
Focus on Seed Programs

The Seed Industry in Turkey

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Introduction

Turkey lies between latitudes 36-42°N and longitudes 26-45 °E linking Asia and Europe. The actual surface area including lakes and rivers is 81.5 million ha (79 million land) stretching 1,660 km long and 550 km wide. The country is characterized by a great diversity of agroecological zones. Geographically Turkey is situated in temperate region, but the diverse nature of the landscape, and the existence in particular of the mountains that run parallel to the coasts, results in significant differences in climatic conditions from one region to the other. While the coastal areas enjoy milder climates, the inland Anatolian plateau experiences extremes of hot summers and cold winters with limited rainfall. The average annual rainfall is about 680 mm. Consequently, a wide range of tropical and temperate crops are grown under rainfed and irrigated conditions. Based on agroecology and available resources both intensive and extensive crop production is practiced through out the country.

About 27.6 million ha of land is suitable for crop production where 18.7 million ha is

used for field crops, 1.6 million ha for fruit trees, 0.9 million for olives, 0.6 million ha for vegetables. Each year about 5.2 million ha is let fallow. Cereals occupy the largest share in crop production. Cotton, sugar beet, fruits and vegetables also occupy a considerable proportion of crop production. According to recent statistics cereals, industrial crops, oilseed crops, tuber crops and vegetables, respectively occupy 73, 7.8, 5.2, 1.3 and 12.4% respectively. From 13.5 million ha which could be irrigated only 4 million ha is currently under irrigation. It is expected that irrigated land will increase substantially when ongoing projects will be completed.

In the last three decades, the contribution of agriculture to the GDP decreased from 35% in 1970 to 13.5% in 2000. Despite this decrease agriculture still plays an important role in the national economy. About 14 % of the national income comes from agriculture of which almost two third is from crops. Crop production represents 55% of the agricultural sector followed by livestock (34%) whereas forestry and aquaculture occupies the rest (11%).

Turkey has a population of 65 million in 2000. About 35% of population lives in

rural areas and 45% of economically active population is employed in agriculture.

In 2000, export of agricultural products (crop and livestock) was 2.6 billion USD. Turkey exports processed cereal products, sugar, confectionary, fruits, vegetable oils and tobacco to European Union, Russia and Central Asian Countries.

The main objective of the Turkish national seed industry is to be self-sufficient in seed production and supply of field, industrial, and vegetable crops and become a reliable seed exporter to Europe and the Middle East.

National Seed Policy and Regulation

In early 1980s, Turkey made major structural reforms and adopted a free market economic policy. These reforms affected the agricultural sector in general and the seed sector in particular. Until the mid 1980s the national seed industry was dominated by the public sector and seed trade was heavily regulated. Government deregulation has dramatically changed both the composition and structure of the seed industry. The private sector is encouraged to participate and invest in plant breeding, infrastructure development and technology transfer.

National Seed Policy

The government implemented several policy measures in the seed sector. It abolished public sector monopoly on seed and encouraged entry of the private sector; established the infrastructure for seed production and marketing; liberalized seed import and export; provide low interest credit for investment and encourage foreign companies to enter seed market. This liberalization paved the way for investments by foreign and domestic

private seed companies. At present there are approximately 93 private seed companies in Turkey, of which 46 are registered with the Turkish Seed Industry Association.

National seed policy and regulations are suitable for private enterprise development. Today, the private sector exclusively involved in international seed trade, produces almost all seed of vegetable crops, hybrids and some field and forage crops. Nevertheless, state farms and cooperatives are still major seed suppliers for field crops such as winter cereals and cotton.

A 'Seed Consultative Committee' convened by the Minister of Agriculture with members from General Directorates of the Ministry of Agriculture, State Planning Organization, Farmers' Representative, Union of Chambers of Agriculture and Turkish Seed Industry Association (five members) is responsible for overall policy advice and guidance.

The Ministry of Agriculture and Rural Affairs (MARA) encourages seed production and its wider use by farmers. The Seed Department of General Directorate of Agricultural Production and Development is responsible for implementing national seed policy on behalf of the Ministry. The Department is responsible for:

- Developing policies and incentives for the seed sector
- Implementing legal arrangements to support the seed sector
- Preparing national seed production and distribution plans
- Issuing required permits for seed import and export
- Ensuring cooperation between public and private sectors
- Participating in the Variety Registration Committee

Seed Laws and Regulations

The national seed industry operates within the framework of Seed Law No. 308 (21 August 1963) and Seed Law No. 3976 (21 February 1994). The Crop Protection and Plant Quarantine Law No. 6968 of 1964 covers regulation related to seed-borne diseases. The government sanctioned several regulations to support and strengthen the performance of the seed sector.

Capital Transfer (1982)

The establishment of private seed enterprises and transfer of capital are encouraged through a decree prepared by the State Planning Organization.

Liberalization of Seed Prices (1983)

The seed price both in public and private sector has been liberalized based on free competition and market forces

Seed Imports (1984)

Guidelines for import were established and the private sector allowed importing seed that could not be produced locally.

Seed Sector Support (1985)

Credit: Private companies were granted credits with low interest rate from State banks.

Subsidy: Provision of subsidy for certified seed depending on the crop species

Seed Exports (1986)

Integrate seed certification to OECD schemes and EU standards to promote seed export.

Exemption of Tax (1988)

The government introduced exemption of tax to lower the price of imported seed.

Plant Variety Protection (1994)

Turkey has amended its seed law in 1994

to include plant breeder's rights, but not yet officially operative. A draft PVP law was prepared according to UPOV 1991 Convention and EU Directives (2100/94 EC and 1768/95/EC) related to breeder's rights and submitted to the Parliament for deliberation and legislation.

Agricultural Research and Crop Improvement

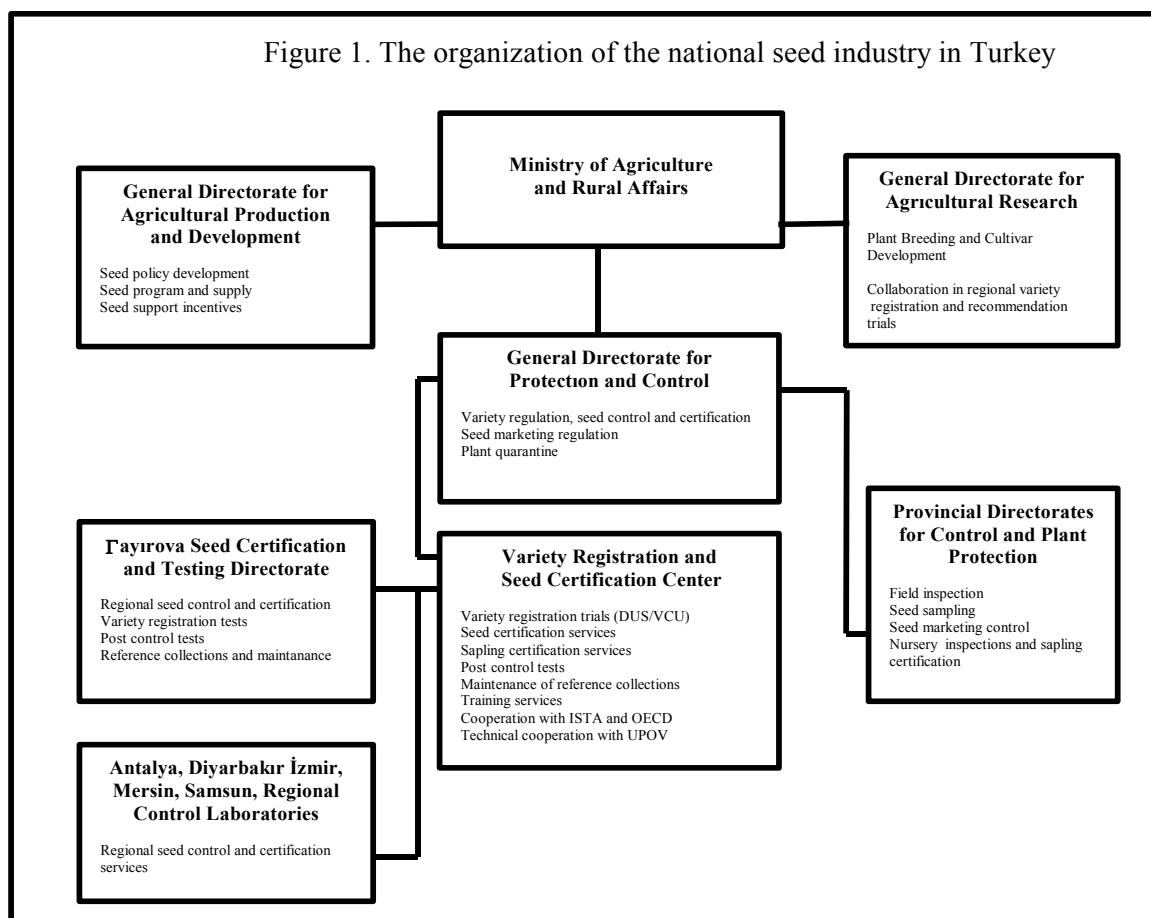
The Ministry of Agriculture and Agrarian Reform has two general directorates responsible for agricultural research and development. The General Directorate for Agricultural Research is responsible for crop research and generation of improved technology including variety development and testing and agronomic research. The General Directorate for Agricultural Production and Development is responsible for seed policy and technology transfer.

Variety Development

Plant breeding and variety development began in 1926 with the establishment of six crop improvement stations particularly for wheat, barley and cotton and eventually expanded to include other crops. The agricultural research institutes under MARA, the universities, and the private sector are responsible for variety development. There are 14 public regional research institutes located in different parts of the country representing different agroecological zones (Table 1).

For most crops agricultural research remains the domain of public sector where substantial number of varieties were developed particularly in wheat, barley and cotton. Since mid-1980s some private seed companies invested in agricultural research. Although, the privatization policy encourages private sector plant breeding, private research efforts are generally concentrated on screening,

adaptation and yield trials of varieties developed elsewhere. In addition to major food crops, variety development activities are also carried out on alfalfa, sainfoin, vetch, sesame, onion and melon.



Institution	Location	Crops
Agricultural Protection Research Institute	Ankara	Cereals, fruits
Agean Agricultural Research Institute	Izmir	Cereals, potato, tobacco
Atatürk Horticultural Crops Central Research Institute	Istanbul	Fruits, vegetables, ornamentals
Bahri Dagdas Int. Winter Cereals Research Institute	Konya	Cereals
Black Sea Agricultural Research Institute	Samsun	Maize
Çukurova Agricultural Research Institute	Adana	Cereals, soya bean
Eastern Anatolian Agricultural Research Institute	Erzurum	Forages
Field Crops Central Research Institute	Ankara	Cereals, legumes, forages

Maize Research Institute	Sakarya	Maize
Mediterranean Agricultural Research Institute	Antalya	Maize, oilseed, cotton
Southeastern Anatolian Agricultural Research Institute	Diyarbakir	Cereals, legumes
Thrace Agricultural Research Institute	Edirne	Rice, sunflower
Transition Zone Agricultural Research Institute	Eskisehir	Cereals, legumes

Turkey has very strong collaboration on variety development with CIMMYT (spring wheat and maize); CIP (potato); ICARDA (spring wheat, chickpea and lentil); IRRI (rice) and CIAT (dry beans). Within the framework of a cooperation agreement signed with CIMMYT in 1986, winter wheat germplasm developed in Turkey is sent as international nurseries to other countries with similar environments.

The agricultural research institutes or private companies submit application to MARA for newly developed varieties to enter release and registration trials. Based on the results of the trials and the decision of the Registration Committee, the approved varieties are registered and published in the Official Gazette before seed production is initiated.

Variety Evaluation and Release

According to Seed Law No. 308 public research institutes, universities, private companies or legal establishments

registered for plant breeding can submit varieties developed or obtained as a result of a scientific breeding or imported for release and registration. The application is submitted to the General Directorate of Protection and Control with descriptive characters of the crop prepared based on UPOV guidelines (three copies) and yield and agronomic data compared with standard check for a minimum of two years (three copies).

The Variety Registration and Seed Certification Center (VRSCC) is officially responsible both for performance (VCU) trials and description (DUS) tests (Table 2). These trials are conducted either separately or jointly depending on the purpose of variety registration i.e. permanent, temporary (provisional) or commercial (standard) seed. Agronomic crops are subject to permanent and temporary registration trials whereas commercial registration may apply for vegetables only.

Table 2. Number of years and test locations for variety release and registration

Crop	DUS		VCU	
	Years	Locations	Years	Locations
Field crops	2	1	2	3
Vegetable	2	1	2	3
Vegetable (hybrids)	2	1	2	2

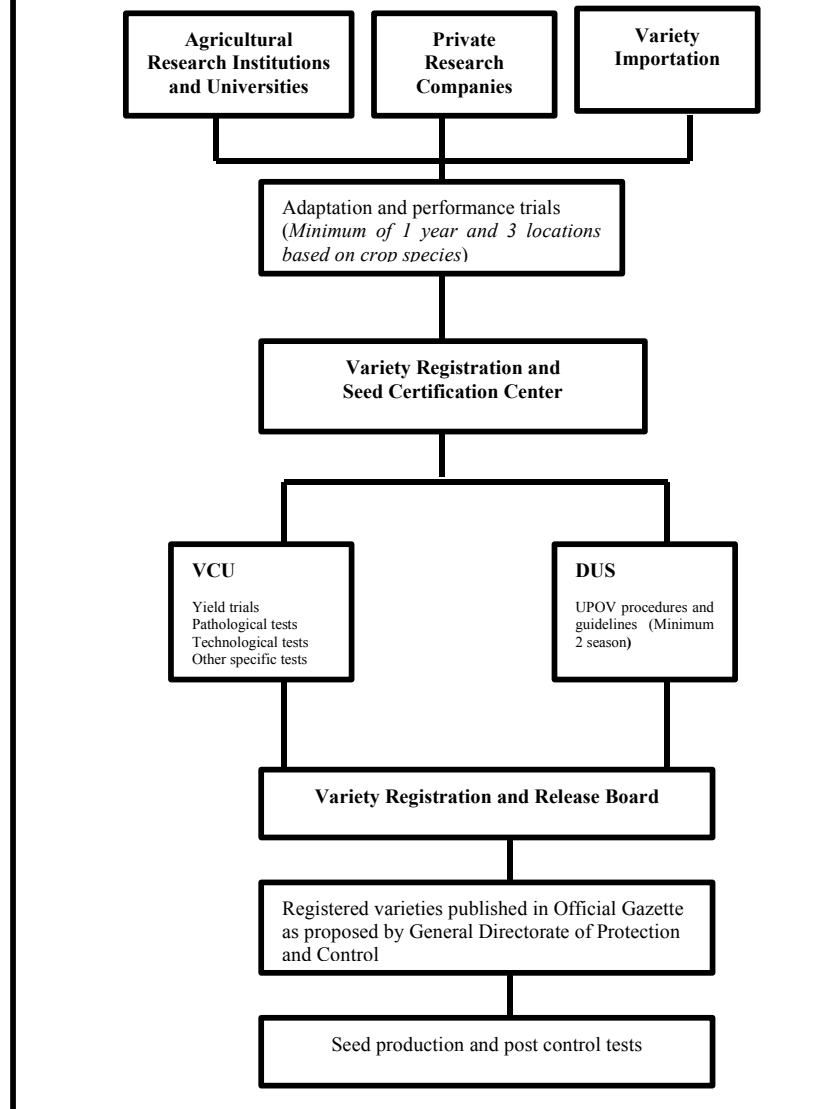
The Variety Registration Department of VRSCC is responsible to execute the trials and prepare reports for the Variety Release and Registration Board (VRRB) where the results are examined and discussed in detail. The variety is released and registered by a minimum of two-thirds majority vote where the lists for each species are published in the official gazette and relevant crop variety catalogues and enter commercial seed production and certification. Based on preliminary yield and registration trials, a variety can be given a temporary permit up to a maximum of four years, if it is considered appropriate by the Board, before the completion of the trials.

The VRRB consists of 12 members representing the Directorate of Agricultural Research (2); Directorate General of Protection and Control (2); Directorate General of Agricultural Production and

Development (1); Variety Registration and Seed Certification Center (2); universities (2); Chamber of Farmers; and (1) private seed companies (2).

The number of varieties developed and registered by the national programs and which are under commercial production is given in Table 3.

Figure 2. Variety registration and seed certification



Variety Maintenance and Protection

Variety maintenance and breeder seed production is the responsibility of the breeder or research institute that developed the variety. The breeder seed produced constitutes the source material for the basic seed production and later generations. The maintenance of publicly released varieties

and production of pre-basic and basic seeds are carried out mostly by public research organizations.

If the owner of a new variety demands protection the variety could enter the protection scheme by the General Directorate of Protection and Control.

Table 3. Number of varieties under commercial seed production

Crop	Number of varieties	Crop	Number of varieties
Bread wheat	85	Cotton	42
Durum wheat	33	Poppy	13
Barley	36	Tomato (hybrid)	356
Rice	21	Eggplant (hybrid)	39
Maize (hybrid)	90	Cucumber	233
Lentil	18	Pepper	78
Chickpea	18	Okra	3
Dry bean	13	Green bean	31
Sunflower (hybrid)	57	Potato	51

Seed Production

Seed production is carried out both by public and private sectors. The public sector produces seed of wheat, barley, rice and cotton whereas the private sector produces almost seed of all hybrids (maize, sunflower, vegetable), soybean, potato, vegetable and some forage crops (Table 4). The public sector will gradually withdraw from competition for those crops where the private sector can produce and market seed efficiently. At present formal sector production is sufficient to satisfy the demand for hybrids, cotton, soybean and vegetable crops. Meanwhile, seed production and supply seems inadequate particularly for cereals and industrial crops.

Agricultural research institutes, universities and nucleus farms produce breeder (elite), pre-basic (original), and basic seed. Public and private seed companies produce certified (control) seed. Public seed production is carried out on the state farms whereas the private sector produces seed on its own land or on contract with farmers. Some private companies import parental lines or basic seed and produce certified seed locally.

Annual seed production plan is prepared by a working group meeting arranged by the General Directorate for Agricultural

Production and Development (TÜGEM) and attended by representatives from the public and private sector. Both public and private companies declare their production plans with respect to crops and varieties where the amount of certified seed produced by each enterprise is determined without any government interference.

The Ministry of Agriculture and Rural Affairs is responsible to collect and provide relevant information to formulate seed supply and facilitate information exchange. The TÜGEM prepares the list of crop varieties and seed producers and publish a 'seed program' booklet for distribution to all provincial organizations of the Ministry of Agriculture, farmers' unions, chambers of agriculture and other institutions involved in the seed sector to inform the farmers about the availability of varieties and encourage certified seed use. The TÜGEM, however, remains an overall coordinator for seed production and a supervisory and monitoring body to ensure that both the public and private sector implement the plans.

Farmer's cooperatives and farmer's credit cooperatives, private seed companies,

provincial directorates of MARA make contracts with state farms to produce certified seed based on seed production plan. These organizations purchase certified seed from the state farms and market to their clienteles. Sometimes the state farms can directly carry out seed distribution to farmers or some farms.

From the total seed required, certified seed covers 100% (sugar beet), 75% (sunflower), 35% (soybean), 30% (maize), 25% (wheat), 10% (barley), 20% (potato) and 25% (non-hybrid vegetables). The share of public and private sector is as shown below in Table 5.

Table 4. Seed production (tonnes) in Turkey from 1999-2000

Crops	1999	2000
Wheat	140,952	116,083
Barley	24,314	19,203
Rice	2,505	2,069
Maize (hybrid)	11,541	8,061
Sunflower (hybrid)	6,071	3,300
Soybean	520	782
Vegetables	1,134	855
Potato	38,697	37,141
Forages	2,961	2,964
Cotton	16,725	15,600

Table 5. Share of public and private seed sector in Turkey (1999/2000)

Crop	Certified seed Coverage (%)	Public sector (%)	Private sector (%)
Wheat	24	84	16
Barley	10	87	13
Soybean	100	10	90
Maize (hybrid)	100	0.5	99.5
Sunflower (hybrid)	100	0.2	99.8
Potato	20	0.1	99.9
Vegetable	20	0.1	99.9
Fodder crops	67	47	53
Cotton	33	84	16
Sugar beet	100	0	100

Seed Processing and Storage

Turkey has a relatively large seed processing capacity equipped with modern conditioning facilities. Most seed companies have processing plants in major agricultural regions for conditioning most of the field crop seed and small quantity of vegetable seed (Table 6). Few companies process seed on payment of fees

in public or private facilities.

The majority of the processing plants are equipped with air-conditioned storage units. The storage facilities are mostly found in major seed production areas in Aegean, Cukurova and Marmara regions (Table 7). Seed processing and storage facilities for wheat and barley are also available in the Central Anatolian region.

Table 6. Seed processing capacity (tonnes per year)

Crop	Processing capacity available		
	Public	Private	Total
Wheat and barley	400,000	25,000	425,000
Maize	50	31,500	31,550
Sunflower	0	11,700	11,700
Soybean	50	9,500	9550
Cotton	124,000	0	124,000
Sugar beet	0	3000	3000
Potato	2,500	20,500	23,000
Vegetables	20	8000	8020
Fodder crops	0	2000	2000
Total	526,620	111,200	637,820

Table 7. Seed storage capacity (tonnes)

Crop	Storage capacity available		
	Public	Private	Total
Cereals	155,000	41,500	196,500
Industrial crops	286,550	61,000	347,550
Vegetables	50	8,000	8,050
Fodder crops	0	2,300	2,300
Total	441,600	112,800	554,400

Seed Marketing and Distribution

Seed marketing and distribution is prepared based on local production, imports and available stock. Seed is distributed to farmers through Provincial Agricultural Directorates of the Ministry of Agriculture, agricultural credit cooperatives or agents. Seed produced by the public sector is marketed either directly by the producers or by agricultural credit

cooperatives. The agricultural credit cooperatives operate as NGOs and run by the Steering committee elected from the farmers and also assisted by the Ministry. The private sector markets its seed directly to farmers or through agents. There are about 3500 seed sale points throughout the country.

Seed Pricing

Since 1983 the government has liberalized seed prices to encourage competition with the private sector. At present seed producers are free to set their prices and there is no direct competition between public and private sectors. Prices are set on competitive basis taking into account costs of production, handling and profit margins. However, seed for wheat, barley and cotton are exceptions where the prices are low due to government subsidy favoring the public sector. In general, there is a two to three times difference between grain and seed prices. The indicate grain prices per kg are \$0.15 for durum wheat, \$0.13 for bread wheat; \$0.10 for barley and \$0.11 for maize.

Credits

According to legislation introduced in 1985, both public and private sectors producing and marketing seed have access to credit for investment and operational costs at favorable interest rates. The Agricultural Bank of Turkey provides credit to farmers for purchase of inputs such as seed, fertilizer, pesticides, machinery and implements. Farmers applying for credit should provide the necessary documents (certified by Provincial Agriculture) including land for collateral to sign an agreement with the bank.

International Seed Trade

Seed demand is assessed through market research conducted by chambers of agriculture, farmer unions, agricultural credit cooperatives and by the private sector. In case domestic production does not meet farmers' seed requirements, the balance is imported from abroad. Each year, the TUGEM of MARA and the Under secretariat of Foreign Trade

issue two different communiqués in the Official Gazette for seed import, considering local seed production and changes in these communiqués are annually updated.

Chambers of Agriculture, farmer unions and agricultural credit cooperatives and the private sector conduct market research to assess seed demand. In 2001, seed import valued at \$53.5 million whereas seed export is valued at \$15.3 million.

Seed Imports

The private sector determines the quantity of seed imported based on seed demand. Import is allowed for certified seed of registered varieties in Turkey. Seed import licenses are granted mostly for vegetables and some field crops. Private companies exclusively import all plant propagation material including seeds and the General Directorate for Agricultural Production and Development grants import permits.

Importers to apply to the General Directorate for Agricultural Production and Development and submit the following documents to get pre-permit: (i) Application form, (ii) Proforma invoice, (iii) Seed certificate (ISTA or relevant OECD certificate), (iv) Phytosanitary certificate, and (v) Seed producer/breeder document (for new starters). After assessing the documents, the Directorate issues pre-permit and send the documents to the General Directorate of Protection and Control (GDPC), relevant Customs Service and the applicant. The GDPC issues the permit after making the necessary control. Then the companies are allowed to import the seed into the country.

Seed Exports

For export, the General Directorate for Agricultural Production and Development issues a communiqué every year. Both the

Directorate and Provincial Directorates of Agriculture grant the permit for seed export. Seed for export should bear a certificate that it conforms to the national standards. Seed exporters need to submit the following documents to the GDAPD or provincial offices in order to export seed: (i) Application form, (ii) Seed export form and (iii) Seed certificate or seed analysis report. If the Ministry of Agriculture approves the

application it give permission to the company to export seed. Table 2 shows the quantity of seed exported and imported in Turkey in 2000.

Table 2. Quantity (tonnes) and value (USD) of seed import and export in Turkey (2000)

Crop	Export		Import	
	Quantity (t)	Value (\$)	Quantity (t)	Value (\$)
Cereal Crops	6,982	3,701,349	3,606	6,701,145
Wheat	3,715	1,099,752	892	290,171
Maize (hybrid)	2,567	2,601,597	2,669	6,386,474
Rice	-	-	45	24,500
Industrial Crops	2,135	7,714,562	10,965	6,014,883
Cotton	7	479,362	484	602,883
Sunflower (hyb.)	2,128	7,235,200	49	196,000
Potato	-	-	10,432	5,216,00
Forage Crops	21	70,383	643	426,335
Alfalfa	21	70,383	102	164,367
Sainfoin	-	-	200	60,000
Hungarian vetch	-	-	230	107,120
Beet root	-	-	7	11,594
Other grasses	-	-	24	44,954
Sorghum x Sudan	-	-	80	38,300
Vegetables	26	825,493	611	50,933,104
Vegetables (hyb.)	1	250,167	420	44,546,948
Vegetables	25	575,326		6,386,156
Turf grass	24	95,050	1,632	2,142,411
Grand total	9,188	12,406,837	17,457	66,217,878

Seed Quality Control and Certification

Seed quality control and certification operates within the framework of Seed Law No. 308 and Seed Law No. 3976 and implemented by the Variety Registration and Seed Certification Center (VRSCC) on behalf of the Ministry of Agriculture and Agrarian Reform. The VRSCC was established on 1 January 1987 following the amalgamation of the

Seed Control and Certification Institute (1959) and Variety Testing and Registration Institute (1960).

The main duties of the VRSCC include:

- Conducting variety release and registration trails
- Preparing reports for variety release and registration board
- Keeping records and maintaining samples of registered varieties
- Providing seed quality control and

- certification services
- Preparing certificates according to OECD and ISTA
- Providing technical services on variety protection
- Conducting training and publishing workshops proceedings

The VRSCC has three departments dealing with variety registration, seed certification and variety protection and has one variety testing station and five regional seed testing laboratories (Antalya, Diyarbakir, Izmir, Mersin and Samsun). However, field inspection and market control is the responsibility of provincial agricultural directorates (Provincial Directorates For Control and Plant Protection).

According to the existing seed certification system, four classes of seed are recognized: breeder, foundation, registered and certified seed. Production of certified seed is limited to registered varieties only. Certification is compulsory for agricultural and horticultural crops registered either permanently or provisionally. Truth-in-labeling applies only for standard seed of some vegetable varieties.

Seed quality control and certification is mainly based on crop inspection and laboratory testing to ensure that the seed meets minimum standards laid down in the regulations. The VRSCC is responsible for field inspection of seed for export. The Plant Protection and Control Units of the provincial directorates of agriculture are responsible for field inspection in the regions. All foundation and registered seed classes are subjected to pre-control while 10 % of certified seed lots are tested in post-control. Once the seed lots conform to the standards labels are attached to the packages. Some private seed companies have internal seed quality control systems.

Each year about 65,000 ha of seed production fields supervised;

approximately 5000 laboratory tests conducted; and 300 OECD and 800 ISTA certificates issued. Moreover, about 2500 seed certificates are granted each year locally and 1000 samples are analyzed for market control. VRSCC is a member of the International Seed Testing Association (ISTA) and Organization for Economic Cooperation and Development (OECD). It applies OECD and ISTA standards and procedures, respectively for variety certification and seed testing. Turkey is participating in OECD Seed Schemes since 1968 and Equivalencies with EU certification since 1989 (which allows turkey to export seed to EU countries). The Seed testing laboratory has been accredited in 2001.

The VRSCC has 26 staff comprising of agricultural engineers (2 PhDs), 10 technicians, 10 administrative personnel and workers. The Directorate also conducts its own training for human resource development.

A number of institutions are collaborating with VRSCC including public/private research institutions, universities, TSE (Turkish Standardization Institute), TIGEM (General Directorate of Agricultural Administrations) and provincial agricultural directorates (Plant Protection and Control Units).

Informal Seed Sector

Approximately 40 % of seed used each year is produced by the formal sector. In commercial farming variety renewal rates are high and use of certified seed is common. On the contrary, for low value crops use of farmer saved seed is widespread. During the last 15 years, use of certified seed has increased dramatically for maize, sunflower, cotton, potatoes and vegetables. However, for wheat, barley, legumes and forage crops, use of certified seed is still rather low. For

example each year around 9.8 million ha is planted with wheat for which approximately 1.9 million tonnes of seed is required. At the replacement rate of five years, the seed requirement per year is about 370,000 tonnes. However, each year 100-150,000 tonnes of certified seed of wheat is distributed whereas the rest of seed is provided by farm saved seed. Approximately 500,000 tonnes of seed produced by farmers is cleaned and treated by MARA including barley, rice, fodder crops and potato seed. The MARA Provincial Directorates of Agriculture coordinates seed cleaning and treatment using stationary plants or mobile cleaners depending on need and geographical conditions. The cleaning service is provided to farmers free or with very nominal charge.

Seed Research, Training and Extension

A Seed Technology Center (STC) was established in Ege University (Izmir) with potential collaboration with national programs on seed research and training. The STC had organized national/international congresses, symposiums, meetings and courses and given a mandate to prepare national policy and strategy for the seed sector. The Center has a national advisory committee drawn from the MARA, the private seed sector and the universities.

The personnel of the public seed sector receive in-service training through Agricultural Extension and Applied Research Project (AEARP). Overseas training programs are also conducted in cooperation with international organizations such as CIMMYT and ICARDA through various external funding.

The promotion of improved varieties is carried out both by the Agricultural Extension Organization and the private seed companies through demonstrations

and field days. During the last two decades, private companies are vigorous in promoting hybrid varieties. Moreover, extension services are supported with published materials and radio/television programs.

National Seed Trade Association

The private seed companies established the Turkish Seed Industry Association (Türkiye Tohumculuk Endüstrisi Derneği or popularly known as TÜRK-TED) as a civil organization under Law No. 2908. The Association was formed to realize the following objectives:

- protect the interests and rights of its members
- maintain domestic and foreign contacts with seed organizations
- promote understanding between public and private sector
- organize courses, tours and meetings for its members
- collect and provide statistical data on varieties, seeds and trade
- contribute to national seed sector development and economy

At present there are 95 private seed companies of which 45 private and one public seed enterprise are members of TÜRK-TED. The Association participates in nearly all seed meetings of the Ministry of Agriculture and is a member of 'Seed Consultation Committee' and the 'Variety Registration Board'. Five of its members in the former and two in the latter Committees represent the Association. TÜRK-TED is a member of International Seed Trade Federation (FIS).

International Membership

Turkey is a member of all OECD certification scheme for seed moving in international trade except subterranean clover. These facilitate seed

export to EU countries particularly for crops such as maize and sunflower.

Since 1962, the SRCC is a member of the International Seed Testing Association (ISTA). The Turkish Seed Industry Association is also a member of the International seed Trade Federation (FIS).

Turkey is also a founding member of the WANA Seed Network and a 'lead country' for developing model seed certification scheme for member countries.

Constraints in the Seed Sector

The price liberalization introduced in 1983 was the most important development in the seed sector. The rapid development of the private seed sector, however, slowed in the 1990s. The main problems encountered are:

1. The PVP law approved in February 1994 could not be realized according to UPOV requirements. The organization responsible for variety protection could not reach the desired level of operation. This has limited seed production of self-pollinated crops.
2. Lack of an effective seed quality control and certification to establish an efficient seed production and marketing operation.
3. Complex organizational structure where seed activities are carried out by different units of the Ministry of Agriculture and Agrarian Reform.
4. Lack of coordination and problems of authority among different institutions, which are involved in rural development and agricultural policies particularly in support prices, input subsidies, credits and certification.
5. Small farm sizes due to rapid population growth resulting to fragmentation of plots where 60% of farms are less than 5 ha. This has influence on the conscious use of

quality seed.

6. Insufficient agricultural research, training and extension services. There is a need for more emphasis on new technologies and training of farmers.

7. Unfair competition between government owned state farms and agricultural enterprises and the private sector.

Recommendations for the Seed Sector

The main goal of the national seed industry is to be self sufficient in domestic seed supply and produce surplus for export. To build an effective seed sector it is essential to take measures to strengthen the system. These are:

1. Support for agricultural research not only for the seed sector development, but also for the introduction of new technology.
2. Support both the public and private sectors for carrying out research and development to reach desired levels
3. Gradual privatization of the public enterprises responsible for production and marketing of agricultural products
4. Increase the market controls and take necessary measures to avoid sale of uncertified and poor quality seed
5. Encourage seed export, ensure fair competition and include the seed sector in the 'support and incentive measures package' of the government.
6. Restructure the organization of the seed industry by merging different units into one body within the Ministry of Agriculture and Agrarian Reform
7. Give more emphasis to training farmers to increase awareness and use of certified seed
8. Implement the PVP law and plant breeder's rights according to UPOV convention



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