing role in the future since there is large, unexploited potential in this field. Furthermore, deregulation should permit the emergence and development of private research to complement the sizeable efforts of the Institut National de la Recherche Agronomique. However, agricultural constraints – especially drought – severely limit the Government's ability to leave the sector completely in the hands of market forces. A state company, the Société Nationale de Commercialisation des Semences (SONACOS), was established in 1975 to promote and consolidate the sector. SONACOS regional units are now being converted into profit centres with independent budgeting. A seed association was established in 1991 to act as a forum for the sector and has been intimately involved in the rehabilitation of the seed sector in Morocco.

Pakistan

Agriculture in general and seed in particular are priority areas for development for the Pakistan Government. As demand for quality seed increased, the Government decided to involve the private sector. Seed business was declared Seed Industry in 1994, complete with industry incentives and benefits. In addition, inbred lines for hybrid seed production may be imported duty-free. A Plant Variety Protection Act is due to come into force. Some 47 local and 4 multinational companies have been granted the right to produce and market seed. Overall, however, the informal sector dominates seed supply in Pakistan.

Sudan

The Sudanese Government has taken steps to develop and liberalize the seed sector, and to encourage private investment in it. Since the early 1990s, legislation and policy have been directed at promoting the use of quality seed and at attracting private involvement in seed business. Although most plant breeding is public, sugar companies conduct their own breeding of cane-sugar. Seed production is handled by the Ministry of Agriculture through agricultural corporations; however, a few companies are involved in the production of seed of wheat, sorghum, sunflower and vegetables either on their own farms or through contracts with farmers. The state controls all seed trade, which is dominated by seed traders and seed importers. Some seed traders are also involved in seed production, either on their own farms or through credit to farmers. Seed imports are dominated by vegetables from the USA and the Netherlands, and there is scope in this area for private investment. There are four examples of successful collaboration between the public and private sectors: Rahad Agricultural Corporation teamed up with a private company; contractors have become involved in the production of seed in collaboration with the National Seed Administration; in the Gezira Scheme, companies contract farmers to produce seed; and the proposed company for production, processing and marketing of seed in Sudan.

Syria

The whole seed industry in Syria is firmly in the hands of the Government, which has improved productivity to the level where wheat seed and grain are exported to neighbouring countries. Vegetable seeds are imported by co-operatives, semi-private companies, or directly by the foreign companies themselves; however, such importation is under the supervision of the Ministry of Agriculture and Agrarian Reform.

Tunisia

Quality seed meets only 12% of national requirements for the main crops in Tunisia. As part of the country's move towards a market economy, various public seed structures are considered suitable for privatization. At present, there are three private and one semi-governmental seed-production enterprises. Private wholesalers import vegetable seed, meeting 50% of local requirements.

Turkey

Since the early 1980s, the Government of Turkey has encouraged the private sector to play an active role in the seed industry. Breeding is still public-sector dominated, but the relaxation of regulations for importing seed has resulted in several private companies importing and marketing varieties, especially of cross-pollinated crops (for which hybrids can be marketed). The impact of the private sector is clearly demonstrated in the large increases in hybrid seed production. Over one-third of the seed processing carried out in Turkey is done by the private sector, and about one-fifth of the currently utilized storage capacity is privately owned. The marketing of most self-pollinated crops (wheat, barley and cotton) is done by the public sector, while the private sector handles most of the other crops; however, government subsidies have been in place for oilseed and fodder crops, fruit and vines since 1985. The Turkish Seed Industry Association acts as a support and information centre for the private sector, as well as a liaison with relevant government offices.

Yemen

Although improved seed is considered important for crop production in Yemen, the seed programmes, which are in the hands of the public sector, are not efficient. Individual farmers (seed growers) produce Certified Seed under contract for the public sector. There is no formal private-sector involvement in the Yemeni seed industry, and farmer-saved seed and farmer-to-farmer diffusion play an important role.

Résumés

Les perceptions des scientifiques du secteur semencier pour la privatisation de l'industrie de semences en Asie de l'Ouest et en Afrique du Nord

Les points de vue des participants à l'atelier sur la privatisation de l'industrie de semences en Asie de l'Ouest et en Afrique du Nord (WANA) étaient obtenus à la fois à travers un questionnaire structuré et des discussions en séances plénières. La privatisation du secteur semencier est vue comme partie intégrante dans l'ensemble du trajet de la plupart des pays de la WANA (l'Asie de l'Ouest et de l'Afrique du Nord) vers l'économie du marché. Les avantages perçus incluent l'augmentation de l'efficacité de l'industrie de semences et une charge réduite sur la trésorerie du gouvernement (Ministère des Finances). Les majeures contraintes de la privatisation incluent le manque de volonté politique et le manque d'une structure légale pour l'investissement du secteur privé (notamment la protection de la variété), la participation gouvernementale (notamment en subventionnant l'industrie), les premiers coûts élevés d'investissement, et le manque de personnes qualifiées dans le secteur privé. Soulever les contraintes légales sera une première phase dans le processus de privatisation (notamment les impôts réduits). Les larges opérations du secteur public doivent d'abord premièrement être décentralisées, opérer comme des centres semenciers indépendantes, efficaces, profit-orienté et éventuellement vendues au secteur privé. En général, le secteur public est moins supportable de la privatisation de l'industrie que de leurs homologues privés. Cependant, la majorité des gens qui ont répondu ont apprécié l'idée de la privatisation, d'amélioration variétale (même des cultures stratégiques), la production commercialisation et la commercialisation; pendant que la majorité supporte le contrôle gouvernemental de l'évaluation, le contrôle de la variété et le contrôle de qualité.

Modèle de privatisation du secteur semencier

Ce modèle de privatisation du secteur semencier est basé sur un système entièrement géré par le gouvernement où toutes les unités sont propriétés de l'Etat. L'expérience pratique a montré que le secteur devrait être libéralisé et privatisé graduellement. Il faut une équipe de planification pour coordonner les efforts, après en avoir défini les objectifs. L'équipe développera les critères d'aptitude à la privatisation et cherchera des candidats appropriés. La deuxième étape du processus consistera à comprendre les différences économiques fondamentales existant entre l'ancien et le nouveau système proposé. La libéralisation du marché exige une approche de vente et non de distribution. L'unité semencière doit devenir une affaire efficiente et efficace, dotée d'une gestion professionnelle et d'un système de suivi financier adéquat. La troisième étape consistera à décider du mode de privatisation (liquidation, association, vente de parts du capital) et de la structure de l'unité semencière (service gouvernemental, société d'Etat, société semi-publique ou entreprise privée). Pour pouvoir survivre dans un environnement commercial, la nouvelle société devra donner d'elle-même une image professionnelle (l'étape quatre). Cela impliquera la diffusion de brochures et la présentation de rapports financiers faisant état des réussites passées en termes de professionnalisme et d'acceptabilité auprès de la clientèle. Pour aider à la mise en oeuvre de cette phase (4), il devra être fait appel à des avocats, banquiers, experts-comptables et autres conseillers. L'étape cinq consistera à évaluer les capitaux et revenus de l'unité semencière, en séparant les capitaux non essentiels de l'unité devant générer des profits. Enfin, au cours de la sixième étape, il faudra que l'équipe de gestion soit motivée et que ses services soient adéquatement rémunérés. Le processus de privatisation doit être complètement ouvert, afin d'éviter que le personnel de gestion ne perde confiance ; la clarification de l'évolution à long terme des carrières par la délivrance de contrats au personnel senior s'avère utile à cet égard. Une fois que ces 6 étapes auront été franchies, il devrait être possible d'atteindre le but visé, à savoir la mise en place d'une société privée de semences à but lucratif, capable de tenir sa place dans l'économie de marché.

Le commerce des semences en Asie de l'Ouest, en Afrique du Nord, dans l'Union Européenne et dans d'autres pays

Peu de données sont disponibles sur le marché des semences en Asie de l'Ouest et dans les pays d'Afrique du Nord. Cependant, des données émanant de la FAO, de la banque de données des Nations Unies et quelques-unes reçues directement des pays concernés montrent que le marché international avec les pays d'Asie de l'Ouest et d'Afrique du Nord est important et que les importations de semences y sont largement supérieures aux exportations (près de 200 millions de dollars US contre 30 millions de dollars US). Les principales cultures concernées sont les légumes et les pommes de terre. Les chiffres sur les marchés intérieurs montrent que, en termes de quantité, les principales cultures concernées sont le blé, l'orge et les pommes de terre et, dans une certaine mesure, le coton. A quelques exceptions près, les pays d'Asie de l'Ouest et d'Afrique du Nord sont peu engagés dans les organisations semencières internationales.

Il existe davantage de données sur les pays européens. Le volume total du marché intérieur de l'Union Européenne est de 6,3 milliards de dollars US et celui des échanges entre les pays de l'Union Européenne se monte à 1,2 milliards de dollars US. Les exportations de UE vers les pays d'Asie de l'Ouest et d'Afrique du Nord sont estimées à 150 millions de dollars US et les importations en provenance de ces pays à 15 millions de dollars US.

La valeur de la consommation mondiale de semences est estimée à 50 milliards de dollar US, dont 30 milliards en transactions commerciales. Les mouvements globaux de semences sont estimés à 3 milliards de dollars US, les cultures les plus importantes étant les légumes (1 milliard), le maïs (400 millions), les plantes fourragères (350 millions) et les pommes de terre (340 millions).

La protection des droits des obtenteurs comme encouragement à l'investissement dans l'industrie semencière

La garantie des droits des obtenteurs permet aux entreprises de sélection de déterminer les coûts de leurs produits. Depuis les années 1960, la plupart des pays qui protègent les droits des obtenteurs ont adhéré aux principes définis dans la Convention internationale pour la protection des nouvelles

variétés de plantes (Convention UPOV). Ces principes couvrent l'unicité (nouveau), la distinction, l'uniformité et la stabilité de la variété à protéger ainsi que l'étendue de cette protection. Avec la reconnaissance des droits de propriété sur les variétés de plantes, le secteur privé est encouragé à s'engager dans la production industrielle, puisqu'il jouit d'une protection légale contre les fraudes, c'est-à-dire contre la multiplication et la commercialisation illégales. Comme les investissements dans la sélection conduisent habituellement à une amélioration des variétés, les agriculteurs peuvent compter avec un accroissement de leurs revenus économiques, même s'ils achètent leurs semences au prix du marché. Ainsi, la protection des droits des obtenteurs encourage l'investissement privé et la productivité agricole.

Chypre

Le gros de la production semencière à Chypre est assuré par le secteur public. Le secteur privé, pour sa part, ne s'est engagé jusqu'à présent que dans la transformation et l'exportation des semences de légumineuses (fèves) et dans l'importation et la commercialisation des semences de légumineuses et de plantes fourragères. Une loi sur les semences a été élaborée afin d'introduire à Chypre les mêmes normes que celles de l'OCDE et de l'UE. Aucun effort n'a été entrepris pour privatiser l'industrie semencière. Mais comme Chypre aspire à devenir membre à part entière de l'Union Européenne et que les effets du GATT s'y font sentir, il faut s'attendre à ce que le secteur privé joue ici un rôle plus grand à l'avenir. Cependant, le Gouvernement est d'avis que la recherche (spécialement en ce qui concerne les céréales) devrait rester entre les mains du secteur public, tandis que la production et la commercialisation devraient être assurées par le secteur privé.

Egypte

Le Gouvernement égyptien a adopté une politique de privatisation du secteur semencier. Un processus de mise en application graduelle est en cours : Les activités de contrôle de la qualité doivent être séparées des

activités de production, l'engagement et les investissements du secteur public seront réduits, et l'industrie semencière devra pouvoir réagir aux forces d'un marché ouvert. Un Conseil national des semences a été créé pour surveiller ce processus, et une nouvelle législation sur les semences et les droits des obtenteurs est en cours de préparation. Bien que la production et la commercialisation de semences aient été offertes pour des participations en franchising, le prix des semences certifiées est artificiellement maintenu à un bas niveau afin d'en encourager l'utilisation par les agriculteurs. L'agence gouvernementale de crédit et de distribution se retire actuellement du secteur de la fourniture des semences, et les coopératives et le secteur privé ont déjà pris en mains une grande partie de la distribution des semences. Ouvrant la voie aux développements futurs, l'industrie des semences de coton a été complètement libéralisée, et les agriculteurs sont entièrement libres dans leurs décisions.

Ethiopie

L'industrie semencière en Ethiopie ne bénéficie de soutien que depuis 1992, suite à l'introduction d'une stratégie et d'une politique semencières nationales. Le Gouvernement s'efforce d'encourager les investissements privés (nationaux et étrangers) dans ce secteur, mais les droits des obtenteurs doivent encore être réglés par la loi. Il n'y a jusqu'à présent dans le pays qu'une seule compagnie privée de production de semences, et celle-ci concentre le gros de ses activités sur les maïs hybrides. La Société Ethiopienne de Semences a été transformée en une entreprise autonome à but lucratif. Une Agence Nationale de Semences a été mise en place pour guider le développement du secteur. Parallèlement aux efforts visant à encourager l'engagement du secteur privé dans l'industrie semencière, le Gouvernement travaille également sur plusieurs projets de promotion de l'utilisation des semences par les agriculteurs à travers le pays.

Jordanie

Il n'y a présentement aucun investissement privé dans l'industrie jordanienne des semences de cultures autogames. L'organisation coopérative

jordanienne passe des contrats à des fermiers privés qui font la multiplication des semences de base. La proposition actuellement à l'étude est de laisser les cultures rentables au secteur privé et de se concentrer principalement sur la multiplication et la distribution des semences certifiées.

Liban

Au Liban, le secteur public s'occupe de la production des semences pour les cultures principales de céréales, de lentilles et de pois chiche. Le secteur privé importe et produit les semences et matériels de multiplication de légumes, arbres fruitiers, plantes ornementales et autres. Cependant, le gros de la production libanaise de semences est assuré par le secteur informel (semences prélevées sur les récoltes et diffusion d'un exploitant à l'autre). Il n'y a aucune restriction à l'engagement privé dans le secteur semencier au Liban et il n'y a pas non plus de loi ou de politique concernant la production et la commercialisation des semences.

Maroc

Le Gouvernement marocain libéralise progressivement le secteur semencier depuis 1989. Cette libéralisation a permis l'établissement de sociétés tant nationales qu'étrangères. Bien que la part de ces sociétés dans le marché des semences soit encore petite, leur rôle va certainement gagner en importance à l'avenir, compte tenu de l'ampleur des potentialités encore inexploitées qui existent dans ce secteur. De plus, la libéralisation devrait faciliter l'émergence et le développement de la recherche privée pour compléter les efforts importants et soutenus de l'Institut National de la Recherche Agronomique. Cependant, à cause des contraintes qui pèsent sur l'agriculture – notamment la sécheresse – il est difficile pour le Gouvernement de laisser ce secteur entièrement entre les mains des forces du marché. Une société d'Etat, la Société Nationale de Commercialisation des Semences (SONACOS), a été créée en 1975 pour promouvoir et consolider le secteur. Les unités régionales de SONACOS sont en train d'être transformées en centres de profit dotés de budgets indépendants. Une Association des producteurs de semences a été créée en 1991 pour

servir de forum pour le secteur. Elle a été étroitement associée à la réhabilitation du secteur semencier au Maroc.

Pakistan

L'agriculture en général et la production semencière en particulier sont des domaines d'action prioritaires de la politique de développement du Gouvernement du Pakistan. Comme la demande de semences de qualité augmente, le Gouvernement a décidé d'y impliquer davantage le secteur privé. Depuis 1994 la production semencière est considérée comme une industrie et bénéficie par conséquent de tous les encouragements et avantages accordés au secteur industriel. En outre, des lignées consanguines pour la production de semences d'hybrides peuvent être importées hors taxe. Une loi sur la protection des variétés de plantes doit bientôt entrer en vigueur. Quelque 47 entreprises locales et 4 sociétés multinationales ont été autorisées à produire et à vendre des semences. Cependant, l'approvisionnement en semences au Pakistan est encore dans l'ensemble dominé par le secteur informel.

Soudan

Le Gouvernement soudanais a pris des mesures pour développer et libéraliser la production semencière et encourager l'investissement privé dans ce secteur. Depuis le début des années 1990, la législation et la politique visent à promouvoir l'utilisation de semences de qualité et à attirer les investissements privés dans le secteur semencier. Bien que la sélection des végétaux soit en majeure partie effectuée par le secteur public, les sociétés sucrières mènent leur propres activités de sélection de variétés de cannes à sucre. Le Ministère de l'Agriculture fait multiplier les semences par des sociétés agricoles. Cependant, quelques compagnies s'occupent de produire des semences de blé, de sorgho, de tournesol et de légumes, soit sur leurs propres exploitations, soit en passant des contrats à des agriculteurs. L'Etat contrôle l'ensemble du commerce des semences, qui est dominé par les marchands et les importateurs de semences. Quelques commerçants participent également à la production des semences, soit sur leurs propres

exploitations soit en fournissant des crédits aux agriculteurs. Les importations concernent principalement les semences de légumes en provenance des Etats-Unis et des Pays-Bas, et ce secteur offre des opportunités intéressantes pour les investisseurs privés. Il y a lieu de citer ici trois exemples de collaboration fructueuse entre les secteurs public et privé : La Société agricole Rahad s'est associée à une compagnie privée ; des entrepreneurs participent sur une base contractuelle à la production de semences en collaboration avec l'Administration nationale de semences ; dans le projet d'aménagement de la Gezira, des compagnies passent des contrats à des agriculteurs pour la production de semences et déduisent ensuite leurs coûts du revenu des agriculteurs après la récolte.

Syrie

L'industrie semencière syrienne, qui est entièrement entre les mains de l'Etat, a amélioré sa productivité au point de pouvoir exporter des semences de blé et de céréales vers les pays voisins. Les semences de légumes sont importées par des coopératives et des entreprises semi-privées ou directement par des sociétés étrangères. Ces importations sont toutefois soumises au contrôle du Ministère de l'Agriculture et de la Réforme Agraire.

Tunisie

La production de semences de qualité en Tunisie ne couvre que 11% des besoins nationaux. Comme ce pays progresse sur la voie de l'économie de marché, plusieurs structures publiques de production de semences sont considérées comme pouvant être privatisées. Il existe actuellement 3 entreprises privées de production de semences et une semi-étatique. Des grossistes privés importent des semences de légumes et couvrent ainsi 50% des besoins locaux.

Turquie

Depuis 1983, le Gouvernement de la Turquie encourage le secteur privé à jouer un rôle actif dans l'industrie semencière. La sélection est encore dominée par le secteur public, mais avec la libéralisation des règlements d'importation de semences, plusieurs sociétés privées importent et commercialisent diverses variétés, en particulier de plantes allogames (dont les hybrides peuvent être vendus). L'impact du secteur privé est clairement démontré par la forte augmentation de la production des semences d'hybrides depuis le début des années 1980. Plus d'un tiers des semences traitées en Turquie vient du secteur privé, et environ un cinquième de la capacité de stockage actuellement utilisée appartient à des privés. Alors que le secteur public commercialise la plupart des semences de cultures autogames (blé, orge et coton), le secteur privé s'occupe de la plupart des autres cultures. Cependant, des subventions publiques sont accordées depuis 1985 pour les oléagineux, les plantes fourragères, les fruits et les vignes. L'Association turque de l'industrie semencière constitue un forum d'appui et d'information pour le secteur privé et assure la liaison avec les services importants du Gouvernement.

Yémen

Bien que la semence améliorée ait une considération importante pour la production des cultures à Yémen, les programmes de semences qui se trouvent dans les mains du secteur public ne sont pas efficaces. Les multiplicateurs de semences produisent la Semence Certifiée sous contrat pour le secteur public. Il n'existe pas de participation formelle du secteur privé dans l'industrie semencière de Yémen, et la semence réservée du cultivateur et la diffusion du cultivateur au cultivateur joue un rôle important.

آراء العلماء المشتغلين في قطاع البذور حول خصخصة صناعة البذور في غربي آسيا وشمال إفريقيا

تم الحصول على آراء المشاركين في ورشة عمل حول خصخصة صناعة البذور في منطقة غربي آسيا وشمال إفريقيا (وانا) من خلال استمارات وجلسات مناقشات مفتوحة، وتعد خصخصة قطاع البذور جزءاً لا يتجزأ من سعي معظم بلدان وانا نحو اقتصاد السوق. ومن بين المزايا المدركة زيادة فعالية صناعة البذور وتخفيف العبء عن خزانة الدولة. ومن بين معوقات عملية الخصخصة عدم توفر الإدارة السياسية وغياب الإطار القانوني لاستثمار القطاع الخاص (وخاصة حماية الأصناف)، ومشاركة الدولة (ولاسيما في دعم هذه الصناعة) وارتفاع التكاليف الأولية لهذا الاستثمار وعدم توفر المهارات اللازمة في القطاع الخاص.

وسيكون رفع العوائق القانونية الخطوة الأولى في عملية الخصخصة، يليها الحوافز للاستثمار الخاص (وخاصة تخفيض الضرائب). وينبغي أولاً جعل عمليات القطاع العام لا مركزية لكي تعمل كمراكز مستقلة فعالة وتبغى الربح، ثم تباع في نهاية الأمر إلى القطاع الخاص. وبشكل عام، كان القطاع العام أقل دعماً لتخصيص بعض أقسام هذه الصناعة من نظيره الخاص. وبشكل عام، فإن معظم الذين أجابوا على الاستمارة أيدوا عملية خصخصة تربية النبات (حتى للمحاصيل الاستراتيجية) وإنتاج البذار وتسويقها، في حين أيدت الأغلبية تحكم الدولة باختبار الأصناف وتقييمها ومراقبة الجودة.

نموذج لخصخصة قطاع البذور

يستند هذا النموذج الرامي إلى خصخصة قطاع البذور إلى عمليات البذور التي تديرها الحكومة بشكل كلي حيث تمتلك الدولة جميع وحداتها. ومن الخبرة العملية، ينبغي تحرير هذا القطاع وخصخصته بالتدريج. وثمة حاجة لفريق من المخططين لتنسيق الجهود بعد وضع الأهداف أولاً. وسيضع الفريق المعايير الملزمة للخصخصة، ثم

البحث عن مرشحين مناسبين لذلك. وتتمثل الخطوة الثانية في فهم الفروق الاقتصادية الرئيسية بين النظام القديم والنظام المقترح، ويحتاج السوق المحرر إلى أسلوب للبيع بدلاً من التوزيع. إذ يجب أن تصبح وحدة البذور فعالة وذات كفاءة إدارية ومحاسبية عالية. أما الخطوة الثالثة فتتمثل في اتخاذ قرار حول شكل الوحدة (مبيع، مساهمة، أو بيع أصول) وهيكلتها (مثال : هيئة حكومية، مؤسسة تملكها الدولة، تعاونية تمتلك الدولة جزءاً منها، أو هيئة خاصة). ولإثبات وجودها في السوق التجارية العالمية، يجب أن تقدم الشركة الجديدة نفسها بصورة جيدة (الخطوة 4). وسيشمل ذلك نشرات وكتيبات عن الشركة وبيانات مالية، مستفيدة من النجاحات السابقة من حيث الخبرة ودرجة تقبل الزبائن. وينبغي دعوة المحامين والمصرفيين ومدقي الحسابات ومستشارين آخرين للمساعدة في إجراء هذه الخطوة (4). أما الخطوة الخامسة فتكمن في تقييم أصول ودخل وحدة البذور، فاصلة بين الموجودات غير الضرورية عن الوحدة التي تستهدف الربح. وأخيراً (الخطوة 6) فإن الإدارة تحتاج إلى تحفيز وتعويض كافٍ لقاء خدماتها ويجب أن تكون عملية الخصخصة منفتحة تماماً، لكي لا يفقد المديرون الثقة. كما يساعد في هذا المجال توظيف أشخاص على مستويات عالية. وما إن يتم تنفيذ الخطوات الستة هذه، يصبح بالوسع تحقيق الهدف من شركة بذور خاصة تستهدف الربح يمكنها الحفاظ على مكانة مرموقة لها في السوق الاقتصادية.

تجارة البذار في غربي آسيا وشمالى إفريقيا، والاتحاد الأوروبي وبلدان أخرى

لا تتوفر سوى معلومات قليلة عن سوق البذار في بلدان غربي آسيا وشمالى إفريقيا (وانا) غير أن المعلومات الواردة من الفاو وبنك المعلومات في الأمم المتحدة وبعض المعلومات الواردة مباشرة من البلدان المعنية، تظهر بأن السوق الدولية في بلدان وانا هامة، وأن كمية البذور المصدرة أقل بكثير من البذور المستوردة (حوالي 30 مليون دولار أمريكي مقابل حوالي 200 مليون دولار). وتشمل المحاصيل الرئيسية الخضار والبطاطا. وتظهر الأرقام المتعلقة بالأسواق المحلية، من حيث الكميات، أن المحاصيل الرئيسية هي القمح والشعير والبطاطا وإلى حد ما القطن.

وباستثناءات قليلة، لا تشارك بلدان وانا عادة إلا بقدر ضئيل في هيئات البذور الدولية.

تتوفر معلومات أكثر بكثير حول البلدان الأوروبية. إذ يبلغ إجمالي السوق المحلية للاتحاد الأوروبي 6.3 مليار دولار أمريكي، وتبلغ حركة البذور الدولية بين بلدان الاتحاد الأوروبي 1.2 مليار دولار. وتقدر الصادرات من الاتحاد الأوروبي إلى بلدان وانا بـ 150 مليون دولار والواردات من بلدان وانا إلى الاتحاد الأوروبي بـ 15 مليون دولار.

وتقدر قيمة استخدام البذور في العالم بـ 50 مليار دولار تدخل 30 مليار منها في الصفقات التجارية. وتقدر حركة البذور العالمية بـ 3 مليار دولار، ومن أكثر المحاصيل أهمية الخضار (1 مليار)، الذرة (400 مليون) والأعشاب (350 مليون) والبطاطا (340 مليون).

حقوق مربّي النبات كحافز للاستثمار في صناعة البذور

تمكنَ حقوق مربّي النبات شركات التربية من تحديد واردات وتكلفة منتجاتهم. ومنذ الستينيات، وافقت معظم البلدان التي تمنح حقوق مربّي النبات على تنفيذ المبادئ التي جددتها الاتفاقية الدولية لحماية أصناف النباتات الجديدة (اتفاقية UPOV). وتغطي هذه المبادئ، تميز الصنف المزمع حمايته وتجانسه واستقراره (DUS)، ومدى تلك الحماية. إن منح وضع الملكية لأصناف المحاصيل تشجع على دخول القطاع الخاص في هذه الصناعة، نظراً لتمتعها بالحماية القانونية من التزوير، أي إكثارها وتسويقها بصورة غير قانونية، وبما أن الاستثمار في التربية يؤدي عادة إلى الحصول على أصناف محسنة وعلى غلة جيدة، يتوقع المزارعون زيادة دخولهم الاقتصادية حتى بعد دفع ثمن بذورهم بسعر السوق. ولذا فإن حقوق مربّي النبات تشجع الاستثمار والإنتاج الزراعي للقطاع الخاص.

قبرص

تقع معظم صناعة البذور في قبرص بيد القطاع العام، أما القطاع الخاص فلا يعمل إلا في مجال تجهيز وتصدير بذور البقوليات الغذائية (الفول) وفي استيراد بذور الخضار

والأعلاف وتسويقها. وقد وضعت مسودة قانون يتعلق بالبذور من شأنه أن يضع قبرص في مصاف معايير منظمة التعاون الاقتصادي والفني (OECD) والاتحاد الأوروبي. ولم يبذل أي جهد لخصخصة هذه الصناعة، إلا أنه نظراً لأن قبرص تسعى للحصول على عضوية تامة في الاتحاد الأوروبي وبدأت تشعر بنتائج الجات (GATT)، يُتوقع أن يلعب القطاع الخاص دوراً أكبر. وتعتقد الحكومة أنه يجب أن تبقى البحوث (ولاسيما تربية الحبوب) بيد القطاع العام، أما الإنتاج والتسويق فيجب أن تؤول إلى القطاع الخاص.

مصر

اعتمدت الحكومة المصرية سياسة خصخصة قطاع البذور. ويتم تنفيذ هذه العملية شيئاً فشيئاً، في حين سيتم فصل الأنشطة المتعلقة بالتحكم بالجودة عن الأنشطة المتعلقة بالإنتاج، وستنخفض مشاركة الحكومة واستثمارها. ويجب أن تستجيب صناعة البذور لقوى السوق المفتوحة. وتم تأسيس مجلس وطني للبذور للإشراف على العملية، ويجري الإعداد لوضع قانون جديد للبذور ولحماية حقوق مربي النبات. رغم منح تراخيص لإنتاج البذور وتسويقها، فقد بقي ثمن البذار المعتمدة منخفضاً لتشجيع استخدامها من قبل المزارعين. وتنسحب وكالات القروض والتوزيع من توريد البذور، لذلك انتقل الشيء الكثير من عملية توزيع البذور إلى القطاع الخاص والتعاونيات. وتم تحرير صناعة بذور القطن تماماً كبدية للتنمية في المستقبل، لكي يصبح المزارعون أحراراً في اتخاذ قراراتهم.

إثيوبيا

لم يتم دعم صناعة البذور في إثيوبيا إلا منذ 1992، عندما تم وضع سياسة واستراتيجية وطنية للبذور. وتسعى الحكومة لتشجيع الاستثمار الخاص (المحلي والخارجي) في الصناعة، إلا أنه ينبغي سن قوانين تتعلق بحقوق مربي النبات. وحتى الآن لا تعمل سوى شركة خاصة واحدة تركز في معظم نشاطاتها على الذرة الهجينة. وقد تحولت هيئة البذور الإثيوبية إلى مؤسسة البذور الإثيوبية، وهي شركة مستقلة تبغي الربح. وقد أسست الوكالة الوطنية لصناعة البذور لتوجيه تطور الصناعة، وإلى

جانب الجهود الرامية إلى تشجيع مشاركة القطاع الخاص في صناعة البذور، كما تعمل الحكومة في عدد من المشروعات لتشجيع استخدام البذور من قبل المزارعين في أنحاء البلاد.

الأردن

لا توجد حالياً شركة خاصة لصناعة البذور في الأردن حول المحاصيل ذاتية التلقيح. إذ تقوم الهيئة التعاونية الأردنية بإكثار البذور الأساسية من خلال عقود مع مزارعين من القطاع الخاص. ويتمثل الاقتراح الحالي في قيام القطاع الخاص بتداول المحاصيل المدرة للربح والمشاركة في إكثار وتوزيع البذور المعتمدة بشكل رئيسي.

لبنان

يقوم القطاع العام في لبنان بإنتاج بذور المحاصيل الرئيسية للحبوب والعدس والحمص. ويقوم القطاع الخاص باستيراد وإنتاج البذور ومواد الإكثار الأخرى المتعلقة بالخضار والأشجار المثمرة ومحاصيل الزينة ومحاصيل أخرى. بيد أن مجمل إنتاج البذار في لبنان يكمن في القطاع غير الرسمي (من البذار التي يوفرها المزارع وانتقالها من مزارع لأخر). ولا توجد قيود على الاستثمار الخاص في تجارة البذور في لبنان إلا أنه لا يوجد قانون أو سياسة للبذار.

المغرب

تقوم الحكومة المغربية بإلغاء القيود المتعلقة بقطاع البذور تدريجياً منذ عام 1989. ورغم أن عملية التحرر قد مكنت من إقامة شركات بذور وطنية وأجنبية. ورغم أن حصة هذه الشركات في سوق البذار صغيرة، فمن المحتمل أن تلعب دوراً متزايداً في المستقبل نظراً لوجود إمكانيات واسعة غير مستغلة بعد في هذه المجال. كما أن عملية إلغاء القيود يجب أن تتيح ظهور وتطور البحوث في القطاع الخاص لتكميل الجهود الكبيرة والمستمرة التي يقوم بها المعهد الوطني للبحوث الفلاحية. غير أن العوامل المحددة الزراعية - ولاسيما الجفاف - تحد من قدرة الحكومة على ترك القطاع تماماً بيد قوى

السوق. وقد أسست شركة تابعة للدولة وهي 'الهيئة الوطنية لتجارة البذار' (SONACOS) في عام 1975 لتشجيع وتعزيز القطاع. وقد تحولت فروع الهيئة الوطنية في الأقاليم وأصبحت مراكز تبغي الربح ذات ميزانية مستقلة. وقد تشكلت رابطة للبذور في 1991 لتعمل بمثابة محفل للقطاع، وهي تعمل على إحياء قطاع البذور في المغرب.

الباكستان

تحتل الزراعة بشكل عام والبذار بشكل خاص أولوية في مجالات التنمية بالنسبة للحكومة الباكستانية. ومع تزايد الطلب على بذار الجودة قررت الحكومة إشراك القطاع الخاص. وقد تحولت تجارة البذور إلى صناعة البذور في عام 1994، بمبادرات الصناعة وفوائدها. فضلاً عن ذلك، فإن السلالات النقية من أجل إنتاج البذور النقية قد تستورد بدون رسوم جمركية. وسيصدر قانون لحماية أصناف النباتات قريباً. وقد منحت 47 شركة محلية و4 شركات متعددة الجنسيات حق إنتاج البذار وتسويقها. وبشكل عام، فإن القطاع غير الرسمي يهيمن على توريد البذور في الباكستان.

السودان

اتخذت الحكومة السودانية خطوات لتطوير وتحرير قطاع البذار وتشجيع القطاع الخاص فيه. فمنذ أوائل التسعينيات، تم توجيه التشريع والسياسة نحو تطوير استخدام البذور الجيدة النوعية وجذب مشاركة القطاع الخاص إلى تجارة البذار. ورغم أن معظم عمليات تربية البذور تتم في القطاع العام، فإن شركات السكر تقوم بتربية قصب السكر. وتدير وزارة الزراعة عمليات إنتاج البذار من خلال الهيئات الزراعية، ويشارك عدد قليل من الشركات في إنتاج بذور القمح والذرة الرفيعة وعباد الشمس والخضار، سواء في مزارعهم أو من خلال عقود مع المزارعين. وتتحكم الدولة بتجارة جميع البذور التي يهيمن عليها تجار ومستوردو البذور. كما يشارك عدد من تجار البذار في إنتاج البذار سواء في مزارعهم أو من خلال قروض تقدم للمزارعين. وتهيمن على واردات البذور الخضار من الولايات المتحدة وهولندا، وثمة مجال

للاستثمار الخاص في هذا الأمر. وثمة أربعة أمثلة عن التعاون الناجح بين القطاعين العام والخاص : مركز بحوث رهد الذي تشاركه شركة من القطاع الخاص، وقد أصبح المتعاقدون مشاركون في إنتاج البذار بالتعاون مع إدارة البذور الوطنية، وفي مشروع الجزيرة تتعاقد الشركات مع المزارعين لإنتاج البذار، وتحسم التكاليف من مردود المزارعين عند الحصاد.

سورية

تقع صناعة البذور برمتها في سورية بيد الحكومة التي عملت على تحسين الإنتاجية إلى درجة قيامها بتصدير بذور وحبوب القمح إلى البلدان المجاورة. أما بذار الخضار فتقوم التعاونيات والشركات شبه الخاصة باستيرادها أو عن طريق الشركات الأجنبية مباشرة، وتتم عملية الاستيراد هذه تحت إشراف وزارة الزراعة والإصلاح الزراعي.

تونس

لا تلبى البذور الجيدة سوى 12% من الاحتياجات المحلية بالنسبة للمحاصيل الرئيسية في تونس. وكجزء من تحول البلاد نحو اقتصاد السوق، تُعد العديد من هياكل البذور العامة ملائمة للخصخصة. ويوجد حالياً ثلاث شركات خاصة وشركة واحدة شبه حكومية تعني بإنتاج البذار. ويستورد بائعو القطاع الخاص بذار الخضار بحيث يلبون 50% من الاحتياجات المحلية.

تركيا

منذ عام 1983، تقوم الحكومة التركية بتشجيع القطاع الخاص لكي يلعب دوراً نشطاً في صناعة البذار. ولاتزال التربية من اختصاص القطاع العام، إلا أن تسهيل أنظمة استيراد البذار أدى إلى قيام العديد من شركات القطاع الخاص باستيراد الأصناف وتسويقها ولاسيما المحاصيل ذات التلقيح الخلطي (التي يمكن تسويق الهجن من أجلها). ويتجلى تأثير القطاع الخاص في الزيادات الكبيرة في إنتاج البذور المهجنة. ويجري أكثر من ثلث عمليات تجهيز البذور في تركيا من قبل القطاع الخاص، وحوالي

خمس الاستطاعة التخزينية المستقلة حالياً من الأملاك الخاصة. يتم تسويق معظم المحاصيل ذات التأثير الذاتي (القمح والشعير والقطن) بواسطة القطاع العام، في حين يُعني القطاع الخاص بمعظم المحاصيل الأخرى. أما المعونات الحكومية فتتقدم لمحاصيل البذور الزيتية والعلفية والفاكهة والكرمة منذ 1985. وتعمل رابطة صناعة البذار التركية بمثابة مركز يقدم المعلومات والدعم للقطاع الخاص فضلاً عن الاتصالات والتنسيق مع المؤسسات الحكومية ذات الصلة.

اليمن

رغم أن البذار المحسنة تعتبر هامة من لإنتاج المحاصيل في اليمن، فإن برامج البذور التي تقع بيد القطاع العام ليست فعالة. ويقوم المزارعون (منتجو البذور) بإنتاج البذار المعتمدة بالتعاقد مع القطاع العام. ولا يوجد مشاركة رسمية من القطاع الخاص في صناعة البذور في اليمن، وتلعب البذور التي يوفرها المزارعون وانتقالها من مزارع إلى آخر دوراً هاماً.

Regional Perspective

Seed Sector Scientists' Perceptions of and Recommendations for Privatization of the Seed Industry in West Asia and North Africa

Zewdie Bishaw, Guy R. Manners and Anthony J.G. van Gastel

Introduction

The Privatization of Seed Industry Workshop held in Tunis drew together seed professionals from the public and private sectors of 11 West Asian and North African (WANA) countries, along with others from Europe and ICARDA (see List of Contributors). This chapter is a synthesis of responses to a questionnaire circulated by the Workshop organizers and the results of several open-discussion sessions, including the recommendations for privatization and liberalization of the seed sector in WANA.

A total of 26 participants responded to the questionnaire, of whom 9 were from the public sector and 7 from the private sector in WANA, and 10 from Europe [5 private seed companies, 3 technical-assistance personnel attached to national seed programmes (2 in Egypt and 1 in Jordan) and 1 each from UPOV and FAO]. Although respondents were specifically asked for the official view (of their government or company), it is likely that some of the views expressed were personal rather than official. Not all respondents answered every question.

Among the participants who responded to the questionnaire, Cyprus, Ethiopia, Jordan, Lebanon, Syria and Yemen were each represented by the public sector; Morocco and Tunisia (3) were represented by private sector only; and, Egypt, Pakistan and Turkey, were represented by both public and private sector.

Background

In many developing countries some form of government control was exercised to secure economic and social development. Most of the national development programmes in industry, agriculture, commerce and finance are under the control of the state. Similarly, several national seed programmes evolved from special projects which became public-sector functions.

van Gastel, A.J.G., J. Wadsack and G.R. Manners (Ed.). 1997. Privatization of the Seed Industry in the West Asia and North Africa Region. GTZ, Eschborn, Germany.

Today the structural adjustment programme (SAP) has become a prescription of aid agencies for revitalizing stagnating or declining economies. Many countries are moving towards a market-oriented economy, and the role of the public sector is diminishing and that of the private sector increasing. Therefore, privatization of the public sector is becoming a step towards market economy.

Advantages of Privatization

In comparison with equivalent public-sector operations, private seed companies are more efficient and effective, because they are free to make their own management decisions, and operate customer-oriented business. Private seed production is necessarily based on market forces; it is therefore flexible to meet changing demands from farmers.

The existence of several (or many) individual companies in an industry gives better competition to satisfy national seed demand in terms of varieties, quantity, quality, timely distribution, and competitive price. Entry of private companies may diversify the range of crops handled, which reduces production risks to the public sector.

If private companies produce seed domestically, dependence on imported seed will be minimized, saving valuable financial resources. National seed demand may eventually be covered by locally-produced seed; there may also be surplus seed for export.

Since state operations tend to be inefficient and heavily subsidized, privatization reduces state expenditure on seed, benefitting the state budget and national income.

Private-sector involvement improves the seed sector and promotes inter-regional seed trade. The increased use of quality seed by farmers as a result of successful private marketing and seed availability, may also lead to increased agricultural production, food self-sufficiency and farmer income.

Investment tends to be self-perpetuating if the returns are visible, so the private seed sector may develop beyond the original public-sector enterprise, enhancing research capabilities, and economic and market development. Privatization also encourages foreign investment – valuable income for any developing nation.

Major Constraints to Privatization

There was a general consensus that there is often a lack of political will and thus government policy to privatize the seed sector. This is often reflected in outdated agriculture laws, which are inadequate for private seed business. Furthermore, the general political and economic situation of some countries is not conducive to (seed-sector) privatization.

For privatization to succeed there should be clear policy guidelines and adequate legislation for seed business. The lack of incentives and financial laws, and the weak banking and credit systems for supporting private investment effectively reduce investment opportunities.

A major constraint identified by the majority of the participants was unfair competition from the state sector in the form of direct subsidies from the government, or simply state involvement in certain (if not all) aspects of the industry. Furthermore, inadequate pricing policies, i.e. state fixing of prices, make the seed industry financially unattractive to the private sector.

The investment required to establish a seed company is large and the cost of seed production high. In particular, the seed sector of self-pollinating crops is not attractive to the private sector, as it often has strict targets and minimal profit margins; it is difficult even to liberalize this sector.

The lack of Plant Breeders' Rights was perceived as a problem for privatization, especially for self-pollinating crops.

The lack of well-organized commodity markets makes marketing difficult. In many countries, the private sector is obliged to use public-sector channels for seed distribution and marketing.

The lack of trained personnel, managers, and scientific knowledge in the private sector further reduces the opportunities for the private sector.

Recommendations for Privatization of the Seed Sector

Encouraging private sector involvement

Public seed is a tradition in many developing countries and the change to private seed production should, therefore, be gradual. Moreover, the role of the state in the industry should be gradually diminished. The government has a responsibility to ensure that remote areas always have access to quality seed, and to finance the maintenance of seed security stocks. A strong public research base focused on national needs should be maintained, with free access for private companies.

To enable privatization, participants identified several measures that need to be taken. First, a seed council should be established to help formulate a clear policy for the future of the seed sector. Comprehensive seed legislation, including variety registration, variety protection, and seed quality control, should be adopted and implemented taking into account the level of seed-sector development, and covering the different sectors.

A legislative structure must be developed to ensure fair competition and stimulate private-sector development. Company and privatization laws should be enacted, and guidelines for privatization should be prepared. The separation of seed-production activities from (official government) seed-certification activities is essential for privatization. Apart from internal quality control, an external quality-control service should be created to eliminate fraud and ensure that quality seed reaches the farmers. A seed association could be established to act as a link between government and the seed industry.

Incentives for privatization of the seed industry are essential – the industry should enjoy similar status and concessions to those applicable to other industries. An investment law should be enacted and obstacles to foreign investment removed. The capital-investment threshold should be lowered for private entrepreneurs to enable them to enter the seed business. Low-interest credit may be made available for investment in the seed sector. Capital goods, machines and spare parts should be exempt from, or attract low, duty and taxes. The importation of inbred lines and vegetable seeds should be duty-free, and regulations and procedures for seed import and export should be simplified. Seed trade should be exempt from local taxes under a special tax policy, which may include a tax holiday period. There should be no restriction on transfer of profits or direct foreign investment.

Land may be offered at moderate prices to enable private companies to establish facilities. Breeder and Foundation Seed of varieties developed by the public sector should be made available to the private sector. The private sector may be allowed to rent public processing and storage facilities and use public marketing channels.

A free capital market is required in general to encourage private investment, and rural credit programmes are essential so that farmers can buy seed. A free marketing and pricing system should be created, but seed prices should increase only gradually; minimum and maximum sales prices

could be imposed, to protect the producers and farmers, respectively. Furthermore, it is important that any subsidies deemed necessary for a healthy seed sector should be given to both public and private sectors.

Staff of private and public sector should be trained in all aspects of seed industry, particularly management.

Decentralization and privatization of large public sector operations

The decentralization of public seed production into small units was considered a viable first step towards privatization. These units should be turned into independently-operating seed centres. Once the units are operating on a commercial basis, their assets should be valued and they should be tendered. Joint venture and other options should be investigated as viable alternatives to complete sell-off.

However, before state-owned enterprises can be privatized, they should have:

1. carried out a market analysis;
2. established the company according to company law;
3. carried out a debt/equity review;
4. ensured the availability of capital;
5. improved organizational structure and management, and introduced a management information system (MIS) for performance evaluation;
6. introduced a sound financial, accounting and controlling system, and an external auditing procedure;
7. introduced proper budget planning;
8. assessed operational factors and made them efficient, and minimized costs;
9. initiated process-cost control and inventory maintenance (to minimize losses);
10. initiated a timely reporting system;
11. introduced a proper seed-pricing structure, and implemented a sales force;
12. assessed staff requirements and qualifications, and improved recruitment and training procedures (at this step, the state also needs to consider the future of surplus staff);
13. assessed performance indicators relevant to the seed industry;
14. investigated the possibilities for partnerships and co-operation;
15. guaranteed a continuous supply of Breeder or Basic Seed.

Considering the number and complexity of the steps involved, the transition to decentralized seed units and a liberalized seed industry will take some time.

Perceptions of Future Status of Seed Subsectors

Seed policy

Nearly all respondents from public and private sector appeared to appreciate the need for privatization of the public seed sector in their respective countries (93%; n=15). Of the 16 WANA participants, 88% supported privatization, 1 respondent from the public sector did not support privatization, and 1 from the private sector abstained. All European respondents (100%; n=8) supported privatization, but two abstained.

Nine WANA countries (Cyprus, Egypt, Ethiopia, Jordan, Morocco, Pakistan, Syria, Tunisia, Turkey) claim to have national seed policy, or a seed act and regulations (or all three) that support the seed sector. However, due to old policies and laws, support to the private sector is not clearly defined in some countries.

In seven of the countries (Cyprus, Egypt, Ethiopia, Lebanon, Pakistan, Tunisia, Turkey), the seed policy actively supports private-sector involvement. Six countries (Egypt, Ethiopia, Morocco, Pakistan, Tunisia, Turkey) have an investment policy which encourages national companies to become involved in seed, and six (Cyprus, Egypt, Ethiopia, Lebanon, Pakistan, Turkey) encourage foreign participation in the sector.

Eight of the countries (Egypt, Ethiopia, Jordan, Lebanon, Morocco, Pakistan, Syria, Yemen) claim that their policy supports the alternative or informal seed sector, but only Ethiopia and Pakistan have a clear policy on development of the informal sector.

Although five (Cyprus, Ethiopia, Morocco, Pakistan, Turkey) out of 10 countries claim that their policies support variety protection, only Egypt, Morocco, Pakistan and Turkey are considering implementing variety protection.

There was a general suspicion of fair competition between the public and private seed sector in WANA among the respondents. Half of the public sector (n=4) believed that fair competition exists, one-quarter thought that the competition is unfair, and the respondent for Turkey said it is only fair for some crops. Among the private-sector respondents (n=6), two-thirds said that there was not fair competition.

Plant breeding

Plant breeding, the source of modern varieties, is the backbone of the formal seed sector. It is exclusively a government undertaking in almost all countries of the WANA region. However, in developed seed programmes, particularly where the private sector is protected by Plant Breeders' Rights, varieties may also be developed by the private sector.

The participants were asked their views on privatizing plant-breeding activities (Table 1). From the public sector, 44% favoured privatization of all crops, compared with 67% of the private sector and 78% of Europeans. Almost all those who did not support full privatization of breeding indicated that the breeding of strategic crops should not be privatized. For example, coffee is considered a strategic crop in Ethiopia and "should not be privatized". All the public- and private-sector respondents agreed on privatizing other crops and vegetables.

The public (77%; n=9), private (80%; n=5) and European (100%; n=10) respondents agreed that private seed companies should be allowed to carry out their own plant breeding, and the majority of public (75%; n=8) and private (83%; n=7) sector said that the government should not decide which crops they can breed. Moreover, the respondents supported implementing plant breeders' rights [public (67%; n=9), private (83%; n=6) and European (100%; n=8)]; favoured selling of seed of new varieties developed by the government to the private sector [public (89%; n=9), private (100%; n=6) and European (100%; n=9)]; and wanted the private sector to pay royalties

Table 1. Support for privatization of plant breeding.

Crops	Public (n=9)	Private (n=6)	European (n=9)	Total (n=24)
All	4	4	7	15
Strategic	1	0	1	2
Other	5	2	1	8
Vegetable	5	2	1	8

N.B. Respondents who would privatize breeding for all crops have not been added to the individual categories.

for government-bred varieties [public (78%; n=9), private (100%; n=6) and European (89%; n=9)].

Variety testing and release

The responsibility of government in variety testing and release has been accepted as the norm by the national seed programmes of both developed and developing countries. Only 22% of public (n=9), 17% of private (n=6) and 10% of Europeans (n=10) would opt for privatization of variety testing and release for all crops. On the other hand, 33% of public, 67% of private and 70% of European respondents said that variety testing and release should not be privatized for any crop.

Fifty-six percent of public (n=9) and 67% of private (n=6) respondents favoured a comprehensive variety release system, compared with 60% of European respondents who favoured an intermediate system.

The private sector considered their national variety testing and release systems tougher than did public-sector respondents (Table 2). The same trend is observed in perceptions of the difficulty of the registration of national varieties, whereas for foreign varieties the opinions of the two sectors were similar (Table 2).

Seed production

In many developing countries, including those in WANA, seed production and supply is considered a service activity operated by the public sector.

Table 2. Current perceived levels of variety testing and release, and registration of national and foreign varieties.

Activity	Sector	Simple/ easy	Moderate/ intermediate	Strict/ difficult	Very strict/ very difficult
Variety testing & release	Pub	1	5	2	1
	Priv	0	3	2	1
Registration (national)	Pub	5	3	1	0
	Priv	2	2	2	0
Registration (foreign)	Pub	3	5	1	0
	Priv	2	3	1	0

Most of the operations are subsidized by the government and are not profit-oriented. The participants were asked their views on privatizing Breeder, Basic and Certified Seed production.

None of the respondents wanted to keep all seed production in the public sector. About one-third of the public sector supported privatizing Breeder Seed (n=6) and Basic Seed (n=9) production of all crops, while the corresponding figure for Certified Seed production was 56% (n=9). However, only 11, 22 and 25% of the public sector supported privatizing production of Breeder, Basic and Certified Seed, respectively, of strategic crops. In contrast, 67% of private (n=6) and 80% of European (n=10) respondents supported privatizing Breeder, Basic and Certified Seed production of all crops, whereas the rest opposed that of strategic crops. However, all respondents supported privatizing Breeder, Basic and Certified Seed production of other crops and vegetables. The public sector is less supportive of privatizing Breeder and Basic Seed production of all crops compared with the private sector.

Four of the 9 public-sector respondents (Cyprus, Ethiopia, Morocco, Pakistan) indicated that the public seed-production programme is profit-oriented; the other countries' representatives (Egypt, Jordan, Lebanon, Morocco, Syria, Tunisia, Turkey) said that it is operating on subsidies. In Pakistan, seed of some crops is subsidized, whilst that of others is not. It is also known that much of the seed production in Ethiopia is subsidized, but the Ethiopian Seed Enterprise has been given autonomy to operate at a profit. The private sector had similar views where public seed sector is not profit-oriented (60%; n=5) and operating on subsidies (100%; n=6). Eighty per cent of public (n=8) and 75% of private sector (n=4) indicated government plans to privatize the existing seed production facilities.

Seed marketing

Seed should be made available to the farmers at the right time, in the right quantity and quality, in the right place and at a reasonable price. In many countries, however, seed marketing remains one of the weakest links in the seed-production chain and limits farmers' access to seed.

It appears that there is a general consensus that seed marketing and distribution should be privatized. About 67% of public (n=9), 67% of private (n=6) and 80% of Europeans (n=10) supported privatization of the marketing of all crops. However, 22% of public, 33% of private and 20% of Europeans

opposed privatization for strategic crops. All respondents supported privatizing the seed marketing of other crops and vegetables.

Almost all public (89%; n=9), private (100%; n=6) and European (100%; n=9) respondents supported the idea of involving private seed dealers in the distribution of Certified Seed of important food crops.

The participants agreed that the seed companies should be able to determine the seed prices. Most of the public sector (88%; n=8), private sector (80%; n=5) and Europeans (90%; n=10) supported the idea for all crops, and all public-sector and European respondents supported company price determination for other crops and vegetables.

Seed price

Seed pricing is a sensitive issue in many developing countries and there is a tendency for governments to subsidize seed sales. The respondents, however, appreciated that the seed price should at least cover the cost of production. Thirty-three per cent of the public-sector participants (n=9) said that seed should be sold at actual production cost, 22% at production cost plus profit, and 45% at a competitive market price. Most of the private sector (80%; n=5) indicated that seed be sold at production cost plus profit, while the remaining 20% preferred a market price. Europeans (n=10) were equally divided between pricing at production cost plus profit (45%) and at market price (45%). Fifty per cent of the public (n=8) and 60% of the private sector (n=5) supported subsidizing seed of important food crops. However, only 38% (n=8) Europeans supported this idea.

Seed quality control

Traditionally, official seed quality control is a public-sector service activity even in well-developed seed programmes. The perception remains the same, as only 33% of public sector (n=9), 17% of private sector (n=6) and 30% of Europeans (n=10) supported the idea of privatizing seed quality control.

The majority of public (89%; n=9), private (83%; n=6) and European (56%; n=9) respondents agreed that the government should operate a comprehensive seed quality control system. Fifty per cent of the respondents from the public sector (n=8), private sector (n=6) and Europe (n=10) were aware of the FAO's *Quality Declared Seed* system. Moreover, of those

who knew the system, 75% of public sector and 100% of private sector said the system would be good for implementation in their country.

Although the majority agreed that the government should run a comprehensive quality-control system, they still thought that companies should have internal quality-control systems and that the state should carry out random checking [public (75%; n=8), private (40% n=5) and European (75%; n=8)].

Seed import and export

National seed programmes often import seed of major food crops in years of shortage from countries with similar climatic conditions, but national seed policy on seed import and export is unclear in some countries. The public respondents (n=9) rated import procedures as easy (44%) or intermediate (56%), whereas the private sector (n=6) rated them as easy (17%), intermediate (67%), or difficult (16%) (Table 3). However, the public and private sectors of one country disagreed with each other.

Table 3. Perception of current level of the procedures for importing and exporting seed.

Sector	Very easy	Easy	Intermediate	Difficult	Very difficult
<i>Imports</i>					
Pub	0	4	5	0	0
Priv	0	1	4	1	0
<i>Exports</i>					
Pub	2	4	1	1	0
Priv	0	1	1	3	0

The public respondents (n=8) rated the procedure for seed export as very easy (25%), easy (50%), intermediate (12%) or difficult (13%), whereas the private sector (n=5) rated it as easy (20%), intermediate (20%) and difficult (60%). Compared with the private sector, the public sector thinks that the procedure for seed export is more favourable than for

import (Table 3). For one country, the public and private sectors disagreed strongly.

Summary

Overall, respondents were in favour of privatizing all aspects of the seed industry for at least some crops. Least-favoured for removal from government control were variety testing and release, and seed quality control.

Model for Privatization of the Seed Sector

Kurt Quensell

Introduction

It is generally accepted that a market economy is more efficient than a socialist or “command” economy. Consequently, the seed sector as part of the overall economic system is now being adapted worldwide to the requirements of the market economy.

On the basis of practical experience gained in the New Federal States of Eastern Germany, and also in Morocco, Egypt and Bhutan, developing countries intending to liberalize and privatize their seed sector are recommended to adopt a gradual approach.

Model for Privatization of the Seed Sector

There is little experience in the West that can be simply drawn upon, few models can be simply transposed. Moreover, the political and economic context as well as the situation of the agri-food systems differ from country to country: each must find its own most appropriate solution. Therefore, some broad guidelines only are set out where western experience has some relevance.

Within the European model of the seed sector, a distinction is made between (1) the general operating framework, i.e. legislation, seed policy, capital market and agricultural advisory services, which is regarded as the responsibility of governments, and (2) the actual seed market, where the market forces as represented by the seed companies on the supply side, and customers (farmers, consumers) on the demand side, are allowed to operate more or less freely in determining price levels. The “more or less” qualification has to be added because this analysis concentrates essentially on the basic food crops, namely the core or staple crops where the range in which prices are allowed to vary may well be limited for social reasons.

van Gastel, A.J.G., J. Wadsack and G.R. Manners (Ed.). 1997. Privatization of the Seed Industry in the West Asia and North Africa Region. GTZ, Eschborn, Germany.

Targets of a Seed Program

- Yield-improvement of staple crops
- Reduction of food scarcity
- Income-improvement for rural population (farmers, processors, dealers)
- Independence from food or seed imports
- Development of farm management skills and agricultural production know-how
- Use of available natural resources
- Generation of foreign currency
- Low food prices for the non-farming population.

These objectives are a constituent part of all government programmes and are regarded as those which can be realized most effectively in a liberalized and privatized seed market. However, a certain conflict of interest may arise from the last objective in the list, which may, under certain circumstances, impose a political restraint on the free development of the seed price and render state subsidies necessary.

The Seed Chain

The breeding organization, which under certain circumstances may be limited in its activities to the screening of internationally available varieties and the maintenance of certain cultivars, supplies the starting material or base seed to each seed station. The seed stations then propagate and distribute the quality seed or the certified seed via a sales organization to the farmers.

Privatization of a State-Owned Seed Unit

We assume that, prior to liberalization or privatization, the seed stations are under state ownership and that the seed is supplied to the farmers either at a price determined by the government or free of charge.

Experience indicates that the following steps are advisable for promoting the process of liberalization and privatization.

Step 1: Planning

Privatization goals and objectives need to be established, and long-range business plans developed. The first task is to convene a planning team of senior executives which, having been given the necessary authority, can

plan, co-ordinate and oversee all the measures introduced from start to finish.

Specific privatization screening criteria should be established, and suitable candidates for privatization should be identified. The evaluation process should then start and the *closing* of the transaction prepared.

Step 2: Understanding the basic differences between the old and the new economic systems

Due account will have to be taken of the following changes.

The liberalized market requires a sales-led approach rather than a distribution-led approach, which will necessitate market analyses and a sales strategy; significant competition will be introduced, necessitating a brand name and logo for each individual company.

Effective management demands that employees be reliable and that they be appropriately remunerated; this will help ensure good labour relations, a likely component of which will be trade unions. The system will be financed via the capital market; new technologies combined with higher productivity will determine the level of business success.

The new organization will require a professional management team, in which the role of the Board of Directors will be more far-reaching than possible in the public sector. The importance of research and development will be heightened, and there will be extensive use of profit centres.

Financial reporting will become more important with annual accounting records, proper budgeting and planning, and adequate management information. The goal is financial self-sufficiency.

Step 3: Structuring the Seed Unit

Once the decision has been made to enter the liberalized market and/or to privatize the seed unit, based on the knowledge gained during Step 2, the management has to determine the appropriate form and structure of the seed business. Form refers to the manner of participation in the market place, and structure refers to the specific legal framework or organization.

Possible forms are public company (achieved through the sale of shares), joint venture (between public and private sectors), management buy-out, and sale of assets.

Possible structures are as a Department under the Ministry of Agriculture, a corporation owned by the State, a corporation partly owned by the State, and a private corporation.

Whatever the form and structure, the final objective would be the establishment of a private seed company.

Step 4: Presenting the Seed Unit

Liberalization, and particularly privatization, requires that the company be able to present itself in a professional manner. This is important not only for attracting prospective partners or purchasers but also for its image as a private company in the liberalized seed market. Soliciting the assistance of lawyers and bankers, and also auditors, is strongly recommended.

The company will need to prepare a brochure highlighting its size, success, professionalism, and the quality and consumer acceptance of its products. It will also need to prepare financial statements following international accounting principles.

Step 5: Evaluating the Seed Unit

Whatever form and structure is chosen for the regime within the framework of the privatization program, the existing seed unit has to be evaluated. In approaching this problem, it is necessary to define clearly what is to be privatized and therefore needs evaluating. It is quite conceivable that not all of the state-run seed production and distribution system will be privatized. Partial privatization is also possible, for example, the marketing side may be switched to private-sector organizations, or the unit may be split along regional lines. A distinction will always have to be made between "business essentials" and "business non-essentials", and the assets not essential to the business should be sold separately if at all possible so as not to burden the purchase price of the actual seed unit.

After the definition of what has to be, or what can be, privatized, the management has to set up sections which are self-sustainable or can survive outside the public sector.

There are several evaluation methods. The decision as to which is most suitable has to be made case by case. In many situations it will be difficult to apply an evaluation method based on the profit or yield factor. The lowest value applied should be the cost which the purchaser would have to cover

in order to maintain or render the seed unit operational in its current condition.

Assets may be assessed on net value, replacement cost (or fair value of the net assets), or liquidation value.

Income factors may be rated as net income multiplied by a factor (commonly the Price/Earnings (P/E) ratio), capitalized earning (normally the P/E ratio), or as discounted projected cash flow (DCF).

Step 6: Motivation and remuneration of management

The transition from a state-run enterprise to a private company also entails a change in mental attitude among the employees and the risks to which they are exposed.

Potential difficulties include:

- managers not seeing a bright future for themselves in a non-governmental corporation;
- communication problems created by language and distance barriers;
- the investor not being tolerant of certain business practices.

It is vital to the organization's future to overcome the uncertainties which arise from this situation and to motivate the team. A continuous flow of information from the privatizing agency on what is happening and what is planned for the future is the most important means of dealing with this situation. This will include keeping management well informed concerning long-range plans and their role in such plans, providing for regular contact and interaction with the investor at a high level, and providing a good compensation package.

It is also important to provide senior staff with employment contracts which give them a degree of security and ensure they are adequately remunerated.

Model of a Private-Sector Seed Company

Once the above steps have been completed, it is possible to achieve the final objective of establishing a profit-oriented private seed company.

The model shown here is based on a concept which is reflected by most European seed companies. The model comprises an administrative division with four main departments:

- Cultivar maintenance
- Production

- Sales and marketing
- Finance and cost control.

The company may be responsible for one or more seed stations. Each seed station is responsible within its region for the production of seed and reliably supplying the sales (retail) units. These supply the farmers.

Each agricultural area is covered by one salesman who operates as an advisor to the farmers, awakens demand among the farmers in accordance with the sales strategy of the central office (administration), and services the sales units.

Once the system has become established, it can be further advanced with sales also being promoted via farmers who act as opinion-formers in their area. These so-called pilot farmers may work as a back-up to the sales consultant and may even sell seeds directly to other farmers (farmer-dealer system).

Privatization of the Seed Sector in the New Federal States of Eastern Germany

Measures after Reunification

In the case of the former German Democratic Republic, the solutions adopted have, to a large extent, been imposed by the absorption of eastern Germany into the economy of the Federal Republic of Germany and, subject to certain adjustments, by the market mechanisms of the EU Common Agricultural Policy.

Although this process cannot simply and directly be applied to developing countries, certain criteria which applied during this privatization process do serve as good examples and useful pointers. For example, an institution was founded (the *Treuhandanstalt*, a state-funded trust company) which was given sole responsibility for managing the privatization programme (which encompassed more than just the seed sector). Moreover, the privatization process and its implementation were governed by a special Act of Parliament.

The objectives were:

- to reduce the influence of government agencies as quickly as possible by privatizing the state-owned companies;
- to develop and encourage competition;

- to re-create private ownership through the privatization of items such as land and buildings.

The procedures adopted were intended to be quickly implementable and linked to effective reconstruction, but nevertheless to exercise caution in the privatization agreements reached.

The programme affected 4 million employees and more than 40,000 companies or factories.

Included in this programme was the privatization of the seed sector which controlled all the varieties required by agriculture, and the entire operation from breeding to seed distribution in the new federal states.

At the start of privatization, the 39 former State-owned Seed and Plant Units were legally transformed according to German company law and grouped together into a private company (Deutsche Saatzucht AG). This holding company had 42 subsidiaries (18 limited companies for breeding, 16 limited companies for multiplication and processing, 7 miscellaneous limited companies – sales, data processing, etc. – and 1 joint stock company as Holding) and about 12,000 employees. At 1 July 1990, its assets were 829 million DM, with 43 million DM cash and 162 million DM in equity.

Criteria for Privatization

The criteria for privatization essentially followed the steps in the first part of this paper.

Following an official evaluation of the assets, facilities and companies to be privatized, a public invitation to tender was issued. The bids were required to contain the following components:

- Price
- Number of employees required for the next 3 years (as a firm guarantee)
- A guaranteed investment programme for the next 5 years.

Bidders were also required to prove their credit-worthiness and experience in the industry.

Any sell-off had to be approved by the Board of Management and the Supervisory Board of the holding company, and the Treuhandanstalt.

The Result

By November 1995, there were only a few residual assets left, liquidation of which is to be completed by the end of 1997; some 1514 sale contracts had been concluded. Sale proceeds obtained were 297.3 million DM. New owners assumed old debts and accounts payable to the sum of 20.6 million DM, and promised 289.7 million DM of investment, and guaranteed jobs for 3167 employees.

Summary

The experience gained in the new federal states of Germany, and also in some developing countries, can be summarized as follows.

Both liberalization and privatization of the seed sector require an economic approach, i.e. it is essential to earn a profit or at least to cover costs. This usually involves rationalization measures which, *inter alia*, lead to a reduction in overcapacity and the release of redundant employees. Finding a workable solution to this problem – which differs greatly from case to case – requires careful analysis and preparation. In certain circumstances, it may be necessary to involve the government, for example, in redeploying labour from units ready for privatization to other state units.

Moreover, liberalization of the seed market can only work if the favourable framework of conditions mentioned at the beginning are, or have already been, created by the government. Those responsible must be prepared to work close together at all levels to ensure this.

In difficult cases, it is recommended that pilot projects be implemented first within certain closely defined areas. These will enable knowledge to be acquired, promote the necessary learning process and offer evidence of overall practicability and feasibility. One example for this approach can be found in Egypt where the GTZ is currently overseeing just such a project.

Finally, one thing has to be made clear: there is no one simple solution for the liberalization and privatization of a national seed sector; however, useful suggestions can be made as to how to proceed.

Seed Trade in West Asia and North Africa, the European Union and Other Countries

Bernard Le Buanec

Introduction

It is difficult to obtain statistical data on the world seed trade and particularly on that in WANA countries. Only few data are available and some of these are not recent. Information provided in this paper is based on information received from WANA Seed Network country representatives in Cyprus, Egypt, Ethiopia, Jordan and Morocco, and FIS members in Libya, Tunisia and Turkey; the *Focus on Seed Programs* documents, published by the WANA Seed Network; the FAO Seed Review 1989–1990, which includes information on 11 WANA countries, and the United Nations Foreign Trade Data Bank with information on 7 WANA countries.

Seed Trade in WANA Countries

The WANA countries considered here are Algeria, Cyprus, Egypt, Ethiopia, Iran, Iraq, Jordan, Lebanon, Libya, Morocco, Oman, Pakistan, Saudi Arabia, Sudan, Syria, Tunisia, Turkey and Yemen.

Agriculture is important in the economy of the WANA countries, although there are large variations among the countries (Table 1). Seed should be an important factor for the development of these countries.

Involvement of WANA countries in the international seed trade organizations

There are three main international organizations involved in the international seed trade.

The International Seed Testing Association (ISTA) is a non-governmental association with (up to June 1995) public laboratories as members. ISTA counts 64 accredited members, 52 of them being allowed to issue international seed certificates. Since June 1995, private laboratories have also been eligible for ISTA membership.

van Gastel, A.J.G., J. Wadsack and G.R. Manners (Ed.). 1997. Privatization of the Seed Industry in the West Asia and North Africa Region. GTZ, Eschborn, Germany.

Table 1. General information on WANA and EU countries.

	Overall		Range	
	WANA	EU	WANA	EU
Total population	521,012,000	369,658,000	764,000–127,000,000	392,000–81,187,000
Rural population	56.5%	21.6%	16.3–87.7%	3.4–66.4%
Agricultural share in the GDP	15.11%	3.18%	31.0–41.1%	1.2–16.3%
Farming population in the working population	40.9%	5.92%	7.3–75.5%	3.0–22.2%

Source: Encyclopedia Universalis, Symposium Les chiffres du monde, 1994, Paris.

The Organization for Economic Cooperation and Development (OECD) has seed schemes (established in the 1970s) for issuing international seed labels, to facilitate the international movement of seed. Non-OECD members may apply for seed-scheme(s) membership. The OECD Seed Schemes presently hold 42 members.

The International Seed Trade Federation (FIS) is a non-governmental organization composed mainly, but not entirely, of private national seed associations (ordinary members) and private seed companies (associate members). FIS has members in 56 countries. FIS provides facilities for business contacts, rules for international seed trade and arbitration.

For a country to be efficiently involved in the international seed trade, it is useful for it to be a member of these three organizations. This is not the case for most WANA countries, except for Morocco, Tunisia and Turkey (Table 2). Cyprus is a member of the three associations, but is not allowed to issue international ISTA seed certificates. Iran will probably soon be in the same situation, since it is in the process of becoming a member of the Sugar Beet and Forage Schemes.

International seed trade in WANA countries

Data on international seed trade in WANA countries are given in Tables 3 to 6; this is an incomplete picture of the situation. Because of this and despite using all the available sources, some data have to be taken very carefully.

However, it seems possible cautiously to draw the following conclusions.

- At least some of the WANA countries (and probably all of them) are involved in international seed trade.
- Imports are, by far, larger than exports. It is not easy to evaluate the international turnover, but the total value of imported seeds (including potato) is certainly between US\$ 100 million and 200 million, probably nearer US\$ 200 million. This would represent roughly 7% of the total international seed market.
- According to data published by GNIS, in France, US\$ 150 million of imports come from Europe and US\$ 30 million from North America. That gives a total of US\$ 180 million, which is consistent with our estimates.
- Exports are much lower and probably somewhere between US\$ 20 and 30 million.

Table 2. Involvement of WANA countries in international seed trade organizations.

Country	ISTA		OECD	FIS	
	Issuance of certificates	Non-issuance		Ordinary member	Associate member(s)
Algeria	-	-	-	-	-
Cyprus		x	x		x
Egypt	x	-	-	-	-
Ethiopia	-	-	-	-	-
Iran		x	†		x
Iraq	-	-	-	-	-
Jordan					x
Lebanon	-	-	-	x	
Libya	-	-	-	-	x
Morocco	x		x	x	
Oman	-	-	-	-	-
Pakistan	x	-	-	-	-
Saudi Arabia	-	-	-	-	-
Sudan	-	-	-	-	-
Syria	-	x	-	-	-
Tunisia	x	-	x	-	x
Turkey	x	-	x	x	x
Total	5	3	4	3	6

x = Member.

† Application in process.

Table 3. Seed export from some WANA countries (US\$ thousands).†

Country	Total‡		Sugar beet		Forage		Flowers		Vegetables		Others	
	1992	1993	1992	1993	1992	1993	1992	1993	1992	1993	1992	1993
Morocco		632				391				196		44
Tunisia	530	454			23	60	2	1	496	372	7	19
Cyprus	2	0									2	0
Jordan	32	44			32	44						
Oman	63	62									63	62
Turkey	9,865	7,354	425	42	6,110	4,788	589	290	2,583	1,564	157	668
Pakistan	949	1,130			716	455	126	95	105	563	0	16
Total	11,441	9,678	425	42	6,881	5,738	717	386	3,184	2,699	229	809
Average	10,559		233		6,309		551		2,941		519	

Source: UN Foreign Trade Data Bank, GATT DP Section S9, 09/01/95.

† Blank entries represent lack of available data.

‡ Potato seed not included.

Table 4. Seed import into some WANA countries (US\$ thousands).†

Country	Total‡		Sugar beet		Forage		Flowers		Vegetables		Others	
	1992	1993	1992	1993	1992	1993	1992	1993	1992	1993	1992	1993
Algeria	9,649				1				224		9,423	
Morocco		18,276		5,890		2,769		39		9,417		106
Tunisia	3,914	3,952	775	851	156	256	33	43	2,724	2,753	224	46
Cyprus	1,258	1,196			291	187	10	16	811	929	145	62
Jordan	10,608	10,059			6,429	5,443					4,179	4,615
Oman	1,300	1,131									1,300	1,131
Turkey	20,603	24,370	1,596	5,077	1,576	2,221	191	326	14,651	14,348	2,586	2,396
Pakistan	8,654	11,595	250	176	4,359	4,817	35	275	3,697	6,235	311	90
Total	55,986	70,579	2,621	11,994	12,812	15,693	269	699	22,107	33,736	18,166	8,446
Average	63,282		7,307		14,252		484		27,921		13,306	

Source: UN Foreign Trade Data Bank, GATT DP Section S9, 09/01/95.

† Blank entries represent lack of available data.

‡ Potato seed not included.

Table 5a. Import of seeds into some WANA countries in 1989/90 (tonnes).

Country	Alfalfa	Sugar beet	Potato	Wheat	Barley	Vegetables	Rice	Soya bean	Sunflower
Morocco	200	796	9,252	-	-	-	-	-	-
Saudi Arabia	-	-	5,432	170,000	16,000	-	-	-	40
Syria	-	-	1,070	-	-	-	-	-	-
Tunisia	-	-	17,000	-	-	85	-	-	-
Turkey	-	-	3,400	36,000	4,800	200	1,500	2,700	600
Iran	-	-	-	-	-	480	-	-	-
Total	200	796	36,154	206,000	20,800	765	1,500	2,700	640

Source: FAO Seed Review.

Table 5b. Seeds exported from some WANA countries in 1989/90 (tonnes).

Country	Wheat	Potato	Vegetables	Maize
Syria	10,000	5,400		
Turkey			700	10

Source: FAO.

Table 6. Seed export and import of Turkey 1989–1993 (tonnes).

Crop	1989		1990		1991		1992		1993	
	Export	Import	Export	Import	Export	Import	Export	Import	Export	Import
Wheat	35	36,200	5,030	180	1,005	5,227	750	2,795	611	2,240
Barley		4,840		60		60		39		5
Hybrid maize	784		697	17	2,107	136	2,063		1,528	646
Hybrid sunflower		608	194	53	695	95	2,600		1,700	
Vegetables	120	200	128	235	80	60	140	200	140	225
Potato		3,485		6,668		11,205		4,292		
Soya bean		2,754		2,338		2,256				
S. S. Grass			100	23	140	55	30	115		159
Total	939	48,087	6,149	9,574	4,027	19,094	5,583	7,441	3,979	3,275

Average annual import: 17,494; Average annual export: 4,135.

- Among the most important species or groups of species involved, the most valuable is vegetables, followed by potato. This is consistent with the international seed trade. Contrary to the international market, however, maize and forages are little represented.
- Annual fluctuations are very important from country to country and from species to species, especially for cereals.

Domestic seed markets within WANA countries

If it is difficult to obtain data on the international seed market in WANA countries, it is still more difficult to obtain data on their domestic markets. The information available in the FAO seed review includes seven WANA countries and is obviously incomplete (Table 7). However, it is clear that domestic seed sales are dominated by small-grain cereals, followed by potato. Cotton takes a significant share of the market in Syria and Turkey, and maize a large proportion of the market in Ethiopia.

Seed Market in the European Union

The vast majority of EU seed is used in its country of production (Table 8). However, seeds worth US\$ 1.2 billion cross international borders within the EU. The WANA countries take a similar proportion of EU seed export to that taken by North America. A mere one-fortieth (2.5%) of the seed imported into the EU comes from WANA.

The World Seed Market

For various reasons, it is not easy to evaluate the global market of seeds and plantlets. However, one can estimate the total value of seed use worldwide at more than US\$ 50 billion per year. Of this, approximately US\$ 30 billion would be involved in commercial transactions, about US\$ 20 billion of which would be in countries with so-called market economies.

The international market in seed (Table 9) grew by 237% between 1970 and 1994, and by an estimated 169% between 1977 and 1994. In 1994 it was estimated to be a little under US\$ 3 billion, with the largest shares being taken by vegetables (1 billion), maize (400 million), herbages (350 million) and potato (340 million) (Table 10).

Table 7. Seed marketed in some WANA countries (tonnes).

Country	Bread wheat	Barley	Durum wheat	Potato	Cotton	Maize	Soya bean	Sunflower
Cyprus		10,929	717	14,900	1			
Ethiopia	6,585	1,231				1,125	9	13
Morocco	53,550	2,740	22,300			112		
Saudi Arabia	170,000	16,000		1,070				
Syria	112,000	40,000		34,000	22,000	2,000	1,500	40
Tunisia	20,000	60,000	70,000	22,000				
Turkey	232,000	26,000		800	29,000	4,500	3,200	3,700
Total	594,139	156,900	93,017	79,970	52,000	7,737	4,709	3,753

Table 8. Seed market of the EU (US\$ million).

Domestic Market	6,300
<i>Export</i>	
Between EU members	1,200
To other European countries	170
To WANA countries	150
To North America	50
Others	50
<i>Import</i>	
Total	600
From WANA countries	15

Table 9. Evolution of global seed movement.

	1970	1977†	1980	1985	1994
Movement in million US\$	860	1076	1200	1300	2900
Increase over 1970 (%)		25	40	51	237
Increase over 1977 (%)			11	21	169

† Figures obtained by interpolation between 1970 and 1980.

Table 10. Global seed exportation (US\$ million).

Crop	Export value
Maize	400
Herbage	350
Potato	340
Beet	260
Wheat	70
Other agricultural crops	480
Small-seeded vegetables and flowers	750
Large-seeded vegetable legumes	250

Conclusion

Although it is difficult to evaluate the seed market in WANA countries because of the lack of data, it appears that this market is significant and experiences large variations among countries and crops.

In terms of quantity, the most important crops for the WANA seed market seem to be wheat, barley and potato. Cotton and sugar beet are also significant in some countries.

As far as international trade is concerned, the value of seed imported into WANA countries is probably about US\$ 200 million, the most important crops being vegetables, followed by potato. The value of exports is much lower.

It would be useful to improve the available knowledge on the WANA countries' seed markets to aid their development and the involvement of the private sector. FIS is willing to participate in this task.

Plant Breeders' Rights as an Incentive for Investment in the Seed Industry

Barry Greengrass

Plant Breeders' Rights

The plant breeder's right is a specialized form of intellectual property right. It has the objective of encouraging individuals and organizations to invest their talents, skills and financial resources in the development of improved plant varieties.

The effect of the plant breeder's right is that certain specified acts in relation to the material of a variety cannot be performed without the authorization of the breeder.

Initially, the making available of a plant-breeders' rights system by a country was a matter for the national law of that country. However, since the 1960s, virtually all countries which have plant-breeders' rights systems, have come together and agreed to grant such rights in accordance with standard principles which have been fixed in the International Convention for the Protection of New Varieties of Plants (the UPOV Convention). The Convention was originally established in 1961 and was revised in 1972, 1978 and 1991.

The standard principles established by the Convention have the following two main elements.

1. Commercial novelty, distinctness, uniformity, stability and an acceptable denomination are established in the standard conditions which must be fulfilled for the granting of protection.
2. A minimum scope of protection for the right which must be granted to the breeder.

In the 1978 Act (currently in force), the breeder must be given what is in effect the exclusive right to market or offer for sale propagating material of the variety and to produce such material for the purposes of commercial marketing. The breeder must also be given the exclusive right to use the variety repeatedly for the purpose of creating another variety.

van Gastel, A.J.G., J. Wadsack and G.R. Manners (Ed.). 1997. Privatization of the Seed Industry in the West Asia and North Africa Region. GTZ, Eschborn, Germany.

These minimum rights were modified in the 1991 Revision, which is not yet in force. Tables 1 and 2 compare the scope of protection afforded by the 1978 Act with that of the 1991 Act.

The changes introduced in 1991 were made to reflect 30 years' experience of operating the 1961 Act and also technological changes, e.g. the emergence of genetic engineering and tissue culture during that 30-year period.

Commercial Viability of a Private Seed Business

It should be the primary objective of the privatization of state seed production and distribution organizations to serve the establishment of financially healthy, private-sector organizations able to meet the needs of commercial farmers for a reliable supply of good-quality, genetically authentic seed. To remain viable, a private business must make a profit. The plant breeder's right causes the protected variety to become a proprietary product. Seed of the protected variety is the property of the business and the business can determine the volume of production and price of the product according to demand (market forces). A proprietary product can be contrasted with a "commodity" product which can be produced by all seed-industry participants. Surpluses are frequently produced and prices fall. The sale of commodity products cannot generate the margins of profit necessary to finance plant breeding programmes.

Demand for a proprietary product may be influenced by sales promotion, including paid advertising, public relations and farmer education, for which the proprietary seed business has the necessary financial resources. If the proprietary product has a demonstrable benefit for the farmer, it can be priced accordingly and the financial prospects of the seed business will be greatly improved.

Proprietary status can be obtained for a variety of the business if it has been bred by that business or if exclusive rights have been obtained from the person or organization that bred the product.

The emergence of F_1 hybrids is the obvious example of a mechanism to maintain the proprietary nature of a company's products. If the company maintains control of the parents of the hybrid, the hybrid cannot be produced by others. Since the F_2 generation will segregate, farmers must return to the seed business each year for fresh seed. It is no accident that the major research-based seed businesses in the world have been those that produce

Table 1. Minimum right to be granted to the breeder under the UPOV Convention.

	1978 Act	1991 Act
Acts in relation to material of a protected variety which require the authorization of the breeder	<p>Marketing</p> <p>Offering for sale</p> <p>Production for purposes of commercial marketing</p> <p>Repeated use of variety for producing other varieties†</p>	<p>Selling or other marketing</p> <p>Offering for sale</p> <p>Production or reproduction (multiplication)</p> <p>Conditioning for the purpose of propagation</p> <p>Exporting</p> <p>Importing</p> <p>Stocking for the above purposes</p>
Definition of material to which such acts relate	The propagating material of the protected variety	<p>1. The propagating material of the protected variety</p> <p>2. The harvested material of the protected variety, (i) if obtained through the unauthorized use of propagating material of the protected variety, and (ii) unless the breeder has had reasonable opportunity to exercise his right over the said propagating material</p>
Varieties to which the breeder's right relates	1. The protected variety	<p>1. The protected variety</p> <p>2. Varieties whose production requires the repeated use of the protected variety</p> <p>3. Varieties which are essentially derived from the protected variety</p>

† These provisions give the breeder the exclusive right to use his variety to produce a hybrid.

Table 2. Exclusions from the Minimum Right of the Breeder under the UPOV Convention.

1978 Act	1991 Act
1. Use of variety to create other varieties.	1. Acts done privately and for non-commercial purposes.
2. Production of propagating material which is not for the purposes of commercial marketing (the minimum scope of protection does not extend to such production; not a true exclusion).	2. Acts done for experimental purposes.
	3. Acts done for the purpose of breeding other varieties.
	4. Use by farmers on their own farms of products of their own harvest (optional for member states).

and sell F₁ hybrids of maize, sorghum, sugar beet and vegetables. However, a problem arises when varieties reproduce themselves. If competitors can reproduce the product as soon as it is available in the market, how can its proprietary nature be maintained?

A solution to the problem of securing proprietary status self-pollinated crops has been found in the plant-variety protection system. Since the competitors of the seed business cannot produce and sell seed of the business's protected varieties without its permission, the business is able to decide to produce all the seed of its varieties itself or to permit competitors to produce and sell seed of its varieties in accordance with the terms of the licence contract including payment of a royalty. Each business must decide for itself exactly how it will exercise its proprietary rights over its varieties.

Thus it can be seen that some potential investors will be encouraged to invest in seed business if the legal and regulatory framework of countries encourages the emergence of businesses which are able to develop and market their own proprietary plant varieties. Insofar as such potential investors include foreign seed companies, these seed companies will be encouraged to bring their knowledge, skills and latest and best varieties and germplasm to such countries. Plant variety protection is clearly one of the instruments of policy that are available to governments contemplating privatization of their seed sector and which should be used when establishing an appropriate regulatory framework.

Plant Variety Protection and the Public Interest

Of much greater importance than the viewpoint of the seed business and the seed business investor is the viewpoint of the farmer and the general public. Plant breeding is long term and expensive. Investment in plant breeding only makes good economic sense if it is dedicated to the production of improved plant varieties able to provide a crop of greater value at harvest time. Farmers can only be expected to buy seed of new plant varieties on a regular basis if experience shows that they will harvest a crop of increased value and that any increased seed cost is fully justified.

Experience shows that any increase in seed costs will be a fraction of the increase in value of the harvested crop. Plant breeders' rights thus have the potential to contribute not only to the emergence of a profitable private-sector seed industry but also to the productivity of agriculture as a whole.

Summary

Plant breeders' rights enable breeding companies to determine the supply and cost of their product(s). Since the 1960s, most countries which offer plant breeders' rights have agreed to follow the principles set out in the International Convention for the Protection of New Varieties of Plants (the UPOV Convention). The principles cover the uniqueness (novelty), and distinctness, uniformity and stability (DUS) of the variety to be protected, and the scope of that protection. The granting of proprietary status to crop varieties encourages private-sector involvement in the industry, as it has legal protection from fraud, i.e. illegal multiplication and marketing. Since investment in breeding usually leads to improved varieties and consequently improved harvests, farmers can be expected to increase their economic returns even after paying a market price for their seed. So, plant breeders' rights encourage private investment and agricultural productivity.

Country Reports

Advanced Privatization Effort

Egypt*

Introduction

The goals of the reform programme adopted by the Government of Egypt and the Ministry of Agriculture and Land Reform (MALR), which have accepted a privatization policy in the economy, are a reduction of unnecessary expenditure, a rationalization of public administration, a greater dependence on market forces and a gradual market orientation of the agricultural sector. This requires restructuring of public-sector organizations, and developing the policy and legal instruments to favour the establishment, investment and growth of the private sector.

The overall purpose of restructuring the seed industry in Egypt is to promote and facilitate the establishment of an efficient, responsible and responsive seed industry with maximum participation from the private sector that will be supportive of agricultural development in the country.

Specific aims are: (1) to separate the public-sector activities in the area of seed production, processing, marketing and distribution from those of seed certification; (2) to reduce government investment and operational support for seed production and supply activities of the major self-pollinated crops beyond the Foundation Seed class; and, (3) to bring efficiency into the seed system in a free and open market format.

Restructuring the seed sector will be accomplished in a progressive and orderly manner with minimum disruption of the flow of seed to Egyptian farmers to avoid reduction in agricultural production.

A National Seed Council has been established, with wide representation of all parties of the seed industry. It advises the Ministry on seed issues, policies and control measures, and has been given the responsibility of leadership, guidance and monitoring of the seed-sector reform plan.

Separation of Production from Seed Certification

An important structural reform is to complete the separation of seed production and distribution functions from certification, quality control, and related activities; all of these have been controlled by the Central

* Based on contributions by S. Abd El Wanis, P. Witthaut and Ahmed Kamel. van Gastel, A.J.G., J. Wadsack and G.R. Manners (Ed.). 1997. Privatization of the Seed Industry in the West Asia and North Africa Region. GTZ, Eschborn, Germany.

Administration for Seeds (CAS). The separation process began recently. The Central Administration for Seed Testing and Certification (CASC) will be responsible for most of the traditional public-sector functions, i.e. seed certification; testing; promotion; licensing of dealers, processors, traders and producers; variety registration; breeders' rights; seed industry support and promotion; and marketing control. The Central Administration for Seed Production (CASP) will be responsible for the production activities of the CAS.

To complete the separation of seed certification from production (i.e. CASC and CASP) requires the identification of staff, activities, offices and equipment for each of the organizations, which is taking time.

A new seed law has been drafted to replace the weak law currently in force. A Plant Breeders' Rights act is also ready for legislation.

The variety registration committee has been made more independent from the Agricultural Research Centre (ARC). Technical and administrative rules for variety registration have been modified to cope with the recent reforms in the agricultural sector, and the management of crop-variety registration has been transferred to CASC.

Other rules and regulations for the seed industry need to be amended to allow the private sector to become involved in decision-making. Shortcomings in procedures for seed import, export, field-inspection, and sexual and vegetative seed production have been overcome by ministerial decrees.

However, the time needed for the country to join the relevant international organizations (UPOV, FIS and OECD) is protracted.

Bringing Efficiency into the System

The private sector, which has long been dominant in the production, importation and distribution of vegetable and forage seeds, already has the major share in the production and supply of hybrid crop seeds, i.e. maize, sunflower and hybrid sorghum.

CAS solicited proposals from potential seed producers and interested parties for the production and marketing of seed for self-pollinated grain, legume and oilseed crops. Ten proposed franchises were accepted and assigned percentages of the production of Certified Seed of selected crops in the various governorates based on the average seed distribution of the previous three years. The prices proposed by the companies were up to three times the grain prices (double the price of seeds at the retail level).

This was not acceptable to the Government, because it would have reduced the use of high-quality seed by farmers to the detriment of agricultural production. However, seed prices are being raised slowly towards full cost under the guidance (control) of the CASP. At present, the selling price is being kept artificially low to promote the use of Certified Seed by the farming community as well as to secure the national food supply. CASP also currently fixes the purchase price, multiplication and purity bonus of Certified Seed, under the authority of the MALR.

It is important for CASP to produce its own Foundation (Basic) Seed and to have direct contact with plant breeders, so as to respond immediately to changing demand for new and improved crop varieties. Under the present situation, Breeder and Foundation Seed are under the authority of the ARC, so further discussions between CASP and ARC are needed.

Private-sector companies are fully responsible for the seed of self-pollinated crops (cereals and legumes) that they handle; of the total seed production, they produce about 5% of the wheat, 15% of the rice and 10% of the legumes.

The Principal Bank of Development and Agricultural Credit (PBDAC) is withdrawing from seed supply, so co-operatives and private organizations have taken over a substantial part of the seed marketing.

A German-funded project has collected essential data on the costs and prices of rice and wheat from the operations of two processing plants financed by the German Government. The project is assessing transportation costs to determine the efficiency of alternative locations of seed production and processing centres, as well as options for centralization or decentralization. This will provide information for further restructuring of the seed sector, and for improving the management and efficiency of seed production and marketing in public and private sectors, and co-operatives.

The cotton sector has already been liberalized. Cotton farmers are now free to plant as much cotton as they wish, and to market the produce as seed cotton or as fibre to the ginneries, export companies, or the Government. This could become one of Egypt's most profitable operations and a landmark in the Egyptian seed industry.

Seed Profit Centres

A pilot project has been initiated to re-organize two of the existing public processing plants into independent Seed Centres.

A Seed Profit Centre should have access to Foundation (Basic) Seed, make its own contracts with farmers to plant Registered Seed, and organize its own marketing of Certified Seed.

A Seed Profit Centre which is restricted by the seasonality of seed production could also sell other inputs, e.g. fertilizer and other agro-chemicals, to utilize its extra management capacity and infrastructure, but there is also the possibility of offering its seed-processing unit as a sub-contractor to the private sector and to provide storage capacity to wholesalers. All these additional activities will contribute to a positive overall result and rentability of such a Centre.

The first steps towards re-organizing the two Seed Centres into Seed Profit Centres have been made already, namely: (1) setting up an organizational structure and developing job descriptions; (2) direct contracting of farmers by the Seed Profit Centres for growing Foundation (Basic) Seed and Registered Seed; (3) introducing modern management tools, like a computerized finance and accounting system (including financial controlling); (4) training staff on the job in all aspects of a decentralized national seed industry and management of the Seed Profit Centres; and (5) organizing marketing of seed, by direct selling of seed to the farmers, through Agricultural Cooperatives, the General Organisation for Agricultural Land Reform, and private seed wholesalers and retailers.

To get the Seed Profit Centres directly involved in the marketing of their Certified Seed and to fill the gap which PBDAC has left, close co-operation between the Agricultural Cooperatives, the General Organisation for Agricultural Land Reform, private seed merchants and CASP is necessary. The marketing department (of CASP) in Cairo is developing a general sales strategy including pricing policy, advertising, creation of a business name and a new logo.

Summary of the Economic Reform Programme

The economic reform programme in the agricultural sector may be summarized as follows.

- Removing governmental control on farm-output prices, crop areas, and procurement quotas for all crops.
- Increasing farm-gate prices of cotton and sugar-cane towards international prices.
- Removing farm-input subsidies.

- Lifting all governmental restrictions on private-sector import, export and marketing of all farm inputs and agricultural crops.
- Diverting the main role of the agricultural credit agent (PBDAC) to financial services.
- Limiting state land ownership and selling the newly-reclaimed land to the private sector, and adjusting the land tenancy system.
- Confining the role of MALR to agricultural research, extension, and economic policies.
- Adjusting the interest rate to reflect the commercial rate.
- Adjusting the foreign exchange rate to reflect the real value of local currency.

Constraints Affecting the Development of Seed Business in Egypt

- The lack of any seed-producers' collective organization (e.g. union or association), is seen as a constraint to further co-operation.
- There is currently no government monitoring and supervision of the private sector's handling of technical matters, such as production and processing; such activities are seen as important, because they would give support to private companies which are seriously developing the seed business.
- The testing and registration period is viewed as being too long, and hampering the private sector's work in developing and introducing new varieties and hybrids. The ARC's involvement in commercial activities is also seen as a constraint.
- There are currently no criteria to guide the issuing of official licences for the private sector to operate as a seed business.
- Government involvement in seed business competes with the private sector. The private sector cannot compete, especially in pricing and production costs.
- The only effective seed-distribution channels are operated by the public sector. These are also used by the private sector, whose own distribution networks are developing only slowly. During the development of private distribution networks there will be some bottlenecks in the distribution of seed.
- Since there is currently no variety protection, the private sector is not encouraged, or inclined, to develop its own varieties and hybrids.

Consequently, the sector still relies on the (government) research stations to carry out these tasks. The goal of privatization is that the private sector should be involved not only in producing and selling seed, but also in developing new varieties. This will not happen until breeders' rights are introduced.

- Egypt has very limited cultivated areas, and most of them are located in the Nile Delta, so adequate isolation, especially for hybrid seed crops, is difficult to find.

Summary

The Government of Egypt is gradually privatizing the seed sector. Quality control activities are being separated from those of production. Pilot seed centres are being financially evaluated for independent viability. A new seed law and plant breeders' rights are being prepared for legislation. Progress towards a market economy should encourage private investment. Seed production and marketing has been offered to franchises, but the price of Certified Seed is being maintained artificially low to encourage its use by farmers. The government credit and distribution agency is withdrawing from seed supply, so co-operatives and the private sector have taken over much of the seed distribution. As a forerunner of future developments, the cotton seed industry has been completely liberalized, so that farmers are free to make all their own decisions.

Ethiopia*

Introduction

In Ethiopia, farmers and seed enterprises contribute about 96 and 4% of the annual seed requirement, respectively. In the seed sector as a whole, efficient seed production and supply systems are not established. However, the Ethiopian Government is promoting the seed industry to help boost agricultural production; it is also promoting private investment in the seed sector.

Seed Policy

Government policy was not conducive for the development of the seed industry until the end of 1992, since there was no national seed policy. In October 1992, Ethiopia introduced a National Seed Industry Policy and Strategy to guide seed industry development.

The National Seed Industry Policy encourages the development of both public and private seed enterprises. The Government will encourage domestic private seed enterprises to handle seed production, distribution and marketing. The policy supports price deregulation, subsidy elimination, equal access to Breeder and Basic Seed, quality control and truth in labelling of seeds.

Proclamation 15/1992 provided for the encouragement, expansion and co-ordination of investment. Private investors can invest in any area on their own, in partnership or in joint venture. Domestic and foreign investors, as well as existing enterprises and expansions, are exempt from paying duties and taxes levied on imports of capital goods, equipment and spare parts, provided that these are not available in the country in comparable quantity, quality and price. Exemption from paying income tax for a period of 3–8 years from the commencement of production or operation is another incentive. Furthermore, no assets of a domestic or foreign investor, enterprise or expansion may be nationalized wholly or partly except in accordance with the general policy and law issued by the State and upon

* Based on contributions by Gurmu Dabi and Worede Wolde Mariam. van Gastel, A.J.G., J. Wadsack and G.R. Manners (Ed.). 1997. Privatization of the Seed Industry in the West Asia and North Africa Region. GTZ, Eschborn, Germany.

payment of adequate compensation. In addition, such assets may not be seized, impounded, sequestered or dispossessed except under court order.

As part of the seed-sector liberalization process, the Ethiopian Seed Corporation (ESC) was converted into the Ethiopian Seed Enterprise (ESE), an autonomous profit-oriented enterprise.

Private Sector Involvement

The ESC and Pioneer Overseas Corporation entered into a memorandum of understanding on 17 January 1990, to set up a joint venture to procure, produce, process, distribute and sell Pioneer and other seed products in Ethiopia. To date, Ethiopian Pioneer Hi-Bred Seeds, Inc. is the only corporate investment in the seed sector in Ethiopia.

Government Incentives to the Private Sector

Under the prevailing National Seed Industry Policy and the Seed Systems Development Project, the Government will provide support to the development of private seed enterprises in the following ways:

- mobilization of the private sector through workshops, seminars and awareness campaigns;
- assistance to potential entrepreneurs in the formulation and evaluation of business-development proposals, in a format suitable for bank financing;
- advice on appropriate technology (including equipment);
- facilitation of access to technical know-how, and Breeder and Basic Seed of improved varieties;
- permission to import elite material for the development of new varieties.

The National Seed Industry Agency promotes good working relationships among public and private seed enterprises and the farming community. It also encourages private investors to produce and distribute seed by providing them with advisory and regulatory services.

Constraints to Further Privatization

- **Lack of an effective seed system:** The process that starts with varietal development and ends with planting a variety in farmers' fields does not always flow smoothly in Ethiopia. It may stop at any stage between Breeder Seed and farmers' fields.

- There is a low level of awareness of the seed-industry development – many still believe that seed activities are confined to the public sector.
- Effective demand for seed is not yet established and therefore even the small quantity seed that is produced by the public sector is difficult to market.
- There is no varietal development and multiplication for some high-value cash crops, for example, vegetables, flowers and forage crops – emphasis was, and still is, given to the major food crops (cereals, pulses and oilseeds).
- Private investors need large sums of capital for initial investment in seed-processing plants and accessories.
- The Government still exercises indirect price control through subsidies for the Government/public sector (a private-sector complaint denied by the public sector).
- Plant variety protection legislation (breeders' rights) has not yet been enacted to encourage a private-sector role in plant breeding.
- Some question the impartiality of the National Variety Release Committee and see some of the requirements of the variety registration procedures as restrictive.
- The Investment Authority charges US\$ 40,000 to grant Licence – some say this is too high.

Recommendations for Overcoming Constraints

- For a seed system to be effective, the interdependence of activities that start with varietal development and continue up to seed marketing and distribution should be fully understood by all those involved in the process. This has been carefully considered in the design of the Seed Systems Development Project.
- Opportunities for the private sector to participate in seed industry and the nature and importance of quality seed need to be explained to those who show some interest in investing in this sector. The agricultural extension model, which uses improved seed in its package of technologies and was implemented in the 1995 crop season, is expected to show a positive impact on farmers' awareness of quality seed.
- The field-demonstration efforts already being undertaken by the agricultural extension model, the emphasis given to the use of improved seed by the Government, and the promotional activities being undertaken

by seed enterprises are all expected to raise demand for improved seed. Once this is achieved, the shortage of improved seed will become an issue for which private investors will have to plan, so as to produce and distribute sufficient seed to meet the demand.

- To meet the demand for seed and planting material of high-value cash crops (vegetables, flowers and forage crops), the research centres are expected to make concerted efforts to improve the current situation. Currently, the country is wholly dependent on imports to supply these seeds to farmers. Private investors can participate once varieties are made available from research centres.
- Gradual growth from, for example, a contractual grower or seed dealer, is one way of overcoming the financial constraint of entering the seed business. The organization of co-operatives and share companies to pool resources could meet the high initial investment requirements.
- The Government needs to provide opportunities for private sector entry at intermediate levels in the seed chain.
- The private sector wishes to see the allocation of bilateral and multilateral support for the seed sector distributed equally to public and private sectors.
- Policy should be developed for the public sector to focus more on promotion and support for production of low-value seed of self-pollinated varieties.

The Ethiopian Seed Programme

The National Seed Industry Agency

The National Seed Industry Agency (NSIA) was established by Proclamation in 1993, with the following powers and duties:

- to design, implement and monitor systems, programmes and projects to enhance the development and progress of the seed industry;
- to issue regulations, guidelines and procedures for variety evaluation and release by governmental and non-governmental organizations, and to monitor the proper implementation thereof;
- to effect the promulgation of seed legislation and ensure its implementation to: protect the rights of breeders and seed-users, develop a system for seed marketing, and establish and control seed quality standards;

- to facilitate conditions for a healthy division of responsibilities and promote good working relationships among public seed enterprises, donor organizations, private seed enterprises and the farming community;
- to follow up the implementation of rules and procedures regulating seed producers;
- to ensure the proper implementation of rules and guidelines on import and export of seeds;
- to prepare a list of non-restricted and restricted crops, varieties and hybrids for use by foreign seed companies and joint ventures and, when approved, ensure its implementation;
- to monitor and ensure the production and supply of high-quality seed to users in sufficient quantity;
- to encourage investors to actively participate in the production and distribution of seed;
- to devise a system of secondary seed multiplication and seed exchange through farmers for areas not supplied by seed enterprises;
- in co-operation with the relevant governmental and non-governmental offices, private organizations and the farming community, to reinforce research and development in genetic resources, crop improvement and seed technology;
- to establish a central seed data and information system;
- in co-operation with relevant institutions, to support and encourage training programmes at various levels and in different specialities, so that the country may have sufficient trained manpower in the seed sector;
- to promote and support proper public awareness to enhance the development and growth of the seed industry;
- in co-operation with relevant organizations, to ensure maintenance of adequate seed reserve stocks for emergencies;
- on behalf of the government and in co-operation with relevant government institutions, to negotiate and sign agreements with local and foreign organizations concerning seed activities;
- in co-operation with appropriate government institutions, to assist in the implementation of plant quarantine regulations.

Varieties

Sources of Breeder Seed are the Institute of Agricultural Research (IAR), the Alemaya University of Agriculture (AUA) and, to a limited extent, the

Awassa College of Agriculture. These public-sector plant-breeding institutions concentrate on cereals, pulses, oilseeds, cotton, potato and forage crops. A serious problem, however, is that there are few varieties of field crops which are drought-tolerant/resistant, for semi-arid and arid areas.

Field evaluation, release and registration of newly-developed or introduced varieties are carried out by the National Variety Release Committee (NVRC), an ad-hoc committee composed of breeders, agronomists, crop-protection experts and social scientists. The NVRC secretariat office is under the NSIA.

The multiplication of Breeder Seed into Pre-Basic Seed is carried out mostly by the research centres responsible for producing Breeder Seed. Production of Basic Seed using Breeder or Pre-Basic Seed from research centres has remained solely the responsibility of the ESE. ESE Basic-Seed farms produce the medium-term Basic-Seed requirements for all crops that have Breeder Seed. Ethiopian Pioneer produces Basic Seed of maize on land contracted from state farms and small-holders on an annual basis.

There has never been production of Certified Seed in Ethiopia. ESE produces most of the Commercial Seed under contractual agreements signed each season with state farms and, more recently, with private commercial farms. Ethiopian Pioneer contracts the production of seed of hybrid maize by state farms and the private sector.

Processing and storage

Only ESE and Ethiopian Pioneer have processing plants. ESE has a total annual capacity of 60,000 tonnes, which exceeds its production, so limited custom processing is carried out. This will all change with the Government's next five-year plan of using more improved seed. Ethiopian Pioneer has an annual capacity of about 6000 tonnes, again there is excess capacity. The storage capacity of ESE is estimated at 37,700 tonnes and that of Ethiopian Pioneer is 1500 tonnes.

Currently, no external quality control is exercised before seed is sold to users, although ESE exercises internal quality control. However, a seed law has been drafted and a Quality Control and Certification Division has been set up under the NSIA.

Marketing

ESE used to sell most of its seeds to state farms directly and to peasant farmers indirectly through NGOs and the Ministry of Agriculture. However, the seed marketing network is so under-developed that even the small quantity of seed produced is difficult to market. ESE is currently developing a sustainable marketing strategy in which farmers would be the main clients. Ethiopian Pioneer sells seed direct to state farms and through offices of extension agents and private dealers to farmers. Since 1991, ESE has raised its prices significantly and has become a profit-making enterprise. Ethiopian Pioneer came into operation after price deregulation was effected and sets its own selling prices.

Summary

Despite the policy applied and incentives offered by the Government, Ethiopian Pioneer remains the only corporate private investment in the Ethiopian seed industry. However, the public-sector ESE has become profit-oriented, and the Government is promoting quality-seed use among farmers.

Morocco*

Legislation for Seed Sector Deregulation

A policy aimed at deregulation of the seed sector has been pursued in Morocco since 1989 and has resulted in the implementation of a number of regulatory and economic measures, particularly in the following fields.

Prices

Control of seed prices was discontinued with the exception of bread wheat seed, the price of which is fixed annually by the state. However, due to the severe drought in the 1994/95 crop season, and in order to prevent seed being used for other purposes, the Government fixed the price of seed of the main cereals – both the price paid to the producer and the price paid by the user.

Seed importation and distribution

Detailed regulations were elaborated and implemented by the Direction de la Production Végétale, a central department of the Ministère de l'Agriculture et de la Mise en Valeur Agricole (MAMVA), to organize the importation of seed and its distribution within the country. These regulations specify the conditions which have to be satisfied by importers and distributors in order to ensure seed quality and prevent the introduction of non-adapted varieties. Consequently, only the varieties registered in the official catalogue can be imported, and imported seed must bear a certification label corresponding to OECD regulations.

Protection of improved varieties

Draft legislation on the protection of improved varieties (Plant Breeders' Rights) has been prepared and is in the course of being approved.

Privatization to Date

Although Morocco has over 140 private seed enterprises, they make up only 5% of the seed market. They are concerned primarily with producing,

* Based on contributions by H. Sabik and S.M. Bouanani.
van Gastel, A.J.G., J. Wadsack and G.R. Manners (Ed.). 1997. Privatization of the Seed Industry in the West Asia and North Africa Region. GTZ, Eschborn, Germany.

importing and marketing seed other than that of autumn-sown cereals. Privatization of the seed sector is in its infancy in Morocco. However, liberalization of the seed sector has progressed far.

In 1975, the Société Nationale de Commercialisation des Semences (SONACOS) was established as a state company, with financial autonomy. Its role is to promote and consolidate the Moroccan seed sector by:

- promoting national seed production, the seed industry and the use of Certified Seed and planting material;
- promoting the use of new varieties by farmers;
- ensuring that farmers have access to adequate supplies of Certified Seed of the different crops.

Its main activities are:

- producing, processing and treating seed and planting material by contract seed growers;
- introducing, importing and exporting seed and planting material;
- marketing seed throughout the country.

SONACOS operates 15 regional units, regarded as regional centres, with processing and storage facilities. In 1993/94, SONACOS achieved a turnover of US\$ 54 million.

Profit Centres

Profit Centres are assessed by their profit-and-loss account or income and expenditure account independent of the combined activities (expenditure and sales) of their parent enterprise, SONACOS. Profit Centres enable the enterprise to analyse the performance of each "regional enterprise" in detail, and then to compare unit-related income and expenditure for key items between regions.

It is therefore necessary to differentiate between a comparative analysis using analytical accounting and a comparative analysis using the comparative indicators of regional administration. In effect, the setting up of Profit Centres will lead to greater transparency and better steering of the administrative activities of the regional centres. The budget of SONACOS, which previously was a single document, will now consist of the combination of the regional budgets with the possibility of monthly compilation.

The comparison of the regional budgets and the results achieved by the centres will indicate the development of the balance between income and

expenditure at an early stage, and will enable SONACOS management to take appropriate measures.

Profit Centre budgets will take into account only their own expenditure and income, including sales or purchases between the different regional centres consisting of a transfer of seed or factors of production (bags, thread, lead seals, equipment, etc.).

The establishment of the Profit Centres will enable the regional managers to become more vigilant, responsible and active in taking the decisions necessary at their level.

The Moroccan Seed Association

The Association Marocaine des Semences et Plants (AMSP) was established in 1991. Membership is open to all individuals and legal entities that carry out any seed-related activities and have or represent a plant variety registered in the official Moroccan catalogue.

About 50 state and private companies belong to the AMSP. Most, if not all, of the world's important seed companies are present or represented in Morocco. The association is managed by a 15-member board. To enhance efficiency, 10 sectoral committees have been set up.

The association has the following objectives:

- to represent and organize the different professional sectors;
- to propose to the public authorities measures likely to contribute to an improved organization of the seed and planting material sector, and to an improvement in the conditions of the professional activities of its members;
- to liaise between its members, the public authorities, and other Moroccan and foreign professional organizations;
- to affiliate with national and international organizations pursuing similar or related objectives;
- to publish and distribute among its members the data necessary for their professional activities.

Since its establishment, the AMSP has been concerned with the organization of the sector. Within the scope of these activities and at the request of the Minister of Agriculture, the AMSP participates in all committees and activities directly or indirectly connected with the seed sector.

The AMSP organizes courses and members regularly take part in international meetings; it was also instrumental in bringing about the sector rehabilitation measures implemented by the MAMVA.

Like every other association recently established, the AMSP is experiencing teething problems; due to the current confusion in the sector, the lack of sufficient "team spirit" and the often diverging interests of its members, it is having difficulties putting its structures in place.

Constraints to Further Privatization

The most important problems posed by the privatization of the seed sector in Morocco are listed below.

- The uncertainty in the seed market where demand and supply are characterized by considerable fluctuations closely linked with the production of the food crops. As an example, the total production of food grain in 1993/94 was 9.4 million tonnes, while it was only 1.6 million tonnes in the following season.
- The low purchasing power of the great majority of cereal farmers.
- The ratio of seed price to food grain price is almost 1.4. Any increase in the price of cereal seed involves the risk of a decrease in the use of Certified Seed, especially since production is always determined by climatic conditions.
- The relatively large investment required to establish a seed company, with a long recuperation period.
- The delivery of supplies to the most remote sales outlets, where there is generally little demand for commercial seed.
- The management of reserve stocks of about 20,000 tonnes. The drought experienced during the mid-1990s highlighted the strategic importance of these stocks and the risks existing in a country subject to extremely variable climatic conditions.

Recommendations for Overcoming Constraints

It would be wise to begin privatization gradually and to intensify relaxation of control and develop a proper seed market at the same time.

Under these conditions, one option would be the partial privatization of the public-sector enterprise by selling a share to the seed growers so as to lend greater economic weight to the enterprise and inject new management methods.

This proposition is justified since the seed growers are both suppliers and customers, the transfer of profits would involve no modification problems and, in view of the conformity of interests, would permit the continuation of present activities. Furthermore, this form of privatization would strengthen the vertical integration of the seed sector, improve the security of supplies, and facilitate seed price formation.

The Moroccan Seed Programme

Breeding

Public-sector research is carried out by Institut National de la Recherche Agronomique (INRA) in co-operation with international and regional research centres. INRA carries out breeding of varieties, variety maintenance, and production of Breeder Seed. It is the major plant-breeding organization, particularly for cereals.

There is no private research on a national scale. However, foreign breeders are introducing and testing their varieties, submitting them for approval and marketing the seed.

Morocco is almost self-sufficient in quality seed for autumn-sown cereals; however, it still depends on imports for food legumes, beets, potato and vegetables.

Variety testing and release

The Comité National de la Sélection des Semences et Plants establishes the testing conditions and guidelines for each species, and studies the proposals submitted for the registration of new varieties or the removal of obsolete ones.

The Service de Contrôle de Semences et Plants of the Direction de la Protection des Végétaux, des Contrôles Techniques et de la Répression des Fraudes (DPVCTRF) is a central department responsible for quality control and seed certification, maintenance of the official catalogue, and carrying out the trials required for registration and release of new varieties.

Certified Seed

SONACOS operates a production network of 600 seed growers with an annual seed multiplication area of almost 55,000 ha. Although there are 120 agreed companies in Morocco, SONACOS is the only national producer of Certified Seed.

The activities supported by the state for the development of the seed sector have contributed to an increase in the level of utilization of quality seed. Although still negligible at the beginning of the 1970s, the use of quality seed had increased to almost 25% for bread wheat and 14% for durum (hard) wheat by 1995. In contrast, the level of utilization of Certified Seed of barley is still minimal (less than 2%), since the crop is generally grown in unfavourable locations with high climatic risk.

Processing

Among the 10 private and national societies involved in cereal and forage-crop seed processing, SONACOS has 60% of the total capacity of about 150,000 tonnes. SONACOS is also the only society with potato-processing facilities (30 tonnes/hour).

Morocco has about 50,000 tonnes cool-storage capacity (10% of this is in SONACOS).

Marketing

SONACOS is considered the most important marketer of Certified Seed in Morocco. It uses a seed-distribution network of more than 350 sales outlets throughout the country. These sales outlets are operated in co-operation with the field services of the MAMVA.

Almost one-third of these outlets sell only small quantities (each less than 50 tonnes per cropping season) and are not profitable. However, they are all supplied each year to promote the use of quality seed. As a result, 70,000 to 80,000 tonnes of seed are made available to the farmers at a uniform price each year throughout the country.

Summary

Deregulation of the Moroccan seed sector has enabled both national and foreign seed companies to be set up; however, their share in the seed market is small. Agricultural constraints – especially drought – severely limit the Government's ability to leave the sector completely in the hands of market forces. A state company, the Société Nationale de Commercialisation des Semences (SONACOS), was established in 1975 to promote and consolidate the sector. SONACOS dominates the liberalized processing and marketing subsectors, and its regional units are now being converted into profit centres with independent budgeting.

Pakistan*

Legislation

Agriculture is a high priority area for the Government of Pakistan, whose policy aims at rapid promotion and development of this sector. The Government regularly increases its minimum support/procurement prices of crop produce to encourage farmers and it facilitates agricultural credit to the farming community through commercial banks and the Agriculture Development Bank (ADBP). For example, in an effort to modernize agriculture, the Government has recently introduced the "People's Tractor Scheme" under which small-holder farmers are given tractors on credit through the ADBP.

The Government of Pakistan launched a seed industry project and its Seed Act in 1976. The Seed Act (1976) provides a regulatory mechanism for controlling the quality of seed by setting up the necessary institutional infrastructure including the National Seed Council (NSC), Provincial Seed Councils (PSCs), the National Seed Registration Department (NSRD) and the Federal Seed Certification Department (FSCD). The NSRD and FSCD are executive arms of the NSC.

The NSC is chaired by the Federal Minister for Food and Agriculture, and has full authority for formulating policy and setting up and regulating the production and quality of crop seed. This institution represents all disciplines concerned with the development of the seed industry in both the public and private sectors.

For the growing seed industry, the Government attaches high priority to research, seed extension, seed production, seed distribution and seed quality control.

The Government fully appreciates the crucial role of the seed sector in supplying quality seed to the farmers. Compelled by the increasing demand for quality seed of different crops, the Government decided to invite the private sector to enter the seed business and share the responsibility for producing and marketing quality seed. The consequent privatization-promotion policy was welcomed by the private sector and by the end of

* Based on contributions by Syed Irfan Ahmad and Javad Raza Gardezi. van Gastel, A.J.G., J. Wadsack and G.R. Manners (Ed.). 1997. Privatization of the Seed Industry in the West Asia and North Africa Region. GTZ, Eschborn, Germany.

1995, in addition to the public-sector seed corporations, 47 local and 4 multinational seed companies had been granted the right to produce and market seed in the country.

To help the private sector in organizing its seed production and marketing, the government has also established the Truth-in-Labeling (Seeds) Rules (1991), which prescribe selling of seed of various crops with a label declaring the contents of the seed container, percentages of purity and germination, year of production and date of expiry. These arrangements have attracted private-sector investment in seed business.

To encourage the private sector, seed business was declared Seed Industry in 1994 and, to promote hybrid seed production, free import of inbred lines for the production of hybrid seed has been allowed. In addition, the following incentives have been proposed to boost seed production in the country.

- Import of new and used seed-processing machinery and laboratory seed-testing equipment will be exempt from customs duty and sales tax up to the year 2000. Balancing, modernization and rehabilitation of existing seed-processing plants will enjoy the same concessions as new plants.
- Income tax holiday will be allowed for the seed industry up to the year 2000.
- Seed will be treated as an agricultural commodity to ensure cash credit limits similar to those for other agricultural commodities.
- All seed transported from one district to another will be exempt from provincial and municipal taxes.
- Provincial governments may consider allotting state land on long-lease basis to seed-processors for the installation of processing plants and to seed-producing agencies for seed production.

Plant Breeders' Rights

Pakistan has a sound and vigorous agricultural research and plant breeding programme which, until recently, was entirely in the public sector. Thus, there was no strong demand for Plant Breeders' Rights (PBRs). Consequent to the introduction of the private sector in the seed industry, there is a growing demand for the introduction of PBRs.

A draft Plant Variety Protection Act was prepared by the National Seed Registration Department and circulated among all public and private sector

research institutions and seed agencies for their comments. The draft is under active consideration by the Government. The major question now is how to accommodate public-sector breeders in the system. The Act is expected to come into force as soon as the legislative work is completed.

Constraints to Further Privatization

Public sector views

- Available seed-processing capacity cannot meet the set targets of seed procurement.
- High interest on credit from banks.
- Inefficient marketing system.
- Poor storage facilities.
- Lack of seed programmes for vegetables and flowers.

Private sector views

Although 51 private-sector seed companies have been granted the right to produce and market seed in Pakistan, the impact at the national level is not according to expectations. One reason may be that the majority of the seed organizations have obtained registration since 1993 and are in the initial stages of seed multiplication. It may take until the end of the century for them to come into full production. Moreover, some of the seed companies exist only on paper, but not in the field. Although the Government has declared seed business as "Industry", the privileges and incentives are yet to be negotiated, owing to the unique and complex nature of seed business. The private seed sector has some genuine problems, including the following.

- Unhealthy competition with the public sector, which receives some indirect support from the Government.
- Lack of financial incentives to the private sector.
- Lack of facilities for seed processing, storage and marketing.
- Lack of manpower trained in seed production, marketing and seed technology.
- Pre-Basic Seed is made available only to public-sector corporations and is distributed to the private sector, after multiplication, as Basic Seed. This causes problems of both quality and quantity.
- There is little information about farmers' preferences. Most probably the farmers are variety conscious and not quality conscious. This is why the informal sector continues to dominate seed supply.

- Infrequent and inadequate implementation of seed laws.

Recommendations for Overcoming Constraints

- The possibilities of sub-letting the marketing of seed to the private sector should be explored.
- The private sector should be encouraged to take up seed business in North West Frontier Province and Balochistan.
- Pilot projects for the production of vegetable and fruit plants and flower seeds should be initiated to overcome the present deficit in supply. Once these pilot projects prove successful, they can be handed over to the private sector.
- The private sector may be allowed to have its own Pre-Basic/Basic Seed production units. These units need to be established in close collaboration with the breeders.
- It is strongly felt that commercial banks should give loans at lower interest rates (i.e. about 7–8%).
- In order to facilitate research, the Government should consider allocating resources, such as land, on long lease to the private sector.
- Local taxes should be removed or reduced to the level of taxes being charged on ordinary grain.
- To encourage the building of storage facilities, soft loans should be advanced by the commercial banks.
- Imports of seed should be allowed by the registered seed companies. This would encourage the seed business as well as improve the quality of seed being imported.
- A comprehensive market survey is needed, to establish the exact contribution of each source of seed supply.
- The Government may consider declaring the registration of inactive seed companies null if they fail to start seed production within a specified period.
- To control and regulate the activities of the informal sector, seed laws need to be enforced and implemented vigorously in all areas.

The Pakistan Seed Programme

Breeding and variety development

Plant variety breeding, development and release is the domain of the public sector. There is no plant breeding in the private sector.

The institutional strength established for agricultural research and plant breeding comprises 3 agricultural universities, 13 multidisciplinary and 31 non-commodity research institutions. The total number of varieties of different crops released is about 444. However, Pakistan has not been able to produce enough quality seed for the farming community, except for cotton.

Variety testing and release

The National Seed Regulation Department registers new varieties after assessing their distinctness, uniformity and stability (DUS) characteristics. Since the promulgation of the Seed Act (1976), 188 varieties of different crops have been registered, of which 8 originated from private-sector multinationals and 180 from public research institutions.

Certified Seed

The majority of seed is produced by the public and informal sectors. The national companies mainly concentrate on seed multiplication of high-volume low-cost seed like wheat, cotton and rice. The multinational seed companies are handling imported hybrid seed of various crops. Having seen the potential of the seed market, the multinational companies have also started seed production of self-pollinated crops like wheat, cotton, rice and pulses.

Processing

The total available seed-processing capacity of the public-sector seed agencies is 148,850 tonnes of seed, mostly wheat, rice, maize and cotton.

Two of the multinationals have established seed-processing plants (Cargill and Pioneer). Some of the national seed companies have also invested in the installation of processing plant, mainly for cotton.

Marketing

The Provincial Seed Corporations are responsible for arranging the production and distribution of Certified Seed to farmers. In three provinces, the public-sector seed agencies are semi-autonomous bodies, while in Balochistan seed business continues to be handled by the Agriculture Extension Department. These agencies procure and distribute seed of wheat, cotton, rice and maize.

The private sector is the dominant seed supplier in the country. Private sector is of two types: formal (private registered seed companies), and informal (more than 90% of the seed flows from farmer to farmer or from unauthorized sources like commission agents, retailers and shopkeepers).

There is no restriction on the distribution of seed of any crop by the private sector. Additionally, the free-market economy concept is being adopted and the Government is privatizing vigorously. These circumstances offer favourable opportunities for the organized private sector in seed production, distribution and seed imports. Opportunities also exist for export to neighbouring countries. During the period 1993–95, a total of 4225 tonnes of various crop seeds were exported.

Quality control

The Federal Seed Certification Department provides quality control through crop inspection and seed testing.

Summary

Agriculture in general and seed in particular are priority areas for development for the Pakistan Government. As demand for quality seed increased, the Government decided to involve the private sector. Seed business was declared Seed Industry in 1994, complete with industry incentives and benefits. In addition, inbred lines for hybrid seed production may be imported duty-free. A Plant Variety Protection Act is due to come into force. Some 47 local and 4 multinational companies have been granted the right to produce and market seed. Overall, however, the informal sector dominates seed supply in Pakistan.

Sudan*

Legislation

Food security is one of the Sudanese Government's top priorities. So, seed production and supply are an important part of the agricultural policy. The Government has taken a number of measures towards privatization and liberalization of agriculture in Sudan, including the following.

- Free-market policy, where the price for any product is determined by supply and demand.
- Price incentive: A higher-than-market price for a certain crop is announced by the Government before planting to encourage farmers to adopt and follow the technical packages to achieve higher yield in that crop.
- Credit policy: To encourage investment in agricultural production in general and seed in particular, the Central Bank increased the seal for the loans given by private and agricultural banks to agricultural production. The directive gives priority for credit and least profit margin to be considered for seed production.
- Privatization of public corporations: The Government policy is that any public corporation that fails to finance its operations should be sold to the private sector.
- Board of Directors of the Agricultural Corporation: The number of farmer representatives on the Board of Directors was increased to 50% to enable farmers to participate effectively in taking decisions and adopting policies agreed upon by the Board of Directors.
- Use of Certified Seed: The new policy in agriculture is to use Certified Seed in public corporations. The Board of Directors has to determine varieties that are accepted by farmers and suit their locality. Traditional or local varieties are no longer to be used. In this connection, seed-multiplication units should be strengthened to meet the demand for Certified Seed.
- Seed movement: Seed is exempt from local, development and all other taxes associated with movement within the country. This order will

* Based on a contribution by Mahmoud H. Ali and Omar A.F. Yousif. van Gastel, A.J.G., J. Wadsack and G.R. Manners (Ed.). 1997. Privatization of the Seed Industry in the West Asia and North Africa Region. GTZ, Eschborn, Germany.

encourage seed companies and traders to move seed from production areas to areas of demand.

- **Investment encouragement:** The investment law of 1991 gave national and international investors differential privilege to invest in Sudan, which can be summarized as follows: (1) special encouraging land price for the project; (2) exemption from enterprise revenue tax for five years; (3) total or partial exemption from sales and development taxes as well as customs and other taxes on imports; (4) even more advantages are given to projects aimed at rural development, utilization of local raw material, food security operations and development of export potentials of the country.

Privatization to Date

Encouragement of the private sector to produce seeds is seen as essential because the public sector alone cannot meet the seed demand of the country. In Sudan, there are various examples of successful involvement of the private sector.

Rahad Agricultural Corporation

In 1990, the Rahad Agricultural Corporation signed a contract with a private company to produce wheat seed. The company and the Corporation produce high-quality seed, and the Rahad Corporation is known as the best source for certified wheat seed in the country.

Privatization of production

The Ministry of Agriculture decided to privatize the seed production run by the public sector, and invited companies and corporations to share the existing facilities for seed production. The Government reduced the budget allocated to the National Seed Administration (NSA) for seed production.

Gezira Scheme

In the Gezira Scheme, seed companies can produce seed by contract with selected farmers under the supervision of the Scheme. The company prepares the land, provides inputs and supervises the phases of production. At harvest, all these costs will be deducted from the farmers' accounts with the company. The company gives a premium for seed of 10–15% over the market grain price.

AAAID

A more recent development in the process of privatization is the agreement between the Ministry of Agriculture and the Arab Authority for Agricultural Investment and Development (AAAID) to initiate a study for the establishment of a seed company by utilizing some of the assets of the NSA. The study was carried out by a group of Sudanese experts. The proposed company for production, processing and marketing of seed in Sudan would be established on a share-holding basis between AAAID and other financial organizations in the country.

Constraints to Further Privatization

The privatization process of the seed sector in Sudan has just begun. However, before this process can reach its final workable stage, it is believed that a number of obstacles or constraints could hinder its progress.

- The Government actions supportive of privatization might be disrupted by the bureaucracy of Government agencies, resulting in inefficient implementation of policies, regulations and actions. This will result in loss of time, increase cost of operations and disrupt seed supply.
- Weaknesses in activities related to the seed industry, such as development of seed infrastructure, seed extension promotion system, training programmes and facilities, and technical support services.
- Possible Government interference in seed supply plans, methods of operation or in management and decision-making.
- Investment in seed business might not be attractive to private-sector agencies or individuals, since seed production and supply involve high risk, a long time-lag between production and sale, market sensitivity and a long time to recover investment.

Recommendations for Overcoming Constraints

- A committee for privatization of the seed sector should be appointed to follow-up the process and the constraints facing the implementation of the privatization policy. The committee should submit a report to the Seed Council every six months for review and action.
- The seed issue and production of Certified Seed should be given high priority in federal and state policy for agriculture and investment projects.

- The Investment Law of 1991 should be revised to allow more incentives and tax exemptions to the seed sector.
- Investment in the seed sector should receive priority on loan provision from banks and the minimum possible interest margins should be applied.
- Loans for agriculture should be associated with and dependent upon the use of improved seed that has wide acceptability among farmers.
- Only improved seed should be planted by corporations and schemes working in the irrigated sector.
- Agricultural extension should be intensified to help farmers to grow improved seeds and to familiarize them with seed tags and information on the labels.
- An Investment Promotion Directory should be issued with special reference to seed areas.

The Sudanese Seed Programme

Small-holders in both traditional rain-fed and irrigated farming produce and save their own seed from season to season. This sector produces about 90% of the seed of local vegetables and herbs, and 80% of the traditional varieties of sorghum, millet, groundnut and sesame. However, although this is the most important sector area-wise in agricultural production, it is the most neglected one in terms of inputs and extension services.

In 1982, the African Development Fund (ADF) and African Development Bank (ADB) group provided a loan to support the development of the seed sector.

Seed production and quality control

The Sudan Seed Production Project financed by ADF and ADB aimed to achieve satisfactory supply of wheat, sorghum, sesame and groundnut seed. This was done by strengthening of the existing NSA seed farms and agricultural corporation seed units in irrigated and mechanized rain-fed areas, as well as the Agricultural Research Corporation (ARC). The second target was to strengthen the Seed Certification Administration (SCA) so that it can carry out seed certification and quality control.

Breeding and variety development

The ARC breeding section is responsible for variety development, testing, introduction and effective participation in the release of new varieties. Recently, universities started to participate actively in breeding programmes and variety development. Sugar companies carry out cane-sugar research on their seed farms and import new lines.

Variety maintenance and Breeder Seed production

The seed unit under the Ministry of Agriculture is responsible for the multiplication of old and new improved varieties, collection and maintenance of economic crop varieties and training of staff within and outside of Sudan.

Agricultural corporations are the main seed producers in Sudan. They have access to an area of about 1.26 million ha in the irrigated sector and more than 840,000 ha in the mechanized rain-fed sector. Seed units in Gezira, Rahad and New Halfa provide farmers with 100% of improved seed of cotton and wheat, 40–60% of sorghum and 3% of groundnut. The seed gap is bridged by the farmers' saved seed or local markets as in groundnut.

Production and processing in the seed units is supervised by trained technical staff. Field inspection is carried out by the SCA. The area allotted for each seed unit is not enough for seed production to cover the needs of the corporation area with Certified Seed. These units concentrate their efforts on producing higher categories of seed – Foundation and Registered – as well as limited amounts of Certified Seed. However, to meet the increasing demand for Certified Seed, the seed units contract seed production with farmers within the corporations. Moreover, private seed companies are also encouraged to carry out seed production by contract with farmers in these corporations as well as in mechanized farming schemes in the major rain-fed production areas.

Seed companies that have their own seed farms, breeders, processing lines and storage facilities are few. Some companies have seed farms, others produce seed through contracts with farmers. Most of these companies produce wheat, sorghum, sunflower and vegetable seed.

Marketing

Seed trade is controlled by the Government and is dominated by seed traders and seed importers.

Seed traders have good experience in seed exchange and marketing, and have good contacts with local seed producers. Some have their own seed farms, others give credit to seed growers to produce certain crops. Seed traders promote sales of local varieties as well as introduce varieties to new localities. Seed traders move the seed from areas of little demand to areas of high demand. Seed trading is a specialized business, some traders deal with local vegetable seed, while others deal with field crops, e.g. sorghum, maize and millet. In order to secure a regular supply of seed, seed traders have agents in villages and among farmers to purchase seed and send it to centres in towns.

Seed importers are companies or merchants which have permits to import seed from the international market. Vegetable seeds, e.g. tomato, carrot, beet and potato, are imported from the Netherlands and the USA. The data in Table 1 indicate the potential of the seed sector for domestic production of seed currently imported. Sudan is an open market for private investment in the seed sector.

Summary

The Sudanese Government has taken steps to develop and liberalize the seed sector, and to encourage private investment in it. Since the early 1990s, legislation and policy have been directed at promoting the use of quality seed and at attracting private involvement in seed business. Although most plant breeding is public, sugar companies conduct their own breeding of cane-sugar. Seed production is handled by the Ministry of Agriculture through agricultural corporations; however, a few companies are involved in the production of seed of wheat, sorghum, sunflower and vegetables either on their own farms or through contracts with farmers. The state controls all seed trade, which is dominated by seed traders and seed importers. Some seed traders are also involved in seed production, either on their own farms or through credit to farmers. Seed imports are dominated by vegetables from the USA and the Netherlands, and there is scope in this area for private investment. There are four examples of successful collaboration between the public and private sectors: Rahad Agricultural Corporation teamed up with a private company; contractors have become involved in the production of seed in collaboration with the National Seed Administration; in the Gezira Scheme, companies contract farmers to produce seed; and the proposed company for production, processing and marketing of seed in Sudan.

Table 1. Sudanese seed imports, 1990–1994.

Crop	1991	1992	1993	1994
Tomato	26,706	13,117	7,077	43,634
Watermelon	11,860	8,388	1,287	16,281
Onion	429	3,930	2,186	5,260
Muskmelon	1,554	2,428	608	2,212
French bean	2,775	66,434	25,414	13,349
Other vegetables	15,938	15,348	10,459	16,180
Sorghum	60,410	4,000	0	200
Maize	30,690	1,608	0	0
Fodder sorghum	5,850	1,300	0	0
Sunflower	247,800	652,650	495,591	601,000
Millet	110,000	501,000	0	0
Alfalfa	2,500	0	20,000	65,000
Potato seed	2,021,000	131,500	62,000	70,000
Total	2,537,512	1,401,703	624,622	833,116

Tunisia*

Introduction

The national potential for the production of seed of the main crops in Tunisia is almost 19,000 tonnes per year and requirements total about 20,700 tonnes, i.e. national production is able to meet 92% of requirements. However, 88% of this potential consists of uncertified seed, the genetic identity and quality of which are uncertain and which does not correspond to development needs. Quality seed accounts for only 12% of the national seed production and is produced mainly for cereals and vegetables.

For other crops, the entire seed requirements, apart from the seed for some vegetable species, are currently met through uncontrolled on-farm production, imports or controlled local production.

Within the scope of its structural adjustment programme, Tunisia is pursuing a progressive policy towards a market economy. The mechanisms which were put in place within the scope of this policy are characterized by a gradual withdrawal of the state to the advantage of the professional and private sectors.

As a result of this situation, the present structures for seed-sector promotion are suitable to a greater or lesser degree for privatization.

Constraints to Further Privatization

Although the constraints which are hampering the development of the private sector vary from one crop group to another, they may be summarized as follows.

- State control of cereal seed prices, and subsidizing of cereal seed through a barter system in which food grain is exchanged for Certified Seed forces the state to exercise a monopoly on distribution. Consequently, the cereal enterprises do not have their own distribution networks. In 1995, the cost of 100 kg of Certified Seed delivered to the retailer was estimated at Dinar 104.6 (= US\$ 111.75), whilst the price was about Dinar 45 (= US\$ 45.75), i.e. there was a negative margin of over 50%.

* Based on contributions by Aïssa Bouziri and Mouldi El Ghanmi. van Gastel, A.J.G., J. Wadsack and G.R. Manners (Ed.). 1997. Privatization of the Seed Industry in the West Asia and North Africa Region. GTZ, Eschborn, Germany.

- The dominance of farmers' saved seed, which is the most common source of supply, coupled with the ineffectiveness of the efforts of the enterprises and extension services to promote the use of quality seed.
- Competition from seed importers seeking quick returns and the increase in their numbers each year.
- The absence of legislation specifically promoting the seed sector, which would encourage private enterprises to invest in it.
- All quality cereal seed is locally produced, and only local Tunisian varieties are multiplied.

Recommendations for Overcoming Constraints

Public sector views

In order to tackle these constraints and taking into account the changes currently under way in Tunisia aimed at deregulating various economic sectors, the public authorities have entered into a dialogue with the professionals with a view to determining a strategy which would enable the roles of the different players in the seed sector to be redefined. The preliminary outcome shows that such a strategy would revolve around the following main points.

- Assigning to the state the task of determining the policy and general orientation of the seed sector.
- Setting up a national seed committee which would oversee the implementation of this policy and co-ordinate the activities of all the parties in the sector.
- Leaving to the state the authority to apply and further develop the technical regulations, whilst intensifying seed quality control and establishing an efficient variety evaluation system.
- Gradually privatizing all state production and distribution activities.
- Creating a legal and financial environment conducive to the success of an efficient private seed sector capable of ensuring self-sufficiency and satisfying the demand for quality seed and planting material.

In this context, the Government is considering the following actions:

- to encourage the emergence of private seed research;
- to establish a clearly-defined framework providing for the protection of new varieties and breeders' rights;
- to authorize the formation of groups and professional associations in the seed sector;

- to define the guidelines for public-sector assistance to the seed sector and for its implementation;
- to provide specific legislation for private investment in the seed sector taking into account the strategic importance of this sector.

Private sector views

The sectors already deregulated, i.e. the vegetable, legume and fodder-crop sectors, will have to be re-organized because of current confusion. There is a need to increase controls, and strengthen the idea of professionalism for achieving fair competition and ensuring that the interests of agriculture and the country are served.

For the products where a monopoly exists, especially cereal seed, the following are recommended.

- Gradual privatization, i.e. the gradual withdrawal of the state, using all the necessary mechanisms. These mechanisms will essentially comprise:
 - revision of prices: prices should be sufficiently rewarding;
 - establishment of separate distribution network(s): since only the seed-producing organizations currently possess the competence to be considered true professionals, it is suggested that present centres of the state-owned Office des Céréales be ceded to them with priority, according to a well-developed plan and within the scope of an agreement with the Office des Céréales. This will permit simultaneous state withdrawal to the advantage of the industry.
- Establishment of an environment favourable to the motivation and upgrading of companies already producing and marketing seed, to be achieved through:
 - access to finance for new investment in the sector;
 - revision of legislation regulating the seed sector;
 - intensification of quality control as a basis for the privatization of the sector and the protection of the consumer;
 - development of planned strategies for the strengthening of existing structures and the training of their personnel, or the setting up of new structures according to the specific needs of certain sectors (e.g. fodder crops, vegetables).
- Consideration of the privatization of genetic research, the main driving force behind the dynamics of the seed sector, including legislation,

protection of new varieties and research contracts with local seed enterprises to enable advantage to be taken of national genetic material.

The Tunisian Seed Programme

Legislation

The seed sector is regulated by a law dating from 1976. This law has enabled a general framework for the organization and control of seed and planting material production and marketing to be established. On the basis of this law, it has been possible *inter alia*:

- to set up a national advisory committee on seed and planting material charged with developing a national policy for this sector;
- to set up an official catalogue of the species and varieties of crop plants;
- to establish the technical regulations governing the production and marketing of seed of the different crop groups;
- to set up a seed quality control service.

Breeding and variety development

The Institut National de la Recherche Agronomique de Tunisie (INRAT), which has a network of experimental stations in the main production zones, is responsible for crop breeding and variety development. All the varieties of cereals grown locally have been developed in Tunisia. The same applies to certain vegetables and food legumes. However, these achievements are not enough to support the activities of the entire seed sector.

Despite considerable efforts, the exploitation of local genetic resources is still limited. There is a need to intensify research in all areas of the sector, especially for seed of forage species, vegetables and food legumes.

Variety testing and release

Varieties are only authorized for marketing after they have been tested and included in the official catalogue. The varieties developed or introduced are required by law to undergo the DUS and VCU tests. This testing is the responsibility of INRAT.

Only cereal varieties and, more recently, food-legume varieties have been entered in the catalogue since its establishment. For the remaining crops, there is a list of recommended varieties.

Variety maintenance and Breeder Seed production

The organization of varietal maintenance varies a great deal and the relationship between breeder and seed producer (enterprise) is poorly defined. Genetic maintenance of cereals is by the breeders. For the sectors considered less important (vegetables and food legumes), variety maintenance is difficult or impossible at present.

Quality control

Seed quality control started in 1972 with the establishment of a seed quality control laboratory, which carries out the following activities.

- Seed certification of cereal species and potato. On average, about 16,000 ha of cereal seed and 500 ha of potato seed are inspected annually.
- Quality control of Standard Seed. At least 3000 samples are taken each year and analysed in the laboratory.
- Laboratory analysis. The seed-control laboratory is an accredited member of the International Seed Testing Association (ISTA) and all the routine analyses it carries out are conducted according to the ISTA recommended rules. The laboratory carries out as many as 7000 analyses per year to check purity, germination capacity and health of seed.

Production

There are four seed enterprises in Tunisia. Two of these belong to the private sector, one to the professional sector, and the fourth is a semi-governmental organization. These enterprises produce 15,000 to 20,000 tonnes of Certified Seed of cereals and Standard Seed of food legumes.

The semi-governmental GRAFOUPAST specializes in the production and distribution of forage seed and produces about 5% of the requirements in this sector. The professional-sector (GIL) produces mainly vegetable seed, meeting up to 8% of the country's needs; it specializes in the production of seed potato of which it produces 6000 tonnes per year.

Marketing

Farm-produced seed is generally used either on the farm itself or sold at weekly markets, either by marketmen or by the farmers themselves. The distinction between seed and food grain is unclear in this context, especially

for legumes and cereals. It is consequently difficult to determine the precise volume or value of farm-produced seed or of the seed sold by marketmen. However, apart from the seed of some vegetable species, this supply channel dominates. For controlled, locally produced and imported seed, it is possible to some extent and within the limits of the subsidies or quotas fixed by the state each year to distribute this seed via something resembling a market.

Distribution of cereal seed is handled exclusively by the Office des Céréales. In fact, as a result of the subsidies made available to the cereal-seed sector, distribution is mainly in the form of barter (i.e. seed is exchanged for grain).

Since the demand for food-legume and forage-crop seed is low and highly concentrated, users buy directly from the seed enterprises.

The vegetable-seed sector benefits from a relatively well-functioning distribution network which has gaps it would be worthwhile closing. Almost all imports are handled by private wholesalers who supply the country with 50% of its requirements and operate via re-sellers and co-operatives located in the interior of the country.

Some of the private enterprises owe their continued existence to the integration of other activities, such as distribution of farm inputs and landscaping.

Summary

Quality seed meets only 12% of national requirements for the main crops in Tunisia. As part of the country's move towards a market economy, various public seed structures are considered suitable for privatization. At present, there are three private and one semi-governmental seed-production enterprises. Private wholesalers import vegetable seed, meeting 50% of local requirements.

Turkey*

Legislation

The measures taken and incentives applied by the Turkish Government to promote privatization of the seed sector, include the following.

- Establishment of private seed companies and capital transfer to such companies has been encouraged by a decree prepared by the state planning organization.
- Seed import and export have been liberalized and facilitated, to provide cheaper seed for farmers; import permits have been exempt from customs' duty and taxes.
- Private companies have been provided with credit at low interest rates.
- Regulations relating to the sale of seed have been simplified; seed price control has been removed.
- Importation of seed machinery and equipment has been facilitated.
- Important cash incentives have been given for the seed of many crops, especially hybrid sunflower, hybrid maize, and fodder crops.
- Breeders' rights and variety protection have been enacted.
- Tax incentives have been applied to many areas of the seed sector.

Privatization to Date

All crop seed was produced by state-owned agricultural research institutes until 1960. The first private-sector seed production started after 1965 at universities and institutes, with the assistance of FAO and other organizations. The first major development in the seed sector was the liberalization of seed prices in 1982. The institutional reforms since 1980 comprise tax reform, financial liberalization, exchange-rate liberalization, trade liberalization, direct foreign investment liberalization, privatization, and deregulation.

The Government encouraged local and foreign investors to enter the seed business either as locally capitalized, credited, joint-venture or 100% foreign capitalized.

Since the implementation of the various seed policies, the private-sector share in seed production has increased to 95–100% in hybrid maize, hybrid

* Based on contributions by T. Tugrul Balikcioglu and Alev Kutay. van Gastel, A.J.G., J. Wadsack and G.R. Manners (Ed.). 1997. Privatization of the Seed Industry in the West Asia and North Africa Region. GTZ, Eschborn, Germany.

sunflower and soya bean seed production (Table 1). This is significantly higher than in 1985, indicating dramatic changes. Similarly, the private-sector share in seed production has considerably increased for wheat, barley, cotton and vegetables.

Table 1. Production of various seeds (tonnes) and share of private sector.

Seed	1985			1994		
	Public	Private	Priv. share of total (%)	Public	Private	Priv. share of total (%)
Wheat	116,108	210	0.2	90,574	9,079	9
Barley	24,434	—	0	16,991	1,340	7
Soya bean	673	—	0	—	2,473	100
Maize (hybrid)	4,670	—	0	6,948	193	97
Sunflower (hybrid)	2,735	—	0	65	2,264	97
Cotton	25,256	—	0	19,530	647	3
Vegetables	30	569	95	17	1,006	98

About 32 private seed companies have been authorized to conduct research. In effect, the state has given these private companies official research institution status. In addition, 38 state farms have been producing seed.

The Seventh Development Plan allows for the privatization of the public organizations which are responsible for producing and marketing agricultural products. These organizations will gain a new status and their burden on the government will be lessened; in addition, unfair competition between public and private companies will be removed.

Meanwhile, the Turkish Seed Industry Association was established in 1986 to “modernize” the Turkish seed sector by providing guidance to state officials and technicians. Most of the deregulations and laws were enacted after the establishment of the Turkish Seed Industry Association.

Turkish Seed Industry Association

The Turkish Seed Industry Association has the following objectives.

- To provide collaboration among state and private enterprises both within and outside of Turkey.
- To create close and warm relations between the seed industry and relevant ministries, the State Planning Organization, and similar organizations.
- To organize excursions, panels, symposia and conferences for its members to provide them with up-to-date technical improvements from within and outside of Turkey.
- To provide statistical data related to the seed industry within and outside of Turkey.
- To search for new techniques and technologies in seed production, processing, packaging, storage, variety protection and breeders' rights, to improve seed quality and increase the productivity of the seed industry.

The Association's steering committee consists of seven members. The president and board are elected for one year. In addition to the steering committee, there is a censor board of three members. In 1995, there were 65 private companies dealing with seed production and trade in Turkey, of which 34 were members of the Association. The main criteria for membership are to deal with production, have a processing plant or other such investment in the industry, and to have a good reputation.

Constraints to Further Privatization

The rapid development of the private sector during the period after the introduction of incentives slowed down in the 1990s, due to delayed introduction of the variety-protection law and inadequate seed-certification and seed-control services.

Perhaps the most important reason for the pause in seed-sector development is structural problems of Turkish agriculture.

- Demand for seed is low because farms are small and farm income is low.
- Agricultural research, training and extension services are inadequate.
- Different organizations set agricultural and rural policies, especially for support prices, input subsidies and credits, and there are co-ordination

and authority problems between these organizations. Producers' organizations are not effective in marketing products or setting prices.

- State production stations and agricultural enterprises create an unfair competitive environment for private companies.
- In addition to the income difference between agriculture and other sectors, income distribution within the agricultural sector is also diverse. When the income difference between the regions is removed, the demand for modern inputs (including seed) will be increased, especially in the central and eastern parts of the country.

Recommendations for Overcoming Constraints

- The Government should give more importance to new technologies and the training of farmers.
- Support models in agriculture should be reviewed within the framework of the EU, OECD and GATT agreements.
- The agricultural policies for solving the problems of agriculture detailed in the Seventh Development Plan should be implemented. According to the Plan, there are four steps to be taken by the state.
 1. Legal arrangements are needed for variety protection, seed control and operation of the system. Membership of international seed organizations is required.
 2. Structural irregularities in Turkish agriculture need to be corrected, including:
 - privatization of public organizations responsible for production and marketing of agricultural products;
 - development of a sound seed market;
 - establishment of specialized commodity markets;
 - establishment of a farmers' union to guide marketing and pricing of agricultural produce;
 - improvement of agricultural mechanization.
 3. Seed activities of the private sector must be encouraged to increase the use of quality, high-yielding seed by farmers. Privatization activities of the Government will be gradually applied to the seed sector.
 4. In order to strengthen the seed activities and to enable the seed sector to compete in international markets, the state will support the improvement activities after the variety-protection system starts to operate.

- At the regional level, there is a need for standardization of seed production and quality regulations; publication of bulletins on insect pests and diseases; further strengthening and support of the WANA Seed Network, including financially; and, an increase in the awareness of the available private seed enterprises in the WANA region for investment.

The Turkish Seed Programme

Research

There are three central and seven regional crop-research institutes, another 40 research institutes work on different commodities and disciplines. All these research institutes, but especially the central and regional ones, are being strengthened. In addition, a World Bank supported research project of US\$ 80 million is being implemented to support agricultural research and development.

Variety testing and release

Individuals, companies, official organizations and agricultural faculties can apply to the Ministry of Agriculture and Rural Affairs (MARA) for registration of local, improved or introduced varieties. Description of morphological, biological and agricultural characteristics of the variety should be given to MARA together with the data obtained from field and laboratory tests and observations. MARA examines the applications and those found appropriate are sent to the Seed Registration and Certification Center (SRCC) to be tested in variety registration trials.

After these trials are completed, the SRCC prepares a detailed report on the performance of the varieties, which is sent to the Seed Registration Committee. The Committee examines the report according to the principles stated in the regulations. Decision is given by a two-thirds majority. Approved varieties are registered and announced in the official Gazette.

In case of urgent need for production, varieties with incomplete registration procedures can also be discussed in the registration committee and receive a "Production Permit". These varieties are also declared in the official Gazette.

Certified Seed

In Turkey only varieties which have passed through the registration procedures and are declared in the official Gazette may be multiplied. Seed

producers need to apply to the provincial directorates who examine the applicant's capabilities and facilities, and approve applications.

Following inspection of seed fields, seed samples are taken from seed lots for laboratory testing.

Breeder Seed may be produced by public research institutions and the General Directorate of Agricultural Enterprises; Registered and Certified Seed may be produced by public and private seed-production organizations and by farmers.

Production of certified wheat seed rose from about 49,000 tonnes in 1980, to 99,653 tonnes in 1994. Considerable increases have also been realized in the production of various hybrid seeds (Table 1). Production of hybrid maize seed increased from 860 tonnes in 1980 to about 7000 tonnes in 1994.

Likewise, there was previously no production of hybrid sunflower seed, which was imported until 1980. However, production reached about 2300 tonnes in 1994. Hybrid vegetable seeds have started to be used intensively; production of certified vegetable seed, which was 191 tonnes in 1980, was over 1000 tonnes in 1994.

The increase in seed production has been followed by an increase in the use of Certified Seed, and a subsequent increase in crop yields (Table 2).

Processing

Most private companies have their own seed-processing plants equipped with modern machines. Both the private companies and the state enterprises have been encouraged to invest in new processing plants, and helped to establish them. Total seed-processing capacity in Turkey is about 638,820

Table 2. Turkish crop yield increases.

Crop	Yield (kg/ha)	
	Before 1980	After 1986
Maize	3,000–3,500	8,000–10,000
Sunflower	1,000–1,200	2,000–3,000
Potato	25,000–35,000	60,000–70,000
Wheat	2,000–2,500	3,500–5,000

tonnes per year, of which about 17.4% is private; however, only about 207,055 tonnes of seed are actually processed annually, of which about 34.4% is done privately. Total seed-storage capacity is 554,400 tonnes, of which 20% is private. Of this total, some 383,350 tonnes of storage capacity are utilized; again, 20% of utilized storage is private.

Certification and quality control

Each company (private and public) has its own Quality Control Department. However, certification can only be done by the SRCC and six satellite centres spread throughout the country. For certification, a sample is taken from each 40-tonne lot. Exceptionally, commercial vegetable seed may be certified by the producer, but genetical purity testing can only be conducted at the SRCC.

Marketing

Marketing channels are well established in both public and private sectors. Public involvement is restricted to self-pollinating crops (mostly wheat, barley and cotton), which are marketed by the Agricultural Supply Office, the Union of Agricultural Chambers, and by co-operatives and farmers' associations. Private marketing is through intermediaries, either wholesalers or retailers.

Since 1985, a range of seeds has been subsidized. These are mostly oilseed and fodder crops, but also include fruit and vines.

Summary

Since the early 1980s, the Government of Turkey has encouraged the private sector to play an active role in the seed industry. Breeding is still public-sector dominated, but the relaxation of regulations for importing seed has resulted in several private companies importing and marketing varieties, especially of cross-pollinated crops (for which hybrids can be marketed). The impact of the private sector is clearly demonstrated in the large increases in hybrid seed production. Over one-third of the seed processing carried out in Turkey is done by the private sector, and about one-fifth of the currently utilized storage capacity is privately owned. The marketing of most self-pollinated crops (wheat, barley and cotton) is done by the public sector, while the private sector handles most of the other crops; however, government subsidies have been in place for oilseed and fodder crops, fruit

and vines since 1985. The Turkish Seed Industry Association acts as a support and information centre for the private sector, as well as a liaison with relevant Government offices.

Country Reports

Other WANA Countries

Cyprus*

Introduction

Most of the seed industry in Cyprus is firmly in the public sector; so far the private sector *per se* is only involved in processing and exporting food-legume (faba bean) seed and in importing and marketing vegetable and forage seeds.

No effort has been made to privatize the seed-production industry in Cyprus. However, the co-operative movement has recently expressed an interest in undertaking the cereal seed industry as a result of the efforts of Cyprus to become a full member of the EU in the near future.

At present, the Government is cautious about privatization of the various activities of the public sector in general, even in the case of financially problematic organizations. One of the main constraints to privatization in Cyprus is the reaction of the trade unions, which object strongly to the idea. The salaries, working conditions and job security in the public sector are, on average, better than those in the private sector. Thus, the trade unions of the government employees are not prepared to discuss any change in the working status of their members, since they fear that such changes may result in deterioration of their working and financial conditions.

It is expected that the private sector will inevitably play a more important role in seed activities as a consequence of the GATT agreement signed by the Cyprus Government and efforts made for harmonization with EU laws and regulations.

Farmer co-operatives could undertake seed production without great difficulty, as the Cooperative Central Bank and the village co-operative societies are directly involved in the marketing of cereal seed produced by the Seed Production Center (SPC) and they have a good network throughout Cyprus. For this purpose the storage and processing facilities of the SPC may be rented on a long-term basis or sold to the co-operatives. In addition, particular attention should be focused on training sufficient personnel in seed technology and, in particular, seed production, processing, storage and testing.

* Based on a contribution by E. Xenophontos.

van Gastel, A.J.G., J. Wadsack and G.R. Manners (Ed.). 1997. Privatization of the Seed Industry in the West Asia and North Africa Region. GTZ, Eschborn, Germany.

Plant breeding and production of Basic Seed should remain with the public sector, as these activities are more specialized and not so profitable and attractive to the private sector. The public sector firmly believes that agricultural research, and particularly cereal breeding, in the public sector should be strengthened to continue the supply of improved adapted varieties to the private sector.

The Cyprus Seed Programme

Seed law

There are two seed laws applicable in Cyprus: (1) the 1947 Vegetable and Flower Seed Production Law, which regulates the cultivation of vegetables and flowers intended for seed production, and (2) the 1954 Seed Law, which regulates seed sales and makes provision for seed testing.

A new comprehensive seed law has been drafted which makes provision for the evaluation and registration of new varieties as well as for production, certification and marketing of seed of the most important crops grown in Cyprus. This draft law has been brought into line with OECD and EU rules and standards.

Variety development

The Agricultural Research Institute (ARI) of the Ministry of Agriculture, Natural Resources and Environment deals with the breeding and evaluation of new varieties of cereals, forage crops, food legumes, industrial crops and vegetables. It is responsible for variety maintenance and the production of Breeder Seed, intended for further multiplication under the existing seed-certification schemes.

The existing seed law does not include any regulations for variety release or registration. However, within the Department of Agriculture there is a seed committee which decides on the release of new varieties selected by the ARI. New varieties are grown for 2–3 years in large-scale trials on government farms before release to farmers.

Seed production

Breeder Seed is produced by the ARI under the supervision of the breeder. Basic Seed is produced on government farms by the Agronomy Section of the Department of Agriculture in consultation with the breeder. Certified Seed is produced under contract by reliable seed-growers, and delivered to

the Seed Production Center (SPC) for testing and processing. Seed growers are paid a premium over the official price fixed for commercial grain. Commercial Seed is usually produced by private farmers for their own needs. However, during recent years the SPC has also been dealing with the production of Commercial Seed to meet the high demand for cereal seed.

The SPC handles about 11,500 tonnes of cereal seed, 300 tonnes of forage seed and small quantities of food-legume and vegetable seed. However, only 50% of the total demand is met by Certified Seed, the rest is met by commercial barley grain produced locally, which is supplied to the SPC through the Cyprus Grain Commission (CGC). The Commercial Seed is also tested and processed at the SPC. Cereal seed sold by the Center represents about 90% of the total seed requirements of the growers. For storage, a modern silo complex (total capacity 11,000 m) at the SPC is used, which will be rented to the CGC during November–April each year.

Two private seed firms have their own processing and storage facilities and export small quantities of the local broad (faba) bean variety to neighbouring countries.

Seed quality

The seed-testing laboratory at the SPC is an accredited member of ISTA, so seed testing is carried out according to international procedures.

Seed-certification schemes cover cereals, forage crops, food legumes and vegetables. The seed-production branch of the Agronomy Section of the Department of Agriculture is responsible for seed certification. Cyprus has also joined the Herbage and Vegetable Seed Certification Schemes of the OECD.

Marketing of seed

Marketing of cereal and forage seed is conducted by the SPC through village co-operatives. Seed is transported to the village co-operative societies by the Department of Agriculture. The Central Cooperative Bank pays for the seed lots so distributed. Vegetable and certain forage seeds are sold directly from the Center, or through the District Agricultural Offices.

The selling price of certified cereal seed is about 45% higher than that of commercial grain. This difference is intended to cover all the expenses incurred in connection with the premium paid to producers of Certified

Seed, processing, transport, cleaning losses, maintenance and depreciation of machinery and buildings, and commission paid to the Cooperative Central Bank and the co-operative societies.

The private sector is active in marketing imported vegetable and certain forage seed. During 1994, some 84.4 tonnes of seed were imported by the private seed dealers. During the same period, 48 tonnes of vegetable seed were re-exported and 54 tonnes of domestic faba bean seed were exported.

The private sector promotes imported seeds through local dealers who usually market other agricultural inputs such as chemicals, fertilizers and irrigation equipment.

Constraints

The main constraints facing the seed sector as a whole are: (a) noxious weed (*Bromus* spp.) in barley seed crops, which has become a serious problem during the last few years; (b) inadequate mechanization of food legumes and forage legumes for seed production; (c) until recently, shortage of new varieties of food legumes; and, (d) lack of a Government price policy for promotion of grain legumes.

Summary

Most of the seed industry in Cyprus is firmly in the public sector; so far the private sector *per se* is only involved in processing and exporting food-legume (faba bean) seed and in importing and marketing vegetable and forage seeds. A seed law which will align Cyprus with OECD and EU standards has been drafted. No effort has been made to privatize the industry, but as Cyprus seeks full membership of the EU and the effects of GATT are felt, it is expected that the private sector will play a larger role. The Government believes, however, that research (especially cereal breeding) should remain in the public sector, with production and marketing being handled by the private sector.

Jordan*

Privatization to Date

There is very little formal involvement of the private sector in the Jordanian seed industry. Recently, some private farmers have been producing onion seed; otherwise seed production is handled by the Jordan Cooperative Organization (JCO) and the informal sector. The JCO is considered quasi-private sector – it is run according to Government policy, but individual farmers are voluntary members.

Constraints to privatization are:

- price control and other Government involvement make private seed production difficult;
- lack of facilities and equipment, i.e. initial investment will need to be large;
- production and marketing units may become too scattered, and difficult to control;
- national co-ordination of the seed production and distribution programmes will become more difficult;
- non-profitable crops will be of no interest to the private sector;
- the private sector lacks qualified staff.

Comprehensive seed legislation, including variety registration and seed quality control, needs to be adopted. A seed council and privatization law need to be established, and guidelines for privatization developed. Furthermore, an implementation committee for privatization needs to be established.

Proposal for Private Sector Involvement in the Seed Industry

Since the public sector has problems of inadequate financial resources and inefficient management, the Government looks at the private sector as a partner through which seed can be produced to cover the national seed demand for different crops. An integration of public and private seed sectors is proposed, so that seed production and distribution become more

* Based on a contribution by Majid Fandi Al-Zubi.

van Gastel, A.J.G., J. Wadsack and G.R. Manners (Ed.). 1997. Privatization of the Seed Industry in the West Asia and North Africa Region. GTZ, Eschborn, Germany.

efficient. The proposal aims to make better use of resources and to ensure a better supply of seed.

The public sector will encourage the development of private seed enterprises, and continue its roles in policy-setting, research, release and maintenance of varieties, and production of Basic Seed. It will also fulfil the official quality-control functions of seed inspection and laboratory testing.

The private sector should produce and distribute the Certified Seed. In the early stages, there will be a need for the Government to provide incentives and credit to the private sector for the necessary capital investment and to provide temporary subsidies until the industry becomes self-supporting. Since initial investment in seed production is large, the Government will need to provide financial support to pioneer seed projects. The objective is to stimulate production and marketing of Certified Seed through the private sector in line with actual seed needs.

Integration of the public and private sectors will benefit the development of the Jordanian seed sector in the following ways.

- The existence of several public and private seed-production enterprises will reduce production risks.
- Since the private sector tends to concentrate on seeds that have a higher profit, the public sector can handle other crops, ensuring availability of seed of all crops.
- Greater ability to produce varieties that will be acceptable to farmers in terms of quality and yield.
- Private-sector competition will help to ensure more efficient performance and better seed quality.
- The private sector is able to provide flexibility to meet changing demands and to provide various services to the farmer.
- The future continuity is ensured by the private sector.

A new department will probably be needed within the Ministry of Agriculture (MOA) to deal with privatization and to ensure that quality seed reaches the farmers.

The Jordanian Seed Programme

Breeding and variety development

Seed production in Jordan has received considerable attention since 1982. The MOA has promoted a number of seed-production strategies such as

encouragement of plant-breeding and variety-maintenance programmes, introduction of new varieties of various crops, and seed multiplication of strategic crops (wheat and barley). Establishing a seed technology unit and a genetic resources unit in the National Center for Agricultural Research and Technology Transfer (NCARTT) was part of these strategies.

MOA/NCARTT is responsible for breeding and maintaining new varieties, and for the production of Basic Seed. MOA/NCARTT provides the Basic Seed to the JCO for multiplication to Certified Seed. The JCO has developed a multiplication organization on the basis of contracts, and collects, cleans, treats, stores and markets the seed.

Seed production, marketing and quality control

Seed production of cereals began in the 1970s. A comprehensive Seed Production Project was started in 1982 with financial support from the German Government involving MOA/NCARTT and the JCO. The project produces seed of wheat, barley, lentil and chickpea varieties. The objectives of the project were to multiply Basic and Certified Seed of field crops and to maintain the genetic and mechanical purity in order to meet the local demand at acceptable prices.

Seed is produced under contract with individual farmers and the JCO. The JCO provides seed, fertilizer, herbicides and machinery; the grower provides the land and manages the crop to produce high-quality seed. At present, the project meets about 50% of the local demand.

Although many farmers still save their own seed, seed supply of improved varieties by the Government, traders and the JCO has been introduced.

Jordan is still in the preliminary stages of developing a seed quality-control system.

Summary

There is currently no private investment in the Jordanian seed industry of self-pollinated crops. The Jordan Cooperative Organization multiplies Basic Seed through contracts with private farmers. It is proposed that the private sector could handle profitable crops and be primarily involved in the multiplication and distribution of Certified Seed.

Lebanon*

Introduction

In general, Lebanese farmers dislike depending on bureaucratic public institutions, so they try to get their propagating material of plants and animals independently of the Government. However, in recent years, farmers have turned increasingly to the public sector for support and the Government has been subsidizing winter cereals, sugar beet and tobacco.

An economic survey of seed business in Lebanon indicated that of the US\$ 28 million total only US\$ 0.67 million is in the public sector.

Legislation

For many years Lebanon has had a free market economy and a large private business sector, there are no restrictions on foreign currencies, no hard rules on local or foreign investment, no taxes on land ownership and no direct taxes on savings. The banking system is highly developed and bank deposits are legally considered private. The political environment during the past few years has overshadowed the society with the advantages but few of the drawbacks of privatization.

A seed law was written in the early 1970s, but was never enforced because of the 16-year war (1975–1991).

Most of the seed in Lebanon is imported and general trade laws apply to seed. Locally-produced seed is not governed by any special law. However, the appropriate techniques are followed in seed production and quality control. There are general rules and regulations governing issues of public interest like plant diseases, pesticide residues and other chemicals. These rules apply more specifically to import and export provisions. Variety protection and other technical aspects are due to be implemented, since Lebanon has signed the biodiversity agreement of Rio.

* Based on contributions by Michel Abi Antoun, including WANA Seed Network *Focus on Seed Programs: Lebanon* (1997).

van Gastel, A.J.G., J. Wadsack and G.R. Manners (Ed.). 1997. Privatization of the Seed Industry in the West Asia and North Africa Region. GTZ, Eschborn, Germany.

Private Sector Involvement

While varieties of wheat, barley, lentil and chickpea are developed by the Lebanese Agricultural Research Institute (ARI), the private sector imports or produces almost all the seeds and transplants of vegetables, fruit trees, ornamental and other crops.

Constraints to Privatization

- **Economic:** returns on investment are not high in agriculture – perhaps lowest of all for seed; land is valuable and owners require large cash returns from it; labour is expensive; input prices are high.
- **Educational:** there is a lack of interest in the seed sector, since few have much knowledge about it; there is also insufficient expertise, as available specialists try to find jobs outside Lebanon.
- **Social:** the Lebanese look for immediate returns to investment; annual crops are replacing long-lived perennials; group or team efforts are needed to produce quality seed, but grouping is alien to Lebanese Society.
- **Administrative:** there is no enforced seed law, seed policy or long-term planning; there is no land classification; inheritance laws lead to land fragmentation.

Recommendations for Overcoming Constraints

- Implementation of a seed law.
- Establishment of agricultural co-operatives.
- Provision of agricultural credit services.
- Development of the regional seed market.

The Lebanese Seed Programme

Variety evaluation

The public sector (ARI) evaluates germplasm of the major crops, in collaboration with organizations like ICARDA. It also evaluates some imported private-sector material; however, testing for adaptation, performance and quality is often performed by the private sector itself.

Variety maintenance and Breeder Seed production

ARI is responsible for variety maintenance, and provides healthy, pure Breeder Seed for multiplication by farmers. Other seed categories produced by ARI are: Pure lines, Foundation Seed, and Registered Seed.

Variety testing and release

ARI is responsible for both variety testing and release, including yield trials and on-farm verification trials. ARI also conducts demonstration plots of rain-fed crops at about 11 locations with different climatic conditions in collaboration with ICARDA.

The Variety Release Committee is constituted from various public bodies.

Seed production

The cereal-seed requirements are covered by the public sector with two varieties each of bread and durum wheats, and three varieties of barley. Some 107.14 tonnes of Foundation Seed and 722.94 tonnes of Registered Seed of cereals were produced in 1994/95. Cereal seed production costs about US\$ 300 per tonne, a figure comparable with world market prices.

The bulk of seed production in Lebanon, however, is in the informal sector, mainly own-saved seed and farmer-to-farmer diffusion.

There are good prospects for the formal private sector to produce potato, tomato, cucumber and bean seed.

Summary

The public sector in Lebanon produces seed for the major crops of cereals, lentil and chickpea. The private sector imports and produces the seed and other propagating material of vegetables, fruit trees, ornamental and other crops. However, the bulk of Lebanese seed production is in the informal sector (farm-saved seed and farmer-to-farmer diffusion). There are no restrictions on private investment in the seed business in Lebanon, but there is no enforced seed law or policy.

Syria*

Introduction

The Syrian Government places great emphasis on ensuring food self-sufficiency. Syria depends on its production of wheat, barley, potato, sugar beet and cotton. Agricultural production forms 20–25% of the national economy, and those crops are considered strategically important.

Seed production in Syria is almost completely restricted to the public sector. The General Organization for Seed Multiplication (GOSM) of the Ministry of Agriculture and Agrarian Reform is considered the only responsible organization for providing the seed of crops such as wheat, barley, cotton, chickpea, lentil, faba (broad) bean, maize, potato, sugar beet, sunflower and soya bean. In addition, GOSM multiplies small quantities of seed of some other crops such as cucumber, banana and potato.

GOSM is responsible for all the activities of seed production, preparation and quality control.

No other sector – private, semi-private or co-operative – regularly produces seed of any crop. In fact, production of seed of the major crops by the private sector is illegal, since any failure in attaining the seed of these crops would represent a great economic danger.

The governmental directions concerning private seed industry are extremely limited and there are no projects supervised by the private sector. The private sector may enter the field of seed production in co-operation with GOSM (as semi-private sector), since GOSM is the only organization responsible for seed production. Approval and success of such projects is dependant on high economic benefit for the farmer and the Government.

Sources of Breeder Seed and Variety Maintenance

Small quantities of vegetable seed are obtained from seed-production trials. GOSM obtains Breeder Seed of the main crops from various national, regional and international scientific and agricultural research organizations.

* Based on contribution by Jammal Eddin Radwan.

van Gastel, A.J.G., J. Wadsack and G.R. Manners (Ed.). 1997. Privatization of the Seed Industry in the West Asia and North Africa Region. GTZ, Eschborn, Germany.

Marketing

Seed produced by GOSM is distributed through three main channels:

1. direct sale from GOSM and its branches in all areas of agricultural production, in all regions;
2. branches of co-operative agricultural banks (of which there are 102);
3. co-operative sector and co-operative societies.

In addition, GOSM exports seed of some crops (wheat, potato, barley, chickpea and faba bean) to neighbouring countries (Jordan, Lebanon, Saudi Arabia, Algeria, Libya, Turkey and the United Arab Emirates).

Vegetable seeds are imported by private co-operatives, semi-private companies and branches of the foreign seed companies themselves, and distributed through distribution centres all over the country. Importation of all kinds of vegetable seed is only with the permission and under the supervision of the Ministry of Agriculture and Agrarian Reform.

Summary

The whole seed industry in Syria is firmly in the hands of the Government, which has improved productivity to the level where wheat seed and grain are exported to neighbouring countries. Vegetable seeds are imported by co-operatives, semi-private companies, or directly by the foreign companies themselves; however, such importation is under the supervision of the Ministry of Agriculture and Agrarian Reform.

Yemen*

Introduction

A Seed Multiplication Program (SMP) was established in North Yemen (before unification) in 1979 with support from FAO. Since then it has been financed by the EU. The objectives of the SMP were to (1) increase the production of major (cereal) crops by using improved seeds, (2) improve farmers' income and hence gross national income, and (3) improve the country's trade balance by reducing grain imports. In the South, the National Seed Multiplication Center was established in 1975 with FAO and United Nation Development Programme (UNDP) assistance. Since unification, the National Seed Center (NSC), under the General Directorate of Plant Protection in the Ministry of Agriculture and Water Resources, has been responsible for overall co-ordination of seed activities in Yemen.

Assuming the published annual agricultural statistics are accurate, cereals cover 70–75% of the total cropped area. The food gap is covered by imports of wheat and flour; for other crops, the deficit is expressed in seasonal scarcity and high prices (mainly for vegetables and fruit).

An agricultural-sector project, with a seed component, funded by The World Bank is due to be implemented.

Legislation

There is no seed law in Yemen, let alone legislation for privatization of the industry.

Variety Testing and Release

The Agricultural Research and Extension Authority (AREA) is the main governmental body responsible for variety development and testing. Regional agricultural research centres were established in different parts of the country to cover various agro-ecological zones. Newly developed varieties are submitted to the Varietal Release Committee for evaluation, release and approval. Some 25 varieties of 6 species are recommended.

* Based on a contribution by Hassan Mohammed Amer, supplemented with information from WANA Seed Network *Focus on Seed Programs: Yemen* by Kamal Mohammed Hussein Al-Tashi (1996).

van Gastel, A.J.G., J. Wadsack and G.R. Manners (Ed.). 1997. Privatization of the Seed Industry in the West Asia and North Africa Region. GTZ, Eschborn, Germany.

Variety Maintenance

Maintenance of varieties is the task of AREA, which makes an effort to maintain the varieties under multiplication.

Seed Production

Breeder and some Foundation Seed are produced by AREA; and a very small part of the Foundation Seed is produced by state farms (Shira'a Seed Farm). The NSC produces all Certified Seed on contract with seed growers as well as with the state farms.

Seed is produced for wheat, maize, sorghum, barley, millet, potato and cotton, in addition to onion which is produced in Hadramout. The quantities of cereal seed have decreased since 1990.

Because farms are often small, the SMP contracts with a large number of growers, while in other parts of the country state farms and some co-operatives are used for seed production.

Processing and Storage

Seed processing is carried out at five seed centres, located in Dhamar, Yarim, Sana'a, Hadramout and Taiz. The first four centres process mainly wheat, whereas the latter processes maize, sorghum and millet.

Seed Marketing and Distribution

Seed is distributed by the NSC through its seed centres as well as through agricultural offices and extension agencies. Moreover, distribution stores are planned in Marib and other locations. Farmer-saved seed and farmer-to-farmer diffusion continue to play an important role.

Quality Control

There is no official quality control or seed certification body for imported or locally produced seed; however, the NSC exercises some internal quality control.

Trade

The quantity of vegetable seed imported into northern Yemen rose from 59.7 tonnes in 1991 to 173.1 tonnes in 1993, only to fall in 1994 to 32.4 tonnes. Seed imports into southern Yemen are via the Agricultural Service Authority, but no data are available.

Constraints to Seed Sector Development

- The lack of regulations and seed law for varietal selection, assessment and proper release to growers, taking into consideration farmers' needs, experience, and crop husbandry capabilities.
- Contract growers are not able to produce good-quality seed, because farms are small, farmers use traditional crop-production methods, and there is limited irrigation water, agricultural inputs and mechanization. All these result in high production costs and low-quality seed.
- There is no organization or co-ordination of seed-production programmes, as a result of the absence of clear seed-production policy (production, marketing and pricing policy).
- There is no financial or managerial autonomy (except for potato) and, consequently, no sound programme for effective breeding and selection through to proper marketing of seed.
- There is a lack of personnel qualified in seed production technology.
- The price paid to seed growers and that of Certified Seed are not based on the actual costs of production.

Recommendations for Overcoming Constraints

- The price of seed should be increased gradually towards a realistic level, as farmers will not accept any sudden change in seed price.
- Well-organized credit facilities may enable farmers to pay the price of seed.

Summary

Although improved seed is considered important for crop production in Yemen, the seed programmes, which are in the hands of the public sector, are not efficient. Individual farmers (seed growers) produce Certified Seed under contract for the public sector. There is no formal private-sector involvement in the Yemeni seed industry, and farmer-saved seed and farmer-to-farmer diffusion play an important role.

Appendix

List of Contributors

Mahmoud H. ALI
Seed Production Specialist
National Seed Administration (NSA)
P.O. Box 285, Khartoum
SUDAN

Dr Majid AL-ZUBI
Head, Seed Technology Unit
National Center for Agricultural
Research and Technology
Transfer (NCARTT)
P.O. Box 639
Baq'a 19381, Amman
JORDAN

Dr Hassan Mohammed AMER
Director General
National Seed Center (NSC)
P.O. Box 87282, Dhamar
YEMEN

Dr Michel Abi ANTOUN
Senior Seed Specialist
Agricultural Research Institute
(ARI)
Box 400100, Tel Amara, Rayak
LEBANON

Dr T. Tugrul BALIKCIOGLU
Deputy General Director
Gen. Directorate of Agricultural
Research
Ministry of Agriculture and Rural
Affairs
PK 78, Yenimahalle
06171 Ankara
TURKEY

Dr Mokhtar BOUANANI
Director General
SONACOS
30 Rue Moulay Ali Cherif
P.O. Box 67
Rabat
MOROCCO

Mr Aissa BOUZIRI
Sous-Directeur
D.P.V. Ministere de l'Agriculture
30 Rue Alain Savary
1002 Tunis-Belvedere
TUNISIA

Mr M. BURGAUD
Groupeement National
Interprofessionel de Semences
(GNIS)
44 rue de Louvre
75001 Paris
FRANCE

Dr O. DE PONTI
Research Director
Nunhems Zaden BV
P.O. Box 4005
6080 AA Haelen
THE NETHERLANDS

Miss Aida FADHILA
Coopérative Centrale de
Semences (CCSPS)
45 Avenue Farhat Hached
Tunis
TUNISIA

Chihi FETHI
D.P.S.C.
Office des Céréales (OC)
30 Rue Alain Savary
1002 Tunis Belvédère
TUNISIA

Mr Kenneth FREDERIKSEN
Deutsche Saatveredelung
Lippstadt-Bremen GmbH
Weissenburger Str. 5
59557 Lippstadt
GERMANY

Mr Javad Raza GARDEZI
Al-Qaim Seed & Agric. Services
7-Officers Colony
Multan
PAKISTAN

Dr Mouldi El GHANMI
Directeur Général
Coopérative Centrale des
Semences (COSEM)
72 Avenue de Carthage
Tunis
TUNISIA

Mr Barry GREENGRASS
Vice-Secretary General
UPOV
34 Chemin des Colombettes
P.O. Box 18
1211 Geneva 20
SWITZERLAND

Mr GURMU Dabi
General Manager
National Seed Industry Agency
Government of Ethiopia
P.O. Box 9197
Addis Ababa
ETHIOPIA

Dr A. HADDAD
Office des Céréales (OC)
30 Rue Alain Savary
1002 Tunis Belvédère
TUNISIA

Mr Syed IRFAN Ahmad
Director General
Federal Seed Certification
Department (FSCD)
Ministry of Food & Agriculture
G-9/4 Mauve Area
Islamabad
PAKISTAN

Mr Ahmed KAMEL
Managing Director
Pioneer Overseas Corporation
9B Army Forces Buildings
In front of Workers' University
Nasr City, Cairo
EGYPT

Mr Alev KUTAY
President
Turkish Seed Industry Association
Halit Ziya Bul. 74/7
35210 Izmir
TURKEY

Mr Bernard LE BUANEC
Secretary-General
Federation International du
Commerce des Semences
(FIS)
Ch. du Reposoir 5-7
11260 Nyon
SWITZERLAND

Mr G.R. MANNERS
Science Editor/Writer
ICARDA
P.O. Box 5466
Aleppo
SYRIA

Dr M. MEKNI
ICARDA Regional Co-ordinator
for North Africa
ICARDA
B.P. 84
Tunis
TUNISIA

Dr Cay-D. MENTZ
GTZ/Jordan Vegetable Seed
Project
c/o GTZ
P.O. Box 926238
Amman 11110
JORDAN

Dr Kurt QUENSELL
Marktstrasse 27
37574 Einbeck
GERMANY

Dr Jammal Eddin RADWAN
Director General
General Organization for Seed
Multiplication (GOSM)
P.O. Box 5857 Aleppo
SYRIA

Mr J. RENATUS
Saka-Ragis Pflanzenzucht GbR/
Solana Kg
Postfach 130831
20108 Hamburg
GERMANY

Mr H. SABIK
Director Technique
SONACOS
30 Rue Moulay Ali Cherif
P.O. Box 67
Rabat
MOROCCO

Mr Ivan SIKORA
Seed Production Officer
FAO
Via delle Terme di Caracalla
00100 Rome
ITALY

Mr Amor SLIM
Technical Director
GRAFOUPAST
9 Rue Hassan Ibn Nooman
Tunis 1002
TUNISIA

Kheder SYNDA
Direction des Etudes
Agence de Promotion des
Investissements Agricoles
(APIA)
62 Rue Alain Savary
1002 Tunis Belvédère
TUNISIA

Dr Anthony J.G. VAN GASTEL
Head, Seed Unit
ICARDA
P.O. Box 5466, Aleppo
SYRIA

Present address: IITA/GTZ Seed
Promotion and Marketing Project,
P.O. Box 9698, Kotoko
International Airport, Accra,
GHANA.

Mr Joachim WADSACK
GTZ, Abt OE 423-1 Plant
Production
Dag-Hammarskjold-Weg 1-5
Postfach 5180
65726 Eschborn
GERMANY

Mr Salah Abd El WANIS
Under-Secretary for Seed
Director, Central Administration
for Seed Certification and Seed
Testing (CASC)
P.O. Box 12619
8 Gamaa Street
Giza, Cairo
EGYPT

Mr Chris WEISBECKER
GTZ Seed Project
4D Gezira Street
Zamalek, Cairo
EGYPT

Mr Peter WITTHAUT
GTZ Seed Project
4D Gezira Street
Zamalek, Cairo
EGYPT

Mr WOREDE Wolde Mariam
Ethiopian Pioneer Hi-Bred Seeds,
Inc.
P.O. Box 1134, Addis Ababa
ETHIOPIA

Mr E. XENOPHONTOS
Head Seed Production Centre
Department of Agriculture
Nicosia
CYPRUS

Omar A.F. YOUSIF
Pilot Project for Improved Seed
Production, AAAID
P.O. Box 2021
Khartoum
SUDAN

Mr ZEWDIE Bishaw
Seed Production Specialist
ICARDA
P.O. Box 5466
Aleppo
SYRIA

