



ICARDA IN THE NEWS 1986

Mechanising the

ON LAND now submerged beneath the waters of Lake Assad in north east Syria, archeologists found the oldest remains of lentils, dated about 8000 BC. Lentils were first domesticated from wild plants in this region — where today's lentil farmers face soaring harvest costs. Technology for mechanising the harvest of this ancient staple of Middle East and North African diets has not kept pace with that developed for other crops such as cereals.

Lentils, like other legumes, are called 'the poor man's meat' for good reason: they are high in protein — more than twice as rich as cereals — and full of iron and other minerals. *Mujaddarah*, a common Near Eastern dish of boiled lentils and rice or wheat, makes good dietary sense. In many of the region's villages and cities, lentil soup is a filling winter favourite.

For farmers, lentils are a natural fertiliser factory, 'fixing' nitrogen in the soil and leaving it behind for the subsequent non-legume crop, often a cereal. Lentils can also grow in poorer soils and harsher climates than many other crops.

Straw from lentils furnishes a good quality feed for sheep in much of the region — higher in protein, easier for livestock to digest, and more profitable for farmers than cereal straws. Sometimes the plant's residue draws a greater return than the seeds.

Yet the region's farmers, who grow lentils almost entirely with hand labour, are currently caught in a labour crunch, particularly at harvest. Wages for harvest labour in Syria, for example, rose approximately 60 per cent between 1980 and 1983, while the price of lentils went up only 20 per cent.

Labour costs in Jordan have shot up even faster. The area grown with lentils in Jordan consequently dropped from 21.8 thousand hectares in 1966-1970 to 11 thousand hectares in 1981, and plummeted again by half in the last year — almost entirely due to the high cost of harvest. The scarcity and price of labour is hitting small farmers the worst.

Farmers are switching to other crops, such as cereals, that may bring better profits — partly because cereal growing is more mechanised. In one survey in Syria, none of the farmers harvested lentils by machine, while four-fifths used combine harvesters for wheat or barley. The area's small lentil growers, using labour whose cost varies from one country to another, must contend with a world lentil price affected by mechanical harvest in many parts of the world, such as Canada, the USA, the Soviet Union, and parts of Europe and South America.

Scientists at the International Center for Agricultural Research in the Dry Areas (ICARDA), based at Aleppo, Syria, are working on mechanical solutions to the lentil labour squeeze. ICARDA's overall objective is to increase food supply in West Asia and North Africa, through strengthening national research programmes. Lentils are one of the crops for which ICARDA has a global research mandate in the world network of similar institutions. The International Development Research Centre in Canada provided financial back-up for an inter-disciplinary team of breeders, agronomists, social scientists and engineers to



Lentils are currently grown almost entirely with hand labour, and the scarcity and price of labour is hitting small farmers the worst.

mechanise lentil harvesting.

But the region's unique agricultural systems present a challenge for mechanisation. Unlike elsewhere, lentil seeds are broadcast by hand, and the seeds are covered with ridges of soil, leaving an uneven field. Stony lands also make combine harvesting impossible. Ripe lentils are pulled by hand, piled for drying, threshed by tractor or mule-pulled *jerjer* (a wooden frame with serrated cutting wheels), and then hand-winnowed with sieves.

"Mechanising the harvest, particularly to replace the hand-pulling step, is widely recognised as the crop's major problem," explains Dr Willie Erskine, lentil breeder at ICARDA. In 1979, pulling alone accounted for about a third of the total cost of growing lentils in Syria — a proportion that has probably jumped to more than half of this year's cost.

"The lentil pods dehiscence, or open up, when the crop is left too long on the ground," Dr Erskine continues, "so there's a 'time window' — about four to seven days — when the crop must be harvested or lost." Temperature rise rapidly as summer begins, so all lentils in an area mature more or less simultaneously. The result is that everybody in Syria, for example, is harvesting lentils at the same time," he says. Syrian farmers report that labour wages rise at harvest to four times the rates of non-peak periods.

But local lentils — a short stubby crop with pods near the ground — do not lend themselves to mechanical harvest. They tend to lodge, or fall over, more readily than varieties outside the region. And lentil straw — so valuable to the area's farmers —

by Lynn Teo Simarski,
Science Writer,
ICARDA

is simply spat back onto the field by combines in other parts of the world.

ICARDA's research follows three thrusts: breeding, agronomy, and machinery. Less than half a dozen improved lentil varieties have been released in the region, and only in Turkey and Egypt — compared to dozens of better cereal varieties all over the area. Varieties imported for western countries will not work, because they mature too late for local conditions.

ICARDA scientists are now breeding taller lentils that do not lodge or dehiscence. "ICARDA has developed a lentil variety with 16 per cent higher yield and less lodging than the local ICARDA scientists are now breeding taller lentils that do not lodge or dehiscence," ICARDA has developed a lentil variety with 16 per cent higher yield and less lodging than the local Syrian lentil and tested it for three years with the Syrian Ministry of Agriculture and Agrarian Reform," explains Dr Erskine. It will be submitted soon to the country's variety release committee.

"We're also looking for lentils whose pods stay closed when the crop is left in the field," he says. "This way, a family could harvest twice as much and not worry about losing seeds — or they could leave the crop in the field until a combine becomes available."

New varieties for machine harvest are only part of the answer. Preparation for harvest begins with planting, so ICARDA is testing new techniques to make seed beds flatter and free of stones — with the smallest possible departure from farmers' current cultural practices.

For example, the ridged fields left after traditional cultivation could be smoothed with a bar dragged behind the tractor, providing a simple and inexpensive solution. Cereal drills, already locally available, could also eliminate the need for ridges to cover the seeds.

Three other machines could replace lentil-pulling labour. A side-mower, already on the market, uses two moving blades to make a cleaner cut than the typical combine's single bar. The mower requires flat land, however, and works best with tall, non-lodging cultivars.

ICARDA engineers have modified another machine — an angled blades harvester — which shears off lentils below ground and then collects them. It suits the region's ridged fields and can harvest existing lentil genotypes. The collecting blades are inexpensive and easily fabricated, but need wider testing and transfer to farmers.

A third machine called a lentil puller was developed at ICARDA's farm with special

lentil harvest



Mechanisation must be economical and appropriate for the farmer.

funding from the German Agency for Technical Cooperation (GTZ). Although the device is more costly than other alternatives, its pulling — rather than cutting — action ensures harvest of all the straw as well as seeds. The puller is now being tested in Turkey by the University of Adana.

Syria's agricultural ministry and ICAR-

DA will evaluate the first two machines in 1986 at about half a dozen farms in Aleppo, Idlib, and Hamah provinces, where 70 per cent of the country's lentils are grown. While farmers try the new machines at harvest, their neighbours will be invited to comment. "We must make sure the solutions are economical and appropriate for

the farmer, so social scientists are also involved in the research," says Dr Erskine. "Farmers will be asked whether the techniques are cost-effective for them."

These machines are but a beginning for the region's lentil growers, who require a suite of solutions suited to different conditions. Algeria's large estates, without a need for straw, could use a cutter bar. Egypt's tall lentils are grown on stone-free soils, but they have recently become a less economical crop — a situation which could change if a small self-propelled mower became available for harvest. Syria, with its average lentil farm of 3.5 hectares, could use the lentil puller which harvests the straw.

The future for lentils looks brighter, since much of the technology for mechanical harvest already exists. To ensure its practicality for farmers, ICARDA plans a regional training course next year on how to conduct on-farm trials. The goal is for farmers all over the Middle East and North Africa to have tested the technologies in the next two years.

"Our present solutions are interim ones," Dr Erskine concedes, "but they could break the bottleneck that hand-pulling now creates. Eventually, with better agronomy and varieties, perhaps we'll be able to look towards combine harvest of lentils." The hope is that lentils will soon again compete economically with other crops in the agriculture of the region where they have been eaten since prehistoric times.

SINCE Pharaonic times, the fava bean has been a dietary staple for Egyptians. It is usually served as *ful madames*, a kind of bean stew, or as *tamiya*, which is ground beans moulded into balls and deep fried. The crop is particularly important because it is a major source of protein for many poor people whose budgets do not allow for the frequent purchase of meat. Rising meat prices mean that the crop is becoming even more important.

Although Egypt's 1984 production was sufficient to meet domestic consumption requirements, the fact that the acreage cultivated with fava beans was less than planned by the Ministry of Agriculture confirms that some farmers are giving up on the crop because of heavy losses due to disease, weeds and attacks on the plants by insects. Some Egyptian farmers have reported losses of up to 75 per cent. Fava bean yields are also reported to be disappointingly low in the Sudan.

Improving the yields of this key crop is the goal of the Nile Valley Fava Bean Project, in which Egyptian and Sudanese scientists are co-operating in an effort which is seen as a good example of the integration programmes the governments of the two countries have been promoting.

Financing for the project is coming from the International Fund for Agricultural Development (IFAD). Co-ordinating the effort and supplying technical assistance is the Aleppo-based International Centre for Agricultural Research in Dry Areas (ICARDA).

More than 150 Egyptian and Sudanese farmers are testing new fava bean varieties and growing techniques, and many other farmers are benefitting from agricultural extension bulletins that are being produced under the project. Instead of divorcing agricultural research from the farmer, as sometimes happens in developing countries, the Nile Valley project is endeavouring to promote a working relationship between agronomists and scientists and the ultimate beneficiary of the research, the farmer.

Farmers taking part in the project are



Above: fava bean germplasm bank.

Below: selected varieties of fava beans being crossed in screened cages to protect the plants from other pollen. (Photographs by ICARDA).



visited several times a year by project officers to verify whether new varieties are profitable and techniques effective. Project officers in Cairo say the farmers in all areas covered by the project are enjoying an increase in net incomes of more than 160 Egyptian pounds per hectare cultivated. In Egypt, the project has focused on three key fava bean growing areas: Kafr el Sheikh in the Nile Delta, Minya in Upper Egypt, and the Fayyoun Oasis south west of the capital.

One of the project's most important benefits to farmers has been the introduction of herbicides for the control of weeds — a major contributor to crop losses. Finding an appropriate herbicide was especially important because small farmers in the Nile Valley traditionally had to rely on hand weeding. But because of a scarcity of relatively high-cost village labour farmers were often forced to leave their crops unweeded.

Another major problem in Nile Valley

Improving yields of the fava bean

The fava bean, or *ful*, that has been a rich source of protein for Nile Valley dwellers since time immemorial, is the subject of a joint Egyptian-Sudanese research project aimed at increasing farmers' yields through the introduction of new strains and better control of insect pests, weeds and plant diseases. Report by Cairo correspondent Peter Warg.

fava bean farming was solved through the international connections of ICARDA. This was the incidence of 'chocolate spot disease', a blight that produces heavy losses for fava bean farmers in both Egypt and the Sudan. After screening many lines of germ plasm received from ICARDA, project scientist were able to discover a line from Ecuador that resisted the disease.

Another important benefit for farmers has been the development of a new fava bean variety which has been shown to successfully resist a parasitic weed known as broomrape. The new strain, called Giza 402, should allow farmers to get up to 50 per cent greater yields. The strain is being widely tested and it is anticipated that in 1986 fully 28,000 hectares throughout the project area will be planted with the Giza 402 variety.

Agronomists and scientists are also learning from farmers and passing on information about successful techniques to others. For example, it was found that in one Nile Delta village an improved method of storage had been developed in which the beans were stored in underground bins that protected them from light and pests while at the same time preserving their tenderness.

Such information is passed on to other farmers by means of the extension bulletins that are regularly produced under the project.

news analysis

Jordan takes steps to improve poultry marketing

Successful start for Aarinena

THE REGION'S new agricultural research 'umbrella' organisation is rapidly gaining acceptance and assuming authoritative status. Conceived as a means of linking researchers in different agricultural disciplines in countries throughout the region, the Association of Agricultural Research Institutions in the Near East and North Africa (Aarinena) was inaugurated in July last year. Its founding sponsors are the United Nations Food and Agriculture Organisation (FAO), the International Service for National Agricultural Research (ISNAR), and the International Centre for Agricultural Research in the Dry Areas (ICARDA). Other regional institutions associated with the new organisation include the Arab Centre for the Study of Arid Zones and Dry Lands (ACSAD) and the Arab Organisation for Agricultural Development (AOAD). Countries in membership include Egypt, Iraq, Libya, Pakistan, Somalia, Sudan and Syria, and many other nations of the region have expressed interest in joining. The association will help to establish and strengthen regional research networks, facilitate co-operation, act as an information exchange, and sponsor scientific projects and meetings. Based at FAO headquarters in Rome, Italy (where the organisation's Near East regional office is temporarily located), Aarinena is administered by an executive committee under the presidency of Hassan al-Ahmad, director of research at the Syrian Ministry of Agriculture. The secretary-general is Abdel-Wahab al-Mursi, of Egypt, who is FAO's senior agricultural research officer for the Near East region.

Baluchistan Times

SUNDAY FEBRUARY 23, 1986

Arid Zone Research Institute Quetta, Baluchistan

By

**Dr. Sardar Riaz
Ahmed Khan**

Introduction:

Nearly 68 millions of the country's land mass of 79.6 million hectares are arid, receiving less than 300 mm. of rainfall annually. Most of the population in the country has to derive its livelihood from these arid and semi-arid areas. However, these areas though a potential resource are experiencing continuous process of intense land use by increasing populations of people and livestock under periodic droughts. This has led to the disturbance of the fragile eco system with a consequent degradation of vegetation cover, deterioration of soil, depletion of range lands, reduction in animal productivity, lowering of crop yields thus, adversely affecting the human well being.

Establishment of Azri:

Pakistan Agricultural Research Council while foreseeing the magnitude of the problem gave a lead to the country by accepting the most difficult and challenging task of improving productivity per unit area of the arid lands and to reverse the trend of their degradation through misuse or over-exploitation of the natural resources. It established an Arid Zone Research Institute at Quetta with a net work of sub-stations at Bahawalpur, Omer Kot and Dera Ismail Khan in other three provinces to investigate, develop and adapt scientific technology for the integrated development of arid and semi arid areas for sustained economic amelioration of rural/pastoral communities of such hi-

therto neglected regions, thereby, improving the quality of their life.

Organisation:

At present the Arid Zone Research Institute has five sections with following responsibilities:

1. Plant Sciences:

This section screens local and exotic material for selecting high yielding, drought and disease resistant species of cereals, legumes and range species best adapted for dry land areas. Simultaneously, the section is also conducting research for developing the matching production technologies of these crops under arid conditions.

2. Land & Water Use:

The section is responsible for studying the soil characteristics, soil fertility manage-

ment, moisture conservation practices, water harvesting techniques and agro-meteorological studies in our arid regions.

3. Range Management:

The section is conducting research on range improvement and range nutrition.

4. Livestock:

The section is conducting research on animal nutrition, livestock management and animal health.

5. Socio-Economics:

The section studies socio-economic systems in our arid regions, conducts economic analysis of different farming systems and research findings. In addition the section is also entrusted with the responsibilities of dissemination of useful information and transfer of technology to the farmers.

Since its inception AZRI has been facing problems of acute shortage of trained scientific manpower, adequate laboratory facilities, residential houses etc. In spite of these difficulties some very useful research achievements are summarized below:

Research Achievements:

1. Initial surveys of traditional crop and livestock production practices in the arid and semi-arid regions of Baluchistan, Cholistan and Thar deserts have been made which would

assist very much in planning future research programme and fix research priorities.

2. An aridity map of Pakistan has been prepared by using the latest methodology based on recipitation and potential evapotranspiration. It shows that of the total land mass of the country, 5% is hyper-arid, 67% is arid, 17% is semi-arid.

3. Under the winter cereals (wheat, barley and triticale) improvement programme in high altitude areas of Baluchistan carried out in collaboration with ICARDA, a significant increase in yield of wheat was achieved with improved production technology in comparison to the local farmers practices under dryland conditions.

4. Since disease resistance, early maturity, drought tolerance and high yield potential are the basic requirements of an improved cultivars/lines under arid conditions, out of 3000 Germplasm of wheat, barley and triticale 100 promising varieties/strain have been selected for future yield trials under dryland farming.

5. Similarly, out of a large number of local and exotic entries, seven promising lines of lentils, four of faba beans and five of Australian grass species have been selected for further yield trials.

6. It has been shown that by following appropriate in-situ and catchment based water harvesting techniques dryland crop yields can be significantly increased.

7. Preliminary agronomic trials have indicated that by the application of NP fertilization and suitable crop management technology yields of dryland crops can be increased by 33 to 56 percent.

8. New industrial plants like Buffalo gourd, Jojoba, Guayule, and Prime rose have been introduced. Economic important of desert species like Khip and Khar has been surveyed.

9. Sheep and goat production practices have been studied in Pishin, Sibi, Zhob, Chaghi, Panjgoor and Kharan districts of Baluchistan and a series of reports have been published. These reports are being widely used by administrators, planners and research scientists in Baluchistan.

10. Wool production and marketing system in Baluchistan have been studied with laboratory investigation on the quality and characteristics of wool and possibilities of improvement have been indicated.

11. Some promising and nutritious forage grasses like buffalo grasses, Panic grass, Wimmera Eye grass have been identified as a result of introduction and test-

ing. These could be used for revegetating depleted range areas in Baluchistan. Similarly Buffel grass has indicated its potential for establishment in Cholistan.

12. Experimental range area has been improved by soil and moisture conservation practices and planting of forage species. Forage production from improved area was found to be 583 lbs/acre as compared to 350 lbs/acre in unimproved area.

Mart Project:

The Government of Pakistan has started a development project namely the Management of Agricultural Research & Technology with the assistance of USAID. One of the components of this project is to strengthen the research capability of Arid Zone Research Institute, generate and disseminate relevant technologies aimed at increasing agricultural production in Pakistan's non-irrigated areas. Under this project, the services of expatriate agricultural research scientists of international Centre for Agricultural Research in Dry Areas (ICARDA) are being utilized to work with Pakistani scientists at AZRI to plan and conduct research and to organise and conduct training pro-

grammes in research methodologies, farming systems and on-farm research in various agro-ecological regions of Pakistan.

Future Research Plans:

1. Establishment of plant introduction centre for the improvement of cereals, food and forage legumes and crops of economic values having bearing on arid/semi-arid areas.
2. Testing of germplasm of bread wheat, durum wheat, barley, triticale, sorghum, millets, food legumes, forage legumes, forage and range species, under moisture, temperature and disease stresses.
3. Development of high production technologies for different arid zones of Pakistan, especially for the high lands of Baluchistan.
4. Development of integrated crop and livestock farming systems best suited to different arid zones.
5. Evaluation of different tillage implements and ploughing depth, to encourage maximal use of scarce soil water by plant roots.
6. Evaluation of the fertilizer requirements of various crops under dryland conditions, to provide good crop growth with the minimum fertilizer inputs.

7. Evaluation of different crop rotations and cropping patterns to find ways of improving soil fertility on a sustainable long term basis.

8. research on range improvement and better livestock management.

9. Economic analysis of various improved production technologies, farming system research and their impact on the existing socio-economics systems in the arid lands.

10. Agro-meteorological data collection of prediction, developing weather-crop models for better crop planting and reducing risking of weather aberrations.

11. To arrange post graduate research at AZRI and abroad.

12. Research co-ordination at provincial, national and international levels.

13. To arrange workshops and short term training programmes.

14. Dissemination of research findings and transfer of appropriate economically viable production technology to the farming community through on-farm research, large demonstrations, modern extension methods, research, large demonstrations, modern extension methods, research papers and popular articles.

An extra

Could Medicago supplant fallows to provide the key to heavier stocking? Montague Keen reports.

Not idle grazing but part of a scientific estimate of the increased stock-carrying capacity of Medicago after application of P_2O_5

ANOTHER one hundred million ewes could be supported from the semi-arid pastures of nine countries of the Middle East region if an acceptable ley farming system could be devised. Such was the forecast of one forage expert, Dr E D Carter, in 1978. Others have quoted this with apparent approval as a not unrealistic projection. Were it realisable it could transform vast areas, and the lives of their inhabitants, and the food prospects and patterns of millions for whom the sheep is their chief source of meat and dairy products, providing 16% of the calories they need, and much of the protein.

Work which has thus far been concentrated in north Syria suggests that this dream could easily be realised. In a paper shortly to be published in the *Journal of Agricultural Science* by Drs Ali Abd el-Moneim and Phil Cocks, a system is described which, they say, "has profound implications for livestock production in west Asia and North Africa".

Carter's estimate was based on the known ability of adapted self-regenerating annual legumes to produce five tonnes of dry herbage from seven out of every ten hectares on which fallowing is regularly practised. Nine years after he made his estimate a series of farm trials has clearly shown that in one of the least promising areas — because of its cold winters — this can be done. And the key is *Medicago rigidula*.

Moisture conservation

The traditional, normal farming practice in northern Syria, and indeed throughout vast areas of the drier regions where rainfall is less than 300mm, is to grow barley — or wheat in the areas of higher rainfall — in order to feed both grain and straw to livestock, which also graze non-arable common land. The barley is rotated with fallow, and fallowing is defended on the grounds that it controls weeds, conserves

moisture, reduces soil borne disease risks for the following cereal crop, and improves mineralisation of nitrogen.

It is questionable, however, whether the claim of moisture conservation can be sustained; and there are now other, perhaps more effective, ways to break the disease circle, control weeds, and conserve moisture.

The Australians believed they had the answer. In parts of its Mediterranean zone, fallows have long since been replaced by self-regenerating annual legumes popularly called medics. This type of annual alfalfa has the useful attribute of producing in its first year large quantities of impermeable seeds able to survive in sufficient quantities throughout the following year's barley or wheat crop, to produce an acceptable pasture in year three.

Leguminous legacy

The Australians could see no reason why this system should not work elsewhere. It greatly increased the stock-carrying capacity of the land; and it substantially reduced the cost of nitrogen for the succeeding

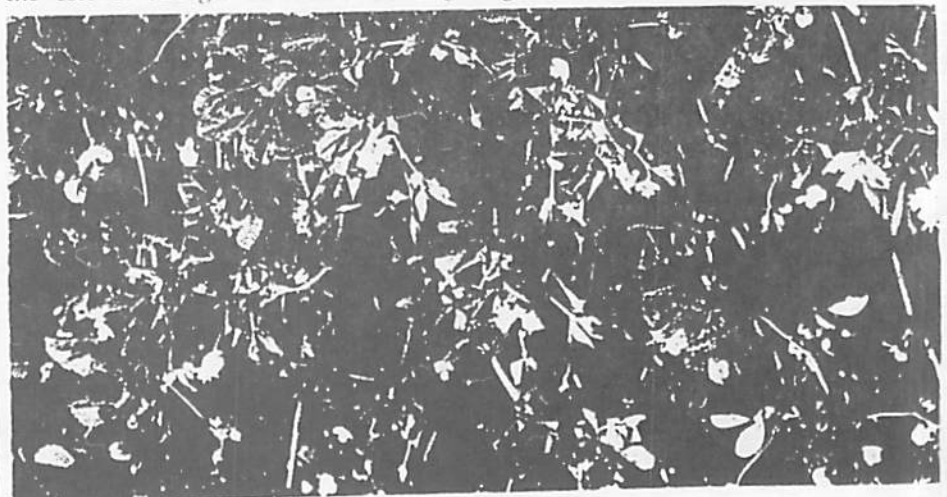
cereal crop, thanks to the leguminous legacy of fixed atmospheric nitrogen.

There was indeed no reason why the system should not work in the Middle East. What failed to perform were the varieties of *Medicago truncatula* and *littoralis* which they sought to transplant. Whatever the reasons why they failed elsewhere, their lack of success in northern Syria was found to derive from lack of winter hardiness. Syrian winters can be fairly severe.

It was the leader of the genetic resources unit at the international centre for agricultural research in the dry areas (ICARDA) Dr Bhal Somaroo, who first spotted the potential of *Medicago rigidula* to solve the problem. Under the guidance of Dr Cocks, programme leader of the ICARDA pasture, forage and livestock team, some 23 genotypes of native Syrian medics which flourished in cold areas were selected for testing at the ICARDA experimental and testing grounds at Tel Hadya south of Aleppo in north-west Syria.

The upshot was to prove not only that

A close up of the medic cultivar *Medicago rigidula* extensively tested by ICARDA scientists.



100,000,000 sheep

Medicago rigidula could regenerate naturally and form productive pastures in rotation with wheat, but that the legume was suitable to both the soils and climate of the region, and to the demands of the ley farming system itself.

The first year's medic was grazed, the sheep withdrawn in time to allow the crop to seed, and the land then shallow cultivated to avoid burying too much of the shed seed. This meant direct drilling at 5 cm depth — and slowly, to minimise soil disturbance. It was found that half the medic seeds might germinate under the wheat crop, but it appeared to make no great difference to the performance of the wheat crop whether the medics were killed off with a general herbicide (to reduce competition for moisture) or allowed to remain. In any event enough medic seed remained seasonally dormant to produce an acceptable grazing sward the following year by natural regeneration without any cultivations.

Winners all round

Everybody won. The cereal crop benefited substantially from free N; the sheep were rewarded with an extra 1.5 tonnes/ha of dry matter yield in Jan/Feb in peak lactation time; and there can be little doubt that a major increase in the sheep-carrying capacity of the land when grazed off directly must raise the organic content, improve the structure and reduce the artificial manurial requirements of the soil.

None of this is anywhere near as straightforward as it may sound, however. There is still much to be learnt about the husbandry practices to recommend. It has already been found that, although low temperature is not the barrier to ley farming which it was once thought, the full benefits of the self-regenerating ley system will not be secured unless at least 100 kg/ha of seed is shed. That must mean taking considerable care that overgrazing does not prevent adequate seed formation and shedding. It also should mean employing a machine for even-depth shallow drilling, an accomplishment easier said than done in conditions in north Syria — or most other comparable areas even where centralised seed drilling tasks are available to supplant hand broadcasting.

The results of ICARDA trials have shown that, by the end of the third year, there is enough residual and newly produced seed to supply adequate herbage in year five, i.e. around 2 tonnes/ha of dried herbage by January 1 and more than 6 t/ha for the whole growing season.

The conclusions pose even bigger difficulties, the resolution of many of which are

— from the dry lands



At a farm trial at Tab, south of Aleppo in northern Syria, farmers are being shown how to use medic in rotation with a cereal crop. Enthusiasm is spreading.

now outside the control, although not necessarily the influence, of ICARDA's experts. Controlled grazing of sheep is a

demanding management problem even for specialist flockmasters born and bred to the task. Exercising strict control over grazing, and thereby avoiding the waste of under-pasturing and the dangers of overgrazing, is tricky enough even with the aid of fences. Performing this task without them is a daunting prospect. There is no sign on the horizon of an abundant supply of cheap, reliable, removable electric fencing which can run off a cheap, light, portable and (for preference) renewable source of free or low cost power.

The rewards of adopting this practice, once enough suitable medic seed stocks become available, would appear so attractive, and the consequences of such importance, that the results of further and more extensive research work by ICARDA and others is bound to be studied eagerly by agronomists as well as farmers in many other areas. Some of the more privileged and progressive ones are now participating in on farm trials over four seasons, with management decisions being taken not by visiting scientists but by a round table consensus approach between scientist and farmers.

Bigger and better sheep from more farm forage

OVER vast areas in the 200-400 mm rainfall belts of North Africa and west Asia, barley is the most important crop grown, and the sheep which eat it are the central feature of the farming system.

It is a highly unstable and precarious life for millions of farmers, large and (mainly) small, depending as it must on rainfall which varies not just from year to year but in its seasonal pattern.

Much of Syria is dedicated to this barley-sheep relationship. When the rains fail, as they did in 1983-84, the consequences are grave. Even in normal years the sheep farmer who harvests his barley can expect to buy back the grain at a higher price later in the season for supplementary winter feed. Many crops never get to harvest point. If poor rains look like producing yields which may hardly justify the cost of harvesting, the sheep are let in to graze off the unripe crop. That season, over 90% of the barley grown on land studied by ICARDA specialists in north-west Syria died at an early stage or was grazed in

March-May, leaving farmers with nothing for their stock the following winter. The market was consequently glutted with sheep sold to raise money to keep the remainder going. And the remarkable thing is that not only were the remaining ewes adequately maintained on costly imported concentrates: they were actually fed at a higher rate than was necessary.

Dependence on rainfall is inevitable in the absence of irrigation — which could not be contemplated for most of this land, or these crops. But far more stability of production, and a reduced dependence on bought-in feed, could result from changes in management practices which ICARDA, in conjunction with the Syrian department of agriculture, is testing out on sample farms selected as representative of the considerable diversity of climatic, soil and environmental conditions found in the region.

Since purchased feedstuffs that year provided over half the crude protein and one

Continued on page 16

Bigger sheep from improved grazings

(Continued from page 15)

third of the metabolisable energy required by the ewes, and it represented the single biggest cash input, the need to grasp at any improvement in the system is apparent. All the more so when in the following year home grown crops provided less than one tenth of the total protein and energy requirements fed to flocks in winter.

These costly purchases and over-generous administration of supplementary feed during the critical winter months just before and during the main lambing season, when ewes need a high plane of nutrition, nevertheless resulted in a growth rate of lambs (157kg/day) which scientists found to be well below the potential of the breed.

The poor performance has been attributed to two management practices. One is the extensive winter grazing of low grade common range lands by ewes and their lambs. This raises the energy needs of the ewe and depresses the performance of their progeny. Secondly, the ewes are not in good enough condition to fatten lambs efficiently. Instead of averaging 55-58kg at lambing, as the experts deem desirable, they have been found to average 51kg; and in the sample from which this was discovered, one quarter of the ewes were 20% below weight. Inadequate feed levels during (autumn-early winter) pregnancy will mean less efficient food conversion after lambing.

Common grazing

Many of these yield, growth and income-depressing factors could be tackled by the introduction of annual leguminous pastures to complement common grazing around the village. Workers at both ICARDA and the Arab League's own research institute ACSAD (the Arab Centre for Studies of the Arid Zones and Dry Lands) have concluded that the scope for improvement in meat and milk yields is very high.

ICARDA specialist Euan Thompson is confident that double the current average milk yield could be achieved in five generations by selective breeding, since there is a great shortage of fresh milk in Syria, as elsewhere.

At ACSAD, where a great deal of work on sheep improvement has been carried out in Jordan and Syria, they are tending to concentrate on producing more meat; and their efforts have been encouraging.

Unfortunately, Nature's Vengeance known to breeders as a negative genetic correlation (more meat = less milk; more milk = less meat) has to be overcome, although good milking quality is vital for speedy lamb growth and low mortality.

To get the benefits down to farmers quickly enough, artificial insemination from improved semen is desirable. Efforts are now being made at the American University of Beirut to overcome the reluctance of ram semen to freeze and remain viable. Similar work on the improvements of the other two principal Arab breeds, the Nedji and the Barbary, is in hand as part of a ten-year project by ACSAD.

The outlook for sheep is encouraging. More use of phosphate on barley in addition to improved stress and disease-resistant varieties now being multiplied, should increase yields and reduce the cost and hazard of reliance on bought-in feed. Use of annual legumes to replace sterile fallows should ensure more adequate forage at the time when the heavily pregnant or lactating ewe most needs it. The more generous application of natural manure should improve the structure and enhance fertility.

Phosphatic key to moisture saving

I TREATED with polite disbelief the claim that quite minor changes in husbandry practices in the very low rainfall areas of Northern Syria could result in a fourfold increase in the amount of natural moisture absorbed into a barley plant. But that is what the ICARDA (international centre for agricultural research in the dry areas) scientist Kutlu Somel quoted to me as an example of what had been achieved in the 200-to-400mm rainfed barley and sheep farming areas once farmers had seen what an appropriate dose of phosphorous could achieve for their crops. On investigation, the extravagance of this claim steadily vanished.

Invited to list the chief constraints to greater output, every one of 160 farmers questioned gave first place to rainfall, or lack of it. Studies showed that only 20% of the rain actually benefitted the plant. The rest was lost, mainly by evaporation. It is anomalous, observes Dr Somel, that Arab countries contain the world's largest deposits of phosphate, but have soils which are among the most deficient in this vital element. The soils of the aforesaid 160 farmers enjoyed phosphoric contents often less than 6ppm, whereas 9ppm is considered barely adequate, even for generally moister soils.

The effect of applying P was spectacular. The P promotes earlier growth and hence firmer crop establishment. This leads to a better and stronger root structure with improved access to soil nutrients. This advantage is largely denied to less advanced plants before growth is arrested by the onset of the cold winter.

So by rapidly closing up a canopy over the exposed soil, the vigorous plants minimise loss through evaporation and maximise uptake of moisture through the roots.

The result is to speed post-winter growth to an extent which promotes earlier harvesting. This shortens the duration and hence reduces the risk of the drought danger period towards the vulnerable last stages of the plant's maturity. So earlier harvesting minimises plant stress and lowers yield variability, the curse of rain-fed farmers throughout Arab lands. Gains all along the line.

Trouble is that cash-strapped governments either give too low a priority to fertiliser purchases, or prefer to concentrate applications on more fertile, irrigated, soils. But with a return on investment as handsome as this, anything which hinders sensible fertiliser use can only increase the loss of food imports. Will the message reach similar areas?

BUSINESS RECORDER

KARACHI FRIDAY SHAABAN 11406 APRIL 11 1986

Plea to ensure small farmers' stability

ISLAMABAD, April 10: Regional farming system workshop for West Asia and north Africa concluded here today after adopting a set of recommendations to increase the productivity and ensure income stability of small farmers in the regional countries.

The concluding session of the workshop was presided over by the chairman Pakistan Agriculture Research Council (Parc). It was organised by the Parc in collaboration with the International Centre for Agricultural Research in Dry Areas (Icarda), Canadian International Development Agency and US AID.

Dr Mohammad Abdullah Nour,

director general Icarda and experts from regional countries participated.

Dr Amir Mohammad in his concluding address urged the participants to give practical shape to the recommendations adopted at the workshop which he added, would help the regional countries to improve their per hectare yield. He said that the workshop had rightly taken account of the farming constraints in the dry areas of Pakistan and also shared its ideas on research approach and farming concept.

Dr Amir Mohammad observed that small farmers who constitute about 70 per cent of the total farming population in Pakistan need to be assisted with latest agricultural technology.

The workshop's recommendations include:

- To improve the efficiency and relevance of agricultural research.
- On farm research with farmers participation to improve existing farming system.
- Farming research be pursued through a system of projects coordinated through Parc in consultation with the provincial agricultural research organization.
- Conducting problem-oriented research which incorporates farmers perspectives, priorities and constraints of research design and implementation.
- Interaction of different aspects in the farming system.
- Close collaboration between physical, biological and social scientists required for carrying out inter disciplinary approach.—APP.

Workshop on farm system opens

ISLAMABAD, April 7: A four-day regional farming system workshop began here on Monday at the National Agriculture Research Centre.

Minister of State for Food, Agriculture and Cooperatives, Mr Sartaj Aziz inaugurated the workshop, which has jointly been arranged by Pakistan Agricultural Research Council (PARC) and some international agencies.

The workshop is being participated by the scientists from the regional countries of West Asia and North Africa.

Mr Sartaj Aziz in his inaugural address stressed the need to develop such a farming system which could help the farmers to achieve agricultural prosperity and improve their living standard.

Mr Sartaj Aziz noted that out of 75 per cent farmers community, only 10-15 per cent have so far benefitted from modern techniques. He called for adopting such a methodology which could help in developing such a useful farming system in the region to increase their productivity. He said Pakistan is interested to also increase the productivity instead of yield.

BELOW PRICE: Mr Sartaj Aziz further said that we are fortunate that we are producing below of the world prices in various crops excepts sugarcane. He said that the participants drawing upon their experiences in similar countries, will be able to suggest a viable and cost effective strategy for development of agriculture in Pakistan with special reference on its research system. He said that 75 per cent farmers are small farmers with the holding of less than 12½ acres. Fifty three per cent of these have holding of less than 5 acres. He further said that a small proportion of these small farmers have benefitted from new technology notably seed and fertiliser and raised their yields, but as the next stage of our technological evolution centred on tubewell and tractors, it has benefitted primarily the large and medium scale farmers.

He said that with their limited holding, the small farmers neither have the capital to invest nor the capacity to take the risk that new technologies involve. He said we must recognise that the extent of government commitment and ability to act to accelerate small farm development is a fundamental factor affecting growth of the small farm sector.

Mr Sartaj Aziz said that the Government of Pakistan has given highest priority to rapid development of this large section of rural population and this, in fact, is a pivotal element of its current strategy of agricultural development.

He said that the farming system research becomes all the more relevant. It places the process of development and assessment of technologies in a distinctly meaningful perspective. He said that it provided us a systematic view of the way in which the farmers weighs information in rainfall, soil and markets and available production techniques.

PRINCIPAL TASK: The Minister of State said the principal task of farming system is to identify and define the circumstances of the target, groups of farmers such as social milieu, institutional setting and policy environment of farms and attitudes and personal constraints of the farmers. He said that the workshop on farming system is new to some of the constituent institutes of agricultural research system in Pakistan. He said that he is happy to note that PARC is playing a leading role in its promotion and adoption in Pakistan.

EFFORTS LAUDED: Earlier, the Director-General of International Agricultural Research in Dry Areas (ICARDA), Dr M Abdullah Nour lauded the efforts of the Government of Pakistan for the establishment of the wonderful high class research centre in Pakistan with all the required facilities. He said that this centre is an example set by Pakistan in this area for the other countries of the region. Dr Nour said ICARDA is the partner to help develop the research in the developing countries. He said that farming system is also part of the programme of his centre and its basic issue is to look into this problem. He said that people want to reach to the farmers with a package of technology for which efforts has to be made. He urged the participants from the other countries to take the example of Pakistan of its farming system.

BARANI AREAS: Dr Amir Muhammad, Chairman PARC, in his welcome address said that Pakistan has the necessary natural resources and motivated people to increase food production for barani areas, but the existing institutional functions and structures have to be improved to give impetus and stability to barani agriculture. He said that realising the favourable role that farming system approach has played in the development of agricultural busi-

Workshop

(Continued from EBR I)

ness in many developing countries, it is expected that the outcome of this workshop will help in promoting our agricultural system. Ways and means of overcoming the vari-

ous constraints identified during the course of the workshop will be earmarked and some solid answers will be available to influence the farmers action in raising crop productivity and income, he added.
—APP

Wifaq April 1986

حکومت کی زرعی حکمت عملی کا سب سے اہم پہلو پے کاشتکاروں کی ترقی ہے سرتاج عزیز

جدید ٹیکنالوجی سے پیداوار بڑھانے کے ذریعہ کاشتکاروں کی آمدنی بڑھانے کا

ایڈیٹر داتا دربار میں انٹرویو کیا ہے انہوں نے کہا کہ تیسری دہائی کے اوائل اور کھیتوں سے وہ بڑے وسیعے کاشتکاروں کا ہونا۔ وہ ان کا کہنا ہے کہ انہوں نے سائنس دانوں پر زور دیا کہ وہ ایسی ٹیکنالوجی وضع کریں جس سے چھوٹے کاشتکاروں کو استفادہ کر سکیں تاکہ ان کی پیداوار بڑھ کر ان کی آمدنی بڑھ سکے۔

اسلام آباد ۹ اپریل (پ ر) وزیر ملکت برائے سرتاج عزیز نے کہا کہ موجودہ حکومت کی زرعی ترقی کی حکمت عملی کا سب سے اہم پہلو چھوٹے کاشتکاروں کی تیز رفتاری سے ترقی ہے۔ وہ منتریاں ایشیا اور شمالی افریقہ میں ناموں کا علاقائی نظام کے نمونہ پر چار روزہ ورکشاپ کا افتتاح کر رہے تھے وزیر ملکت نے کہا کہ زرعی ٹیکنالوجی کی ترقی کے لئے ضروری پروگرام اور پالیسیاں تیار ہونے لگی ہیں جن میں چھوٹے کاشتکاروں کی ترقی کو اس حقیقت سے پیش نظر رکھنا ضروری ہے کہ پاکستان میں ۵۰ فیصد فیصد کاشتکار چھوٹے ہیں جن کے پاس نصف ایکڑ سے کم زمین ہے۔ ایکٹرک زرعی زرعی زمین سے ۳۰ فیصد سے پاس پانچ ایکڑ سے بھی کم ہے۔ انہوں نے نشاندہ کیا کہ ان کھیتوں کو چھوٹی سی تعداد سے جدید ٹیکنالوجی یعنی زرعی برائے کھیتوں کے استعمال سے فائدہ اٹھایا جاسکے گا۔

سرتاج عزیز نے آج دوروزہ سینیٹ کا افتتاح کرتے گئے۔

اسلام آباد ۹ اپریل (پ ر) وزیر ملکت برائے خوراک و زراعت سرتاج عزیز نے سینیٹ اور شمالی افریقہ کے علاقائی کھیتوں کے نظام سے متعلق دوروزہ ورکشاپ کا افتتاح مورقہ ۹ اپریل بروز سوبور بوقت صبح ۱۰ بجے قومی زرعی تحقیقاتی مرکز میں کریں گے جس کا اہتمام پاکستان زرعی تحقیقاتی کونسل کے پروجیکٹ بارانی زرعی تحقیق و ترقی نے کیا ہے اس موقع پر سرتاج عزیز پاکستان زرعی تحقیقاتی کونسل خلیفہ استفالہ پیش کریں گے۔ ورکشاپ میں ملکی و غیر ملکی سائنسدان شرکت کریں گے۔

Sartaj opens farming workshop

ISLAMABAD. April 8: Modern agricultural technology is a must for the small farmers who are holding 70 per cent of the total cultivated land in the country.

This was stated by the Minister of State for Food and Agriculture, Mr. Sartaj Aziz while inaugurating a 3-day workshop on 'regional farming system' for West Asia and North Africa.

The minister said that biological research has brought revolution in the field of agriculture. As a result of which new varieties of crops are being evolved with better per acre yield. He stressed the scientists to demonstrate modern methods of cultivation to the farmers so that they could get more production.

He lauded the role of Pakistan Agricultural Research Council for promoting agriculture on the scientific lines.

The minister expressed the hope that this workshop would put forth solid suggestions to overcome the existing problems of the small land owners in the region and Pakistan in particular.

Earlier, Dr. Amir Mohammad Khan Chairman PARC highlighted the aims and objectives of the workshop. He expressed hope that scientists would evolve a practicable solution to the problems which are confronting the farmers.—APP

Farming system workshop begins today

ISLAMABAD, April 5: A 4-day regional farming system workshop for West Asia and north Africa will begin from April 7, which will be inaugurated by the Minister of State for Food Agriculture and Cooperatives, Mr. Sartaj Aziz at the national agricultural research Centre (NARC) at 10.00 a.m., according to a Press release of the PARC.

The workshop organized by the Barain Agricultural Research Development Project of Pakistan Agricultural Research with International Centre Council in collaboration for Agricultural Research on Dry Areas (ICAPDA) Syria

The Director General of the ICARDA Dr. Mohamed A. Nour will give a key note address at this occasion.

Scientists from other regional countries along with Pakistani scientists will participate in this workshop.—APP.

Suitable farming system urged to achieve prosperity

ISLAMABAD: A four-day regional farming system workshop began here Monday at the National Agriculture Research Centre.

Minister of State for Food, Agriculture and Cooperatives, Mr. Sartaj Aziz, inaugurated the workshop, which has jointly been arranged by Pakistan Agricultural Research Council (PARC) and some international agencies.

The workshop is being participated by the scientists from the regional countries of West Asia and North Africa.

Mr. Sartaj Aziz, in his inaugural address, stressed the need to develop such a farming system which could help the farmers to achieve agricultural prosperity and improve their living standard.

He noted that out of 75 per cent farmers community only 10-15 per cent has so far benefitted from modern techniques.

He said that Pakistan was interested to also increase the

productivity instead of yield.

He said: "We are fortunate that we are producing below the world prices in various crops except sugar-cane. He said that the participants drawing upon their experiences in similar countries, would be able to suggest the countries of a viable and cost effective strategy for development of agriculture in Pakistan with special preference on its research system.

He informed that 75 per cent farmers were small Farmers with the holding of less than 12-½ acres. "Fifty three per cent of these have holding of less than five acres" he added. He further said that a small proportion of such small farmers had benefitted from new technology notably seed and fertiliser and raised their yields, "but as the next stage of our technological evolution centred on tube-well and tractors, it has benefitted primarily the large and medium scale farmers". He said that

with their limited holding, the small farmers neither had the capital to invest nor the capacity to take the risk that new technologies involved.

He said that the Government of Pakistan had given highest priority to rapid development of that large section of rural population and that in fact, was a pivotal element of the current strategy of agricultural development.

He said that the workshop on farming system was new to some of the constituent institutes of agricultural research system in Pakistan. He expressed his satisfaction over PARCs leading role in its promotion and adoption in Pakistan.

Earlier, the Director General of International Agricultural Research in Dry Areas (ICARDA) Dr. M. Abdullah Nour lauded the efforts of the Government of Pakistan for the establishment of the wonderful high class research centre in Pakistan with all the required facilities.—APP.

ICARDA chief calls on Kazi

KARACHI: Dr. Mohammad Nour, Director General of the International Centre for Agricultural Research for Dry Areas (ICARDA), called on the Federal Minister for Food and Agriculture, Kazi Abdul Majeed Abid, at the office of Pakistan Central Cotton Committee, here on Tuesday.—PPI.

Highest priority to rural development

ISLAMABAD, April 7: A four-day Regional Farming System Workshop began here on Monday at the National Agriculture Research Centre.

The Minister of State for Food, Agriculture and Cooperatives, Mr. Sartaj Aziz, inaugurated the Workshop which has jointly been arranged by Pakistan Agricultural Research Council (PARC) and some international agencies.

The Workshop is being participated by scientists from the regional countries of West Asia and North Africa.

Mr. Sartaj Aziz, in his inaugural address, stressed the need to develop such a farming system which could help farmers to achieve agricultural prosperity and improve their living standard.

Mr. Sartaj Aziz noted that out of 75 per cent farmer's community, only 10-15 per cent have so far benefited from modern techniques. He called for adopting such a methodology which could help in developing such a useful farming system in the region to increase their productivity. He said Pakistan is also interested in increasing productivity instead of yield.

Mr. Sartaj Aziz further said that we are fortunate that we are producing, below world prices in various crops except sugar-cane. He said that the participants drawing upon their experiences in similar countries, will be able to suggest the countries of a viable and cost effective strategy for development of agriculture in Pakistan with special reference to its research system. He said that 75 per cent of farmers are small farmers with holdings of less than 12-1/2 acres. Fifty-three per cent of these have holdings of less than 5 acres. He further said that a small proportion of these small farmers have benefited from new technology, notably seed and fertilizer, and raised their yields, but as the next stage of our technological evolution centred on tubewells and tractors, it has benefited primarily the large and medium scale farmers. He said that with their limited holdings the small farmers neither have the capital to invest nor the capacity to take the risk that new technologies involve. He said we must recognize that the extent of government commitment and

ability to act to accelerate small farm development is a fundamental factor affecting growth of the small farm sector.

Mr. Sartaj Aziz said that the Government of Pakistan has given highest priority to rapid development of this large section of rural population and this in fact, is a pivotal element of its current strategy of agricultural development.

He said that the farming system research becomes all the more relevant as it places the process of

development and assessment of technologies in a distinctly meaningful perspective. He said that it provided us a systematic view of the way in which the farmers weigh information on rainfall, soil and markets and available production techniques.

Earlier, the Director General of International Agricultural Research in Dry Areas (ICARDA); Mr. M. Abdullah Nour, lauded the efforts of the Government of Pakistan for the establishment of the wonderful, high class Research Centre in Pakistan with all the required facilities. —APP



نارنگ سسٹم کے موضوع پر منعقد علاقائی ورکشاپ سے خواتین و ذراعت کے وزیر ملک سرتاج عزیز، ڈاکٹر امیر محمد علی، ڈاکٹر عبد اللہ نور اور ڈاکٹر عبد الرحمن خطاب کر رہے ہیں۔

نظام کاشت کاری سے متعلق ورکشاپ آج ختم ہوگی

اسلام آباد ۱۰ اپریل (نیوز ڈیسک) مغربی ایشیا اور شمالی افریقہ کے نظام کاشت کاری کی چار روزہ ورکشاپ کل ۱۰ اپریل کو اختتام پذیر ہوگی۔ علاقائی حکومتوں کے نمائندے اقتصادی امور میں اپنے ملک کے ماحول کے پیش نظر سفارشات پیش کریں گے۔ ڈاکٹر امیر محمد عزیز، وزیر ذراعت پاکستان، ورکشاپ کو نسل کے پراجیکٹ

سرتاج عزیز آج ورکشاپ کا افتتاح کریں گے

اسلام آباد ۱۰ اپریل (خصوصی رپورٹ) وزیر مملکت برائے خواتین و ذراعت سرتاج عزیز "کل جمع دس بجے قومی زرعی تحقیقاتی مرکز میں" ایک دو روزہ ورکشاپ کا افتتاح کریں گے۔ مغربی ایشیا اور شمالی افریقہ کے علاقائی حکومتوں کے نظام سے متعلق اس ورکشاپ کا اہتمام زرعی تحقیقاتی کونسل کے پراجیکٹ بارانی زرعی تحقیق و زراعت نے کیا ہے

Musa lauds services of ICARDA & AZRI in dev of agriculture

QUETTA Apr, 4.

The Director General TCARDA Dr. Mehmood A. Noor called on the Governor of Baluchistan (Retd) Mohammad Musa here today, and apprised him about the research work being undertaken by TCARDA in the field of Agriculture in Baluchistan.

Talking on the occasion, the Provincial Governor said that Baluchistan has a vast area, constituting about 45 percent area of the whole country. he said that the province has both hot and cold areas, where all types of fruits and crops could be cultivated. However, he said that due to scarcity of water, desired benefits could not be achieved from the fertility of the land.

Commending the services of TCARDA and Arid Zone Research Institute, Quetta in the development of agriculture in Baluchistan, the Governor said that these institutions are rendering valuable services in the field of agricultural research.

The Governor said that concerted efforts are being made to further develop and exploit sources of irrigation, so as to enhance agricultural production. Besides the farmers are being acquainted on modern methods of agriculture and such crops are being cultivated, which suits climatic conditions of the province.

Referring to overall development of the province, the Governor said that tremendous development works have been done in the past few years but something more has to be done. He said the people are now aware of the fact that maintaining peaceful conditions are pre-requisite bring development to their areas and now they are whole heartedly cooperating joining hands with the elected Govt. in the development activities.

Matters relating to the development and exploitation of agriculture and minerals also came up during the meeting.

'Satisfaction over ICARDA projects

ISLAMABAD April 8: The Director General of the International Centre for Agriculture Research in Dry Areas (ICARDA) Dr. Mohammad Abdullah Nour expressed his satisfaction over the on-going ICARDA project in Baluchistan and assured continued financial assistance for its development.

He was talking to newsmen at the Islamabad airport on his way back to Damascus after his one week tour of Pakistan.

Dr. Nour said that PARC had made significant progress in agricultural research. He also appreciated the research facilities available in the National Agricultural Research Centre (NARC) which have no match in region.

During his week-long stay, Dr. Nour visited the ICARDA-aided projects in Quetta and also participated in the 4-day regional farming system workshop held in NARC with the collaboration of ICARDA.

Dr. Nour said that ICARDA efforts aimed at developing the research capabilities of the under developed countries.

Dr. Nour said that scientists of the regional countries who were attending the workshop could immediately benefit from each others experiences. He hoped that the recommendations of the farming system workshop would be a great help to the regional countries to develop their farming system.—APP.

ICARDA projects assured financial help

ISLAMABAD, April, 8: The Director General of the International Centre for Agricultural Research in Dry Areas (ICARDA) Syria, Dr.

Mohammad Abdullah Nour left here today for Karachi on his way back to Damascus.

During his one-week stay in Pakistan Dr. Nour visited the ICARDA aided projects at Quetta and also participated in a four day regional day farming system workshop for West Asia and North Africa organised by PARC in collaboration with ICARDA at the National Agricultural Research Centre.

Before departure from Islamabad, he assured his centre's financial help to on going ICARDA projects in Baluchistan. He said that Pakistan Agricultural Research Council with the assistance of the government and international funding agencies had made a significant job by establishing the high class research station called NARC, which had no match in the region.

He hoped that the NARC would play a pivotal role in guiding the research scientists of other countries of this region.

He hoped that recommendations of farming system regional workshop based on regional countries scientists experiences, would greatly help the regional countries to develop their farming system on a solid ground.—PPI.

● Le Centre de coopération internationale en recherche agronomique pour le développement (CIRAD) a reçu le 13 mai, le docteur Nour, directeur général de l'International Center for Agricultural Research in the Dry Areas (ICARDA), dont le siège situé à Alep, en Syrie, est l'un des treize centres internationaux de recherches institués par le groupe consultatif de la recherche agricole internationale (GCRAI). A cette occasion, un accord cadre de coopé-

ration a été signé entre l'ICARDA d'une part et le CIRAD, l'ORSTOM et l'INRA d'autre part.

Cet accord fait suite à la réunion qui s'est tenue à Montpellier en juillet dernier avec les différents partenaires pour identifier les programmes de recherches d'intérêt mutuel.

Marchés tropicaux - 30 mai 1985

1447

Accord cadre entre l'icarda et 3 organismes de recherche français

Le Centre de coopération internationale en recherche agronomique pour le développement (Cirad) a reçu à Paris le 13 mai, le Docteur Nour, directeur général de l'International center for agricultural research in the dry areas (Icarda). Cet organisme dont le siège est à Alep en Syrie, est l'un de 13 centres internationaux de recherches institués par le Groupe consultatif de la recherche agricole internationale (Gcrai).

Selon un communiqué du Cirad, à l'occasion de cette visite du Docteur Nour, « un accord cadre de coopération a été signé entre l'icarda d'une part et le Cirad, l'Orstom, l'Inra d'autre part. Cet accord fait suite à la réunion qui s'est tenue à Montpellier en juillet dernier avec les différents partenaires pour identifier les programmes de recherches d'intérêt mutuel ».

Fabulous beans: bigger yields from 'poor man's meat'

OF THE many efforts to close the rapidly widening gap between food demand and the capacity of farmers in the Arab countries to satisfy it, there could be few success stories more encouraging — or important — than the faba bean saga.

Faba, or broad, beans (*Vicia faba*) have been described as the poor man's meat. The most important pulse, or legume, grown in North Africa and in most of the Arab countries, it is also the cheapest available source of protein for the swelling multitudes in Arab cities and countryside. An important cash crop for farmers, providing a significant proportion of the total farm income in many areas, it is part of the regular daily — sometimes thrice daily — diet of tens of millions. It can be eaten green or dry, plain or mixed, ground or whole, fried, boiled, roasted, toasted, mashed or mealed, for breakfast or dinner, for cakes or sandwiches....

By 1979 demand had already outstripped supply in the Nile Valley where it has been an important crop for over 3,000 years and had once been a useful export. Not only that: imports were costing twice as much as the home article, and were not always available — even when there was enough foreign currency to buy them. Under the impact of more attractive prices for berseem clover and vegetables the area under bean cultivation in Egypt had been shrinking.

by Montague Keen

along with yields. To the south, Sudan was expanding the area cultivated but failing to enjoy the reward of higher yields.

A dozen practical constraints were combining to cloud the future of this crucial crop: irrigation problems, often aggravated by antique pumps and unreliable machinery; the difficulties of coping with weeds, especially the notorious broomrape (*Orobancha*) which could all but stifle a stand of beans; the range and virulence of pests and diseases, of which the most serious was the ubiquitous chocolate spot (*Botrytis fabae*); army worms in the Sudan, and aphids everywhere.

Adding to the hazards of weeds, especial-

Proud of his crop: this farmer in the Kafra El Sheikh area is growing a high-yielding faba bean variety developed by scientists in the Nile Valley Project.

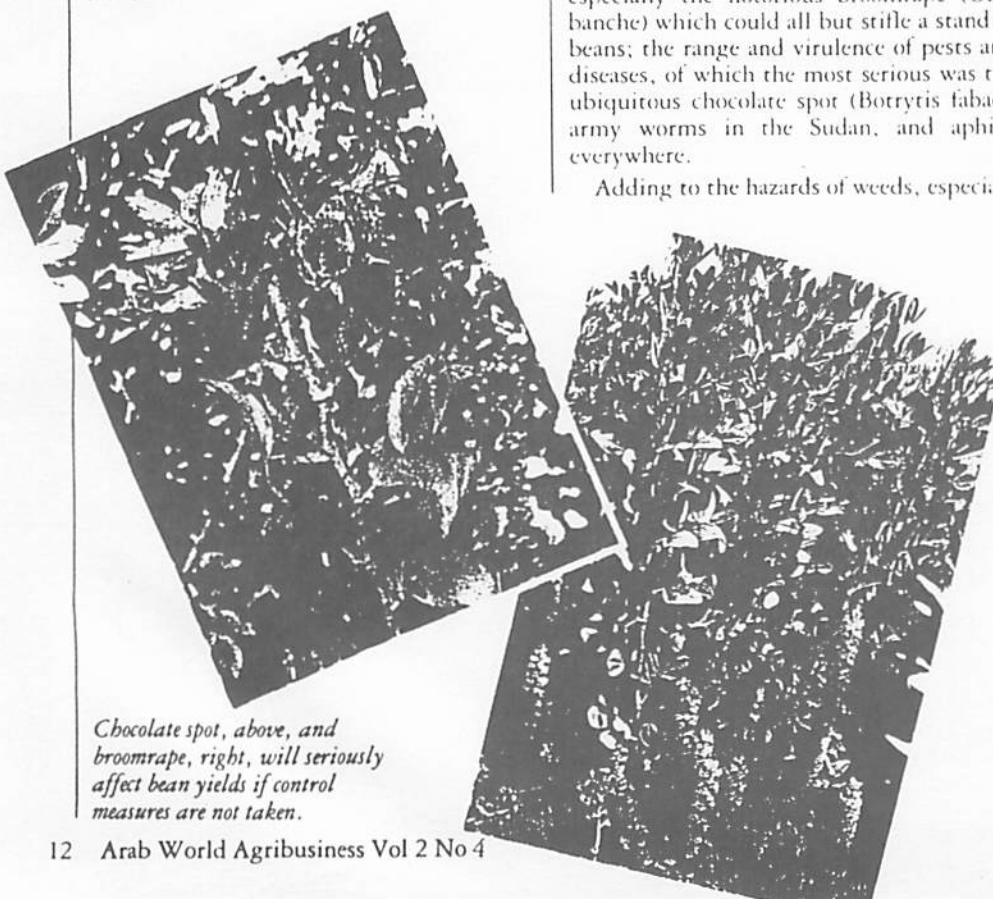
ly in the north, were labour problems at weeding and harvesting peaks, while the all-too-common inability to get the crop sown at the right time was a guaranteed route to lower yields. Even in the Sudan, seasonal labour shortages were proving to be a constraint. And despite 20 to 30 years of research work in both countries, the message was rarely reaching farmers. What extension workers there were had a hopelessly vast territory to serve, and inadequate instruction material to serve it.

That was the scene when ICARDA (the international centre for agricultural research in the dry areas) was called in to launch what must by now be regarded as one of the most successful and practical examples on record of how to translate basic academic research into cashable on-farm benefits. It represented a fine illustration of effective co-operation between two national administrations — now joined by a third (Ethiopia) — and ICARDA, as the international organisation with a world mandate on faba bean improvement. Perhaps even more crucial to its success was the fact that it involved the willing co-operation and active participation of the chief beneficiaries, the farmers themselves.

Normally ICARDA is at least one stage removed from commercial farm practices. Its task is to generate information by conducting research and disseminating information which will help the rural poor to feed themselves and earn enough to buy the food and farm inputs they need. By collaborating with national, international and regional institutions it is demonstrating techniques, and helping to provide the seed and the know-how, which in the view of some experts could double production merely by using technology available today.

That may not yet have been achieved through the Nile Valley Project (NVP) which ICARDA has been running with the backing of IFAD (the international fund for agricultural development), but results already achieved show this to be no flight of fanciful optimism for the faba bean.

The first problem was to examine each



Chocolate spot, above, and broomrape, right, will seriously affect bean yields if control measures are not taken.

major constraint to higher yields and then see how far ICARDA, operating in conjunction with, and through, the national organisations in Egypt and Sudan, could co-operate to overcome them. Selected national scientists were expected to devote up to one third of their time on NVP activities, including on-farm testing. In return they would enjoy research and financial incentives. The aim was to ensure that farmers themselves fully participated in the work. Experimental plots managed by research workers would be set up alongside traditionally farmed plots so that results were immediately evident and regularly comparable by scientist and farmer alike. The final step was for the farmer by himself to carry out tested practices on his own production plot: a novel experience in countries where farmers were far from familiar with researchers and their methods, while many scientists had rarely involved themselves with on-farm studies.

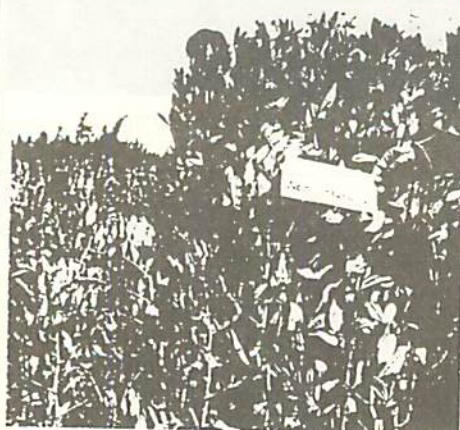
Each alternative practice was carefully costed, and its worthwhileness evaluated. In some cases the recommendation might prove unpractical, or the cost unjustified, but the object was to help the farmer to identify and encourage him to adopt those which were.

Dramatic results

Some 150 of them did so. Trials were concentrated in three of the most important production sites in Egypt and a further three in northern Sudan. The official account of the work describes as "dramatic" the results of trials on 47 Egyptian sites in which plant population, fertiliser use and

weed control were examined: yields of beans rose on average by 22%, 30% and 58% in the three regions compared with the neighbouring, traditionally farmed, plots.

One of the main contributory factors was the use of Giza 402, a new variety of bean developed by the Nile Valley project scientists



High productivity and disease resistance characterise the new varieties of beans bred by the Egyptian scientists.

tists which gives far better yields than traditional varieties; associated with it was the taming, if not the eradication, of broomrape (see panel below).

In the Sudan the results were even more encouraging, although here there were six variables studied: date of sowing, seed variety, irrigation, method of sowing and weed and pest control. Here the yield increase was 64% at one site, 96% at another. Principal reason for the increases was more frequent watering. Earlier and

improved methods of sowing were particularly important at one site, while control of army worm and aphids greatly contributed to the success at the other.

Those farmers who subsequently sowed earlier, watered more frequently, and employed recommended weed and pest control systems at Zeidab in the Sudan were rewarded by yield increases of 45% and a rise of 40% in net profits.

Seed yields doubled

In the following season, adoption of these practices at various locations produced double the seed yields of neighbouring traditional-practice farms at Zeidab, while at Aliab the improvement was 66% and at Selaim 39%. The returns per hectare were even more striking: over 100% at Zeidab, down to 39% at Selaim.

This success prompted the Hudeiba Research Station to extend the project to 77 farmers with 21 pilot production plots covering 140 ha. Although seed yield increases were extremely variable, the lowest was +16%, the highest no less than 276% while the average was 75%. The participating farmers had spent an average of S£75/ha more. But their net average reward was an extra S£119.

Variations in soil conditions, climate, altitude as well as water quantity, quality and timeliness, make it impossible to produce a blueprint recommendation for higher yields or a single variety which combines in its genetic make-up all the desirable qualities — tolerance to weeds,

Continued overleaf



More frequent irrigation has helped raise bean yields in the Sudan. This Sudanese farmer is preparing a check basin for irrigation.

Continued from page 13

resistance to pests, drought, heat and cold. But ICARDA, exploiting what is probably the world's most valuable gene bank or germ plasm collection of faba beans, has been able to score a number of successes of profound practical value, based on more than 3,500 sources of genetic diversity.

High yields, early maturity, resistance to various plant stresses and to the principal pests and diseases: these are the main aims in selection. Their relative importance varies from country to country. In Egypt probably the biggest menaces are chocolate spot and broomrape. Lines have been developed (especially Giza 402) which have shown tolerance not only to broomrape but also to root-rot, another scourge, and stem wilt; both fungi have been inhibiting the extension of faba bean cultivation into new areas of the Sudan. Root rot alone, according to ICARDA scientists, can cut yields by 80%. Chocolate spot can be a 70% killer, and rust 40%; the diseases often occurring together. By combining with well adapted local strains, the genes from sources in Ecuador in which resistance to these diseases has been found, scientists are well on the way to effecting a natural first line of defence against the worst enemies of the faba bean.

Four new lines of beans have been found to have "promising" tolerance to aphids, now an increasingly serious problem (see panel story, right).

The experiments have also shown the merit of early sowing dates, which improve quality, and of following a simple watering

routine which ensures that the fruiting plant is never stressed. Indeed where economy of water is unavoidable, it is better to restrict water during the pre-flowering period, when it has little effect on yield of beans, than during pod formation, when restriction can chop 30% off yields.

Superior strains

Selection of superior strains of beans, one of the most significant factors in the Nile Valley Project's success, is taking account of the nitrogen-fixing capacity of the legume.

ICARDA's seminal role is being gradually replaced by national governmental work, and increasing numbers of farmers are learning by participating in the benefits of improved seeds and husbandry practices.

But there are far more difficulties yet to be overcome, and which pose challenges which will tax the resources of both ICARDA and the participating governments: the need to continue and augment the work of finding improved strains resistant to the main pests, diseases and plant stresses; the extension of operations to Ethiopia, and to areas south of Khartoum in the Sudan; the development of simple machinery to help overcome (especially Egyptian) farmers' acute labour shortages; improvement in the cooking and nutritive qualities of beans, and the development of new lines suitable for no-tillage cultivation after a rice crop in northern Egypt, or maize or cotton in Middle Egypt.

Aphids come under attack

WHY have aphids become a steadily more serious pest of faba beans and cereals in the Nile Valley? Scientists at ICARDA working on the Nile Valley Project think it may be a by-product of crop protection measures to safeguard the cotton crop, with which these crops are rotated. Sprays have killed both aphids and their predators. Over a period of years the aphids, which make up in fecundity what they lack in intelligence, must have awoken to the realisation that ladybirds and other predators weren't present in sufficient numbers to interrupt a meal of beans or barley or, more commonly, wheat.

So whereas the use of agrochemicals on these crops in the Sudan was until recently a rarity, today the farmer invites ruin if his crop is not sprayed at least once. This also helps to explain why ICARDA has developed four new lines of faba beans which show promising tolerance to aphids. Nevertheless, along with leafminers and bruchids and the notorious army worm, aphids are serious pests in both Sudan and Egypt, and their impact seems to have been little affected by changes in fertiliser, irrigation or weed control measures. Indeed earlier plantings, which are generally recommended, seem to render the crop vulnerable to attack.

Fortunately, ICARDA concludes, effective and profitable insecticides for these pests have been identified. The penalty of neglect was demonstrated in the drought year 1984-85 when leaf-miner and white fly on the Sudanese faba bean crop in the Aliab area forced many farmers to let their infested crops be grazed by sheep to stave off financial disaster. Those who had sprayed at the right time had lush crops.

RECHERCHE AGRONOMIQUE DANS LES ZONES SECHES

Coopération renforcée avec l'ICARDA

M. Kasdi Merbah, membre suppléant du Bureau politique, ministre de l'Agriculture et de la Pêche a reçu en audience hier après-midi, M. Mohamed Abdellah Nour, directeur général de l'ICARDA (Centre International de Recherche Agronomique dans les zones sèches) qui effectue une visite officielle en Algérie, suite à une invitation du ministre de l'Agriculture et de la Pêche.

Les deux responsables ont passé en revue l'ensemble des questions relatives à la coopération scientifique et économique existant entre l'Algérie et cette Institution internationale indépendante arabe créée en 1977 et présidée par l'Assemblée

Consultative Internationale pour la Recherche Agronomique dont le siège est à Beyrouth (Liban) et les centres de recherche fondamentale à Alep (Syrie). Dans le domaine scientifique les relations actuelles portent essentiellement sur :

- L'échange de matériel végétal dans le cadre des recherches variétales (particulièrement pour les légumes secs)

- L'échange d'informations techniques relatives à l'activité agricole
- échange d'experts du secteur agronomique

S'agissant de la coopération économique, on notera, qu'un projet de coopération a été identifié entre

l'Institut de Développement des Grandes Cultures (IDGC) et l'ICARDA dans les domaines suivants :

- Amélioration génétique pour les céréales et légumes secs.

- Appui à la production (vulgarisation).

- Formation de cadres Algériens.

- Appui, dans le domaine de la relance du médicago (variété fourragère).

Une délégation d'experts de cette institution séjourne justement ces jours-ci dans notre pays pour mettre au point les lignes détaillées de ce programme qui sera essentiellement réalisé dans la wilaya de Sidi Bel Abbès.

Programme de coopération sur l'amélioration variétale de l'orge

Avec la multiplication de centres de recherches agronomiques en Tunisie (INRAT, INAT...), de nombreux travaux ont été réalisés que ce soit pour l'amélioration de certaines variétés de semences que pour l'introduction de nouvelles techniques culturales.

Nonobstant cela, et pour des raisons diverses, les résultats de ces efforts ne parviennent pas facilement aux intéressés ou bien restent peu connus.

A cet égard, cette rubrique que nous proposons dans le cadre de cette page hebdomadaire se propose de pallier à ce manque et de contribuer à une meilleure connaissance des recherches effectuées par les différents organismes de recherche dans le pays.

Parmi les actions entreprises dans ce domaine, il y a lieu d'indiquer le programme de coopération entre l'INRAT et l'Institut International de Recherches dans les Zones Arides (ICARDA) sur l'amélioration variétale de l'orge.

Le programme, commencé en 1978 par le laboratoire génétique des céréales de l'INRAT et poursuivi en collaboration avec l'ICARDA depuis 1980, a retenu trois variétés d'orge, dont deux adaptées aux zones semi-arides et une aux zones subhumides.

Ces variétés présentent :

- Un rendement en grains assez convenable
- Une précocité appréciable permettant une bonne résistance aux périodes de sécheresse.
- Une moindre sensibilité aux maladies foliaires de l'orge.

Les trois variétés ont été inscrites officiellement sur le catalogue officiel des variétés en 1985.

Il s'agit :

La variété Roho

Nom d'origine : Roho
Origine : Danemark
Année d'introduction : 1975
Obtenteur : I.N.R.A.T.

Caractères de la plante

Epi : 2 rangs
Hauteur : 60-80 cm
Résistance à la verse : bonne dans les zones semi-arides
Feuilles : vert foncé, moyennement larges

Précocité : variété précoce, épi 2 semaines avant Martin.

Caractères technologiques

Couleur du grain : gris-jaunâtre
Poids spécifique : 65,0 (Boulifa)
Poids de 1.000 grains : 40,30 g (Boulifa)
Taux de protéines : 11,66% (Boulifa)

Réaction aux maladies

- Résistant à l'helminthosporiose, à la virose nanisante de l'orge (BYDV) et au charbon nu.
- Moyennement résistant à l'oïdium.
- Moyennement sensible à la rhynchosporiose et à la rouille brune.

Productivité

La variété Roho dépasse Martin durant les 4 campagnes suivantes comme suit :

1980/81/82 : 28 - 57% (Hindi Zitoun)
1982/83 : 26% (Le Fahs, Siliana et Oueslatia)
1983/84 : 31% (Boulifa, Tajerouine, Koudiat Siliana et Oueslatia)

Zones de culture

La variété Roho peut être semée dans les zones à pluviométrie limitée (220-350 mm) comme Le Fahs, Bouarada, Gaafour, Siliana, Oueslatia, Kairouan, Zaghouan, le Sers, Le Kef et Tajerouine.

Recommandations pratiques

Date de semis :

1-5 novembre dans les zones à hiver frais

15-30 novembre dans les zones à hiver doux

Dose de semis : 65 kg/ha

Azote : 20 à 40 unités en fonction de la pluviométrie.

La variété Taj

Nom d'origine : WI 2198

Origine : Australie

Année d'introduction : 1979-80

Obtenteur : I.N.R.A.T.

Caractères de la plante

Epi : 2 rangs
Hauteur : 60-80 cm
Résistance à la verse : bonne dans les zones semi-arides
Feuilles : vert foncé, moyennement larges

Précocité : variété précoce, épi 2 semaines avant Martin.

Caractères technologiques

Couleur du grain : gris-jaunâtre
Poids spécifique : 64,0 (Boulifa)
Poids de 1000 grains : 32,80 g (Boulifa)
Taux de protéines : 13,65% (Boulifa)

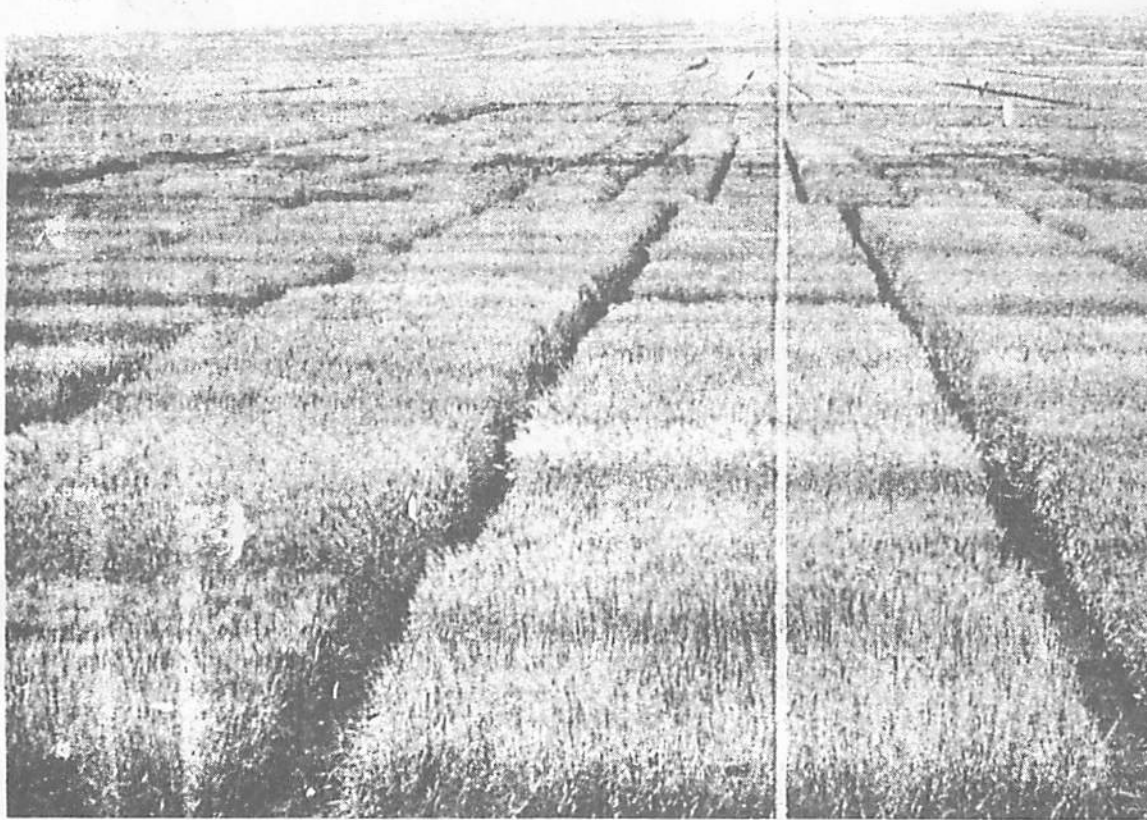
Réaction aux maladies

- Résistant à l'helminthosporiose, à la virose nanisante de l'orge (BYDV)
- Moyennement résistant à l'oïdium, à la rhynchosporiose et au charbon nu.
- Moyennement sensible à la rouille brune.

Productivité

La variété Taj dépasse Martin durant les 4 campagnes suivantes comme suit :

1980/81/82 : 11-38% (Hindi Zitoun)



1982/83 : 15% (Le Fahs, Siliana, Oueslatia)
1983/84 : 35% (Boulifa, Taje-rouine, Koudiat, Siliana et Oueslatia)

Zones de culture

Taj peut être semé dans les zones à pluviométrie limitée (220-350 mm)

Recommandations pratiques

Les mêmes conseils pour Roho.

La variété Faïz

Nom d'origine : ER/Apam
Origine : ICARDA (Alep)
Année d'introduction : 1979/80
Obtenteur : I.N.R.A.T.

Caractères de la plante

Epi : 2 rangs
Hauteur : 70-90 cm
Résistance à la verse : bonne dans

les zones sub-humides
Feuilles : vert foncé, étroites
Précocités : variété semi-précoce, épi 2 semaines avant Cérès.

Caractères technologiques

Couleur du grain : blanc-jaunâtre
Poids : spécifique : 61,5 (Béja)
Poids de 1.000 grains : 34,10 g (Béja)
Taux de protéines : 9,30% (Béja)

Réaction aux maladies

— Résistant à l'helminthosporiose
— Moyennement résistant à l'oïdium et à la virose nanisante de l'orge (BYDV).
— Moyennement sensible à la rynchosporiose et à la rouille brune
— Sensible au charbon nu.

Productivité

Faïz a montré une supériorité

nette par rapport aux témoins Martin et Cérès pour les 4 campagnes suivantes :

1980/81 : 28-38% (Béja et Koudiat)

1981/82 : 30% (Béja, Koudiat et Boulifa)

1982/83 : 20-27% (Béja, Koudiat, Boulifa, Le Fahs, Siliana et Oueslatia)

Zones de culture

Faïz peut être semé dans les zones à pluviométrie moyenne (Béja, Boussalem, Mateur, Le Fahs, Zaghuan, Bouarada et Gaafour).

Recommandations pratiques

Date de semis : 15-30 novembre
Dose de semis : 70 kg/ha
Azote : 40 unités dont 20 au semis et le reste au tallage.

Photo: Murtada Seral-Eddin



Syrian farmers dig an irrigation ditch in a field of faba beans.

BREEDING BETTER LEGUMES FABA BEANS, CHICKPEAS, AND LENTILS

By LYNN TEO SIMARSKI

Egyptian street vendors are famous for fried *falafel*, a nutritious snack prepared with faba beans. In Syria, *shorbat ads*—lentil soup—is a winter favourite. And in parts of North Africa and the Middle East, millions snack on *hummos*, a chickpea-sesame dip.

These and an array of other Middle Eastern dishes are made from legumes, dietary staples generally containing two to four times the protein of cereals, and hence known as the poor man's meat. Legumes are often a cash crop for the small-scale farmer, and they also supply straw for animal feed. The "big three" legumes—faba beans, lentils, and chickpeas—account for about two-thirds of food legumes produced in the Middle East and North Africa.

The region's production of these pulses has declined over the past 20 years. The Green Revolution, focusing on better cereals, largely ignored legumes, and 13 years ago, only two scientists were doing food legume research full time in the entire area.

Since 1975, however, IDRC has funded the development of an informal network on food legumes, as part of its support for applied research on basic food crops. Funding has been given to national legume programs in the region, to the International

Center for Agricultural Research in the Dry Areas (ICARDA), based in Aleppo, Syria, and to several Canadian institutions. All conduct research on lentils, chickpeas, and faba beans.

Legumes fit well into crop rotations because they add nitrogen naturally to the soil, saving the farmer the cost of artificial nitrogen fertilizer. Bacteria living in legume roots take nitrogen directly from the atmosphere, which is then used by the legumes for growth. Surplus nitrogen helps nourish subsequent crops such as cereals.

"One major constraint in the region to better legumes with more stable yields is the use of landraces, or local types, which are low-yielding and susceptible to diseases, pests, and the parasitic weed *Orobanche*," explains Dr Mohan Saxena, leader of ICARDA's food legume research. Another problem is that farmers need better methods of growing the crops.

'PRACTICAL MONEY'

Network support has focused on two fronts: the research programs of key legume-producing countries in the region, and ICARDA's food legume program. The countries receive "practical money", explains Gordon Potts, a Cairo-based program officer with

IDRC's Crops and Animal Production Systems Program. "The scientists appreciate the experience in research management that it provides. In some cases, it's the first time scientists have a chance to manage their own research funds."

The network is decentralized, without the need for complicated legal agreements. "Our approach is to support each country program, with research priorities set by the local scientists," says Dr Fawzy Kishk, IDRC regional director in Cairo.

At ICARDA, 241 researchers and technicians from the region have been trained in legume research. The network has also linked scientists through visits to other research sites and through legume germ plasm exchange. Every year ICARDA sends out selected legume varieties to regional cooperants for evaluation of their characteristics under local conditions. Results are sent back to ICARDA's breeders so that they can make further selections.

The first country in the network was Egypt, whose research on faba beans, lentils, and chickpeas received funding beginning in 1975. The Egyptian scientists' success since then has attracted other donors. The International Fund for Agricultural Development, for example, now supports the Nile Valley Project, an exemplary joint effort between

Egypt, Sudan, and Ethiopia to boost faba bean production.

DOUBLE YIELDS

Farmers and scientists, cooperating in an on-farm testing program, have come up with simple production packages that could almost double yields and increase farmers' incomes in Egypt and Sudan. They have identified lines resistant to chocolate spot disease in Egypt (using germplasm from Ecuador supplied by ICARDA). Other lines resistant to root rot and viruses were identified in Sudan.

Another success has been Giza 402, the first commercial variety to resist *Orobanche*. The researchers have also developed chemical weed controls for faba beans.

IDRC's support for Sudan, initiated in 1978, concentrated on faba and field beans, lentils, and chickpeas. "We have been able to assist research activity in a very isolated research station in northern Sudan," explains Potts. "It takes about 8 hours by bus and 12 by train from Khartoum to reach

Hudeiba Research Station. IDRC funds field operations, travel, publications, training, and consultancies, all of which have allowed the researchers to maintain a level of activity, impossible with only local funding."

As the network took off, other countries were added: Jordan, Turkey, Tunisia, and Morocco. In Jordan, a new legume program, primarily concerned with lentils, chickpeas, and the mechanized harvest of both, was financed at the University of Jordan, where technicians and graduate students were trained. They now carry out an extensive program of varietal and agronomic testing at several sites in the country.

In Turkey, which appointed its first legume research coordinator in 1983, the needs were different. Local funds were sufficient for basic breeding work, so outside support went to master's level training in legume breeding, processing, and agronomy.

Over the period of IDRC support, Turkey developed lentil varieties which are now ready for release. Three chickpea varieties were given to farmers in 1985 and faba beans, being tested on farms near Izmir, may be released to farmers this year.

Across the Mediterranean, in North Africa, farmers need legume genotypes suited to a colder and more humid climate than in West Asia. These could not be developed

earlier to exploit the entire rainy season. If the varieties were used throughout the entire Mediterranean region, chickpea production could double. ICARDA lines are being modified in 16 countries, from Morocco to Afghanistan, to surmount frost and ascochyta blight disease, the two main hazards of winter sowing.

In North Africa, networking has paid off. "Researchers in Tunisia have incorporated resistance to root rot and wilt into chickpeas we sent, which were already resistant to ascochyta blight," says Saxena. Both Tunisia and Morocco have field-tested the new winter chickpeas, and have identified faba beans tolerant to chocolate spot and ascochyta blight. In addition, Tunisian and ICARDA scientists have come up with recommendations for weed control, planting dates, and fertilizer for chickpeas, faba beans, and lentils.

A major bottleneck to legume production in the region is the lack of mechanization, particularly of the lentil harvest. The region's farmers, who grow lentils almost entirely by hand, are currently caught in a labour crunch, particularly at harvest. Farmers are switching to other crops, such as cereals, that may bring better profits, partly because cereal growing is more mechanized.

IDRC has provided financial backup for an

Lack of mechanization has seriously hindered the harvesting of lentils



Photo: Murada Saraj/Edin

at ICARDA's research farm in Aleppo. As ICARDA's Dr Saxena explains, "We had varieties resistant to a pest or disease that were not adapted to North Africa. So Tunisia became the site for a regional nursery where crop lines could be sent for modification at an early stage. The country did not have a full-time food legume breeder, however, so in 1981, ICARDA began to support a breeder and a research associate there. The goal has been to develop a core program which will later expand to the rest of the Maghreb — Morocco, Algeria, and Libya."

Part of ICARDA's role in the network is to tackle the basic problems of food legume research. One example is the decline in chickpea yields over the past 30 years. Although the region's chickpea acreage went up 14 percent over the period, production increased only 11 percent.

NEW VARIETIES PLANTED EARLIER

ICARDA researchers, along with the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), based in India, have developed large-seeded chickpeas with twice the yields of traditional spring-sown types. The new lines can be planted

interdisciplinary team of ICARDA breeders, agronomists, social scientists, and engineers to evaluate alternative methods of mechanizing the harvest. This year they will test the machines at farms in northern Syria where about 70 percent of the country's lentils are grown. An ICARDA training course for researchers in the region will review methods of evaluating the machines on the farm. The goal is for researchers all over the Middle East and North Africa to test the alternative technologies under their local production conditions.

As Potts sees it, "One of the most solid and long-lasting results of the network is the training of personnel and the establishment of national programs in food legumes."

IDRC will have directly sponsored about 20 food legume trainees at ICARDA by the end of the year. Many former trainees are already spearheading legume research in their countries, guiding programs that did not exist 15 years ago. As members of the network, they aim to ensure that legumes will again compete economically in a region where they have been grown for centuries. □

Lynn Teo Simarski is an agricultural writer, formerly on staff at ICARDA, in Aleppo, Syria.

THREE international organisations, two of them located in Syria, are helping Arab governments to make major strides towards higher self-sufficiency in cereals through seed improvement projects. Progress remains painfully slow, but there are signs that the momentum of improvement is gathering pace.

It needs to. Arab countries have the highest wheat consumption in the world, to say nothing of one of the highest population growth rates. While production has been rising at around 2% annually, demand has been increasing by about 10%. In North Africa, once the granary of the Roman Empire, it is reckoned that 65% of the wheat eaten is now imported.

Even more serious are figures for barley, the most important feed grain, the basis of livestock farming for both meat and milk in vast areas of the Arab lands, and a vital part of the livelihood of the majority of its rural inhabitants. Production levels are rising more slowly than wheat, and the rate of import increase is even greater. With 75% of the farm land in North Africa and west Asia growing cereals without irrigation, and in areas receiving less than 400mm, the prospects of productivity increases remain crippled by the continuing extensive use of old, unimproved landrace varieties, in disease-prone, badly managed, inadequately or improperly fertilised soils subject all too often to erosion through over-grazing or over-cropping in the drier areas.

Continuous cropping

With more people enjoying higher incomes to create greater demand, farmers have increasingly abandoned fallowing systems in favour of continuous cereal cropping, and they have pushed barley growing into the 200mm regions where rainfall is inadequate to guard against land degeneration. On land generally deficient in nitrogen and phosphate, which is rarely replaced by adequate manuring or artificial fertilisers, this has been a recipe for falling yields, and an invitation to creeping desertification.

In parts of Syria fallowed land has dropped from 60% to 30% of the cultivated areas since 1965. More sheep need to be sustained on these meagre harvests, and they look more to the range or steppe land for sustenance: a fact which helps to explain why in the Yemen AR large areas of grazing land have turned into semi-arid desert, while heavy erosion from the hill areas is clogging up the irrigation systems in the valleys below.

Cereal yields are probably more vulnerable to the fickleness of climate in the semi-arid areas of the Arab countries than almost anywhere in the world. Even on the rare occasions when too much rain falls, crops lodge and the nitrogen is leached out.

Severe winters, the frequency of spring frosts, late spring droughts, scorching early summer winds which desiccate the ripening

Better cereals are spreading—slowly

—by Montague Keen—

crop and shrink the kernels, or at best shatter the ripe grain heads — these are among the chief hazards. Especially in the higher areas above 1,000 metres, no two seasons are alike.

Weather patterns are statistical figments. Although rainfall was above average in the 1984/85 season in Syria, for example, yields were depressed by drought towards the critical period of plant development. Added to this is the mounting problem of salinity. Chiefly this is associated with irrigated areas, but many dry land farming systems are now affected.

The improvement programme of the International Centre for Agriculture in the Dry Areas (ICARDA), working in conjunction with the International Maize and Wheat Improvement Centre in Mexico (CIMMYT), is now producing new varieties of wheat and barley from which several Arab countries are already reaping benefit.

ICARDA's extensive germplasm testing network, in which 46 countries participate, has resulted in the selection of 15 bread wheats, 17 durum wheats and 11 barley cultivars. These have been selected and bred by national governments as improved varieties for multiplication and distribution to farmers.

This is not a speedy process. It normally takes 10 to 12 years from the original

testing of a variety to its general release. These new cultivars could yield increases averaging 20 to 50%, depending upon the husbandry systems employed.

Yield alone is not necessarily the main object of improvement. In the 200 to 400 mm rain belt area, ability to resist pests and diseases and, not least, the stresses of inadequate moisture, are leading qualities for which plant breeders are looking.

Intensive efforts

Throughout the Arab countries the past 15 years have seen an intensive concentration of effort and resources on the irrigated lands: not unreasonably, since it is in this area that the quickest and most spectacular benefits of increased food production can be gained, as the example of wheat in Saudi Arabia has shown. Inevitably, however, this has overshadowed the role and obscured importance of the rain-fed land on which the vast majority of the population depends, even in Iraq, but with the possible exception of Egypt.

At the same time the longer-established institution, the Arab League's own prestigious research station, located in Damascus, the Arab Centre for the Studies of Arid Zone and Dry Lands (ACSAD), has included among its wide-ranging tasks the collection, evaluation and conservation of cereal germplasms from which it is now producing no less than 400 tonnes each of wheat and barley cultivars to be sent to Arab countries, where the need for drought-resistant varieties is paramount. Propagation in Morocco, Algeria, Jordan and Syria has been undertaken by an International Fund for Agricultural Development (IFAD)-funded wheat and barley improvement project, and the results are cultivars which are reported to have out-yielded the local strains by between 50% and 100%.

Since ICARDA has an international responsibility to improve barley and is the designated regional centre for both bread-making and durum wheats, it acts as the heart of an international network of germplasm exchange for the benefit of the 27 countries of North Africa and west Asia which it primarily serves. ICARDA calculates that farmers at the driest end of the rainfall spectrum (200-350mm), where bar-

Continued on page 19



A clean row of barley under trial at ICARDA's Telhadia experimental station in Syria.

Better varieties are spreading

Continued from page 17

ley is the dominant crop, lose one or two out of every five crops because of drought, and indirectly they have suffered because of the concentration of resources on the improvement of production on irrigated lands. This helps explain why there has been a far more significant growth in wheat production than in barley — because far more wheat is now irrigated — and why barley imports rocket up each year, faster even than wheat. More attention has also been paid to the development of improved varieties of bread wheats and durum, which are being rapidly adopted.

There are two aspects of ICARDA's work which make its growing contribution to raising food production and living standards in the semi-arid areas of such importance. One is the exceptionally wide testing facilities which it either controls or has had placed at its disposal by co-operating governments, universities and research institutions throughout the world, not merely in the North African and east Asian countries for which it has specific responsibility. This enables cultivars to be tested simultaneously under a wide range of soil, topographical and climatic conditions.

Changing roles

Secondly, it acts as a training and advisory centre for collaborating governments which are gradually changing their roles as recipients of technology to that of fully fledged partners in the research processes. Jordan, for example, is now evaluating durum wheat landraces in order to identify potential sources of genes for stress tolerance, and this will be of value to many

ICARDA's new headquarters in the north of Syria are due to be opened in May next year.

other countries. It also helps ensure there is full coordination and uniformity of method, and avoidance of wasteful duplication.

Networks are being established to identify the race and virulence of rust pathogens and septoria of leaf blotch which are major cereal diseases. Since the highly specialised equipment for this already exists in Portugal, Pakistan and Egypt, the basic work is being done there rather than at ICARDA, which will analyse the data on its computer and distribute the results to national programmes.

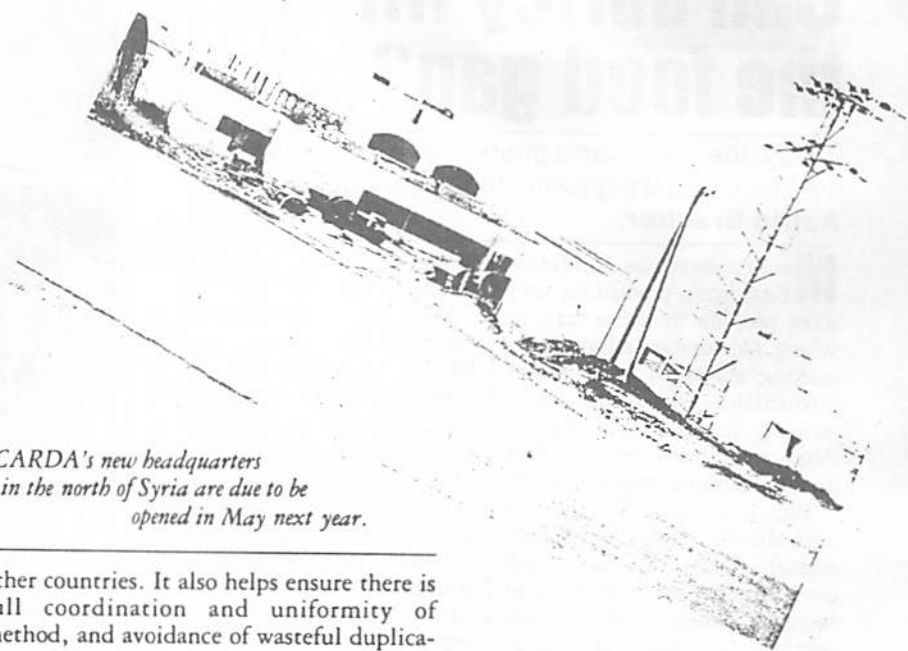
The task of analysis is formidable. ICARDA's germ bank in 1984 had over 15,000 barley and 16,400 bread wheat accessions alone, and last year it evaluated 25 separate characteristics in no fewer than 5,000 different barley samples. The aim: to increase the reliability of yields in bad years while substantially improving them in good ones.

This means selecting crops capable of coping with a combination of drought, cold, heat and salinity, as well as pressures from insects and diseases. That involves the selection at sites throughout the area of germplasm material which has been tested for difference stress responses. Those which have successfully withstood drought conditions, for example, are crossed with others which yield well and show tolerance to other stress challenges. By the fifth generation, promising lines begin to emerge, and advance yield trials are started through an international network of trialling nurseries. In Syria, for example, the ICARDA-selected genotypes are tested in four different environments for two seasons, and the best entries are promoted to advanced trials in eight other environments for two further years, in Cyprus, Tunisia and Syria.

There is close co-operation with ACSAD in joint research, training projects and on-farm cereal trials, as well as exchanges of germplasm. Not only has ACSAD produced some useful new varieties of wheat and barley, which thrive better in dry conditions (see AWA Vol 2 No 1) but it has shown that a substantial reduction in seeding rate of wheat and barley can save up to half the quantity of seeds used in traditional planting.

Perhaps the real test comes on the farm, however. Without the willingness of the farmer not merely to accept new varieties but to associate them with improved and often strange husbandry practices, the full potential of better varieties cannot be realised.

Institutions like ICARDA have encouraged the descent by researchers from ivory towers of academic excellence into practical involvement with farmers in applying the work and recommendations of scientific experts in several Arab countries. Perhaps this is the most hopeful sign for the future of arable production in the dry areas.



Can barley fill the food gap?

Barley, the poor man's grain, may be the answer to the Middle East's growing food shortage, writes Astrid Bracher.

Mention increases in Middle East grain production, and most people's thoughts turn to wheat. Governments have been making efforts to boost wheat production, with the most striking increases coming in Saudi Arabia, which had another bumper crop this year.

But a growing number of agricultural experts are concerned that Middle East governments, in their rush to increase wheat output, are overlooking wheat's poor relation, barley. They argue that if the region is to have any hope of keeping grain imports under control, it urgently needs to increase barley production.

One of the leaders of the barley lobby is Nabil Khaldi, a Palestinian whose study of food "gaps", or shortfalls, in the Middle East and North Africa was published by the International Food Policy Research Institute (Ifpri) in Washington last year.

The study shows that the Middle East has become less able to feed itself, and that the supply of staple crops is falling increasingly behind demand. It estimates that the shortfall for staple foods grew from 8mn tonnes in 1974 to 17mn tonnes in 1980, and will reach 52mn tonnes in the year 2000.

Khaldi has come up with some surprising results in his analysis of the changing structure of the staples gap.

Traditionally, wheat has accounted for most of the gap. But Khaldi, who has been struck by Middle East policy-makers' determination to improve wheat output, believes that between 1980 and 2000 wheat's share of the gap will fall from 59% to 22%.

Meanwhile the shortfall in coarse grains – barley and sorghum – will grow to 36mn

tonnes in 2000, nearly two-thirds of the total shortfall.

Why the huge increase in demand for coarse grains? Khaldi explains that rising personal incomes have produced rapid increases in the consumption of animal products such as meat, milk and eggs.

In the oil states, beef consumption grew by 14% between 1973 and 1980, while poultry consumption grew by 21%. Coarse grains are the major component of animal feed.



Khaldi: 'barley is a unique crop'

The preoccupation with wheat "has led agricultural policymakers to relegate barley to a secondary crop", Khaldi told *The Middle East*.

One reason may be that barley is a crop usually grown by poor farmers in areas of low rainfall. In those countries where barley forms a significant part of the human diet (such as Morocco, Tunisia and Iraq) it is usually eaten by the poor and by subsistence farmers.

Khaldi points out that barley occupies a unique environmental niche, surviving in soils of



Farmers of the marginal zones: barley is vital

low fertility with 400mm (or less) of rain a year.

It is more tolerant of salt and alkalines than wheat, and in areas where there is rain only in winter and where winter temperatures are low, it has an advantage over most other cereals.

Government pricing policies have discriminated against barley farmers in favour of their wheat-growing colleagues.

It is common to find that local wheat costs more than imported wheat, while local barley is cheaper than imported grain. In addition, wheat farmers often receive credit and generously subsidised inputs such as seed, fertilisers and irrigation equipment.

As profits from barley are low and unstable, being dependent on weather conditions, farmers do not invest much time and energy in the crop. "Farmers look on barley as a big lottery: they throw the seed and leave it," Khaldi says.

In the late 1960s the Middle East was self-sufficient in barley, but by 1982 it was importing around 4mn tonnes, nearly a third of consumption. By the year 2000 the demand for barley as animal feed could rise to 30mn tonnes, three times the 1980 figure.

Institutions such as the International Centre for Agricultural Research in the Dry Areas (Icarda) and the Arab Centre for the Study of Arid

Zones and Dry Lands (Acsad) have made some progress in research into ways of improving the productivity of barley.

Icarda has found that the application of small amounts of phosphate fertilisers can increase production, even in years of low rainfall. Variety 176 – a strain of barley developed by Acsad – is said to be promising.

As the next stage in the barley campaign, Khaldi intends to launch a three-year project under Ifpri's auspices, in collaboration with Icarda and Acsad. There is a good chance that funds will be obtained from the Arab Fund for Economic and Social Development (AFESD).

The project, which is likely to cost \$600,000, will examine trends in supply and demand, and estimate shortfalls for 1990 and 2000.

It will assess the economic potential for increasing barley productivity, and will look at the role of price policies. Exploring ways in which governments can expand barley production, it will focus on Turkey, Syria, Jordan, Saudi Arabia and North Africa.

The project will also investigate the relationship between barley and livestock production. Throughout the Middle East farmers depend on a fragile barley-livestock system. If the barley crop fails because of drought, the whole system can collapse. □

ILCA NEWSLETTER

16 SEP 1986

International Livestock Centre for Africa

Vol. 5, No. 3

July, 1986

Faba beans: Ethiopia joins Nile Valley Project

Ethiopia is joining a successful project to increase faba bean output.

Faba beans are a staple food in Egypt and Sudan, the two countries involved in the project so far. The project uses new varieties of the bean as one component in a comprehensive agronomy package including fertilizer, irrigation, and pest and weed control. Increases in yields achieved in on-farm trials are reported to be as high as 276% in Sudan. The new varieties were developed and tested by national scientists, with technical and financial support from the International Center for Agricultural Research in the Dry Areas (ICARDA), and the International Fund for Agricultural Development (IFAD).

The faba bean is also important in Ethiopia, mostly as human food although its residues are occasionally fed to livestock. Being a legume the bean adds to soil fertility, another major advantage in a country where few farmers can afford commercial fertilizers. Ethiopia's Institute of Agricultural Research has already begun on-farm work to evaluate the traditional varieties grown by farmers; research on new varieties, supported by ICARDA, will begin soon.

The success of the Nile Valley Project spells expansion, not just into new countries but also into new areas of research. The Arab Republic of Yemen is now interested in becoming the fourth country

(Contd. from page 1 col. 1)

to join the project, while wheat and barley will be the next two crops to benefit from scientists' attention, complementing the work already under way on lentils in Sudan. On the faba beans side, on-farm research will be expanded to cover larger areas as the national extension services of Egypt and Sudan gear up to deliver the new technology quickly to farmers. Research will also move into intermediate technology for the mechanization of field operations to overcome labour shortages. Source: ICARDA press release.

(Contd. on page 7 col. 1)

Producer : David Dixon
Narration : George Macpherson

Tape No.6R/42G094G

=====

CUE: Fallow usually means leaving soil without any crop for part or all of a season so that soil fertility can be built up, and so that weeds can be tackled when they appear. It is like giving the land a rest for a while. Farmers in Syria and other countries in the Middle East and North Africa traditionally have crop rotation with a cereal crop being followed by a fallow - and then back to cereal - often barley. This is in areas where the rainfall is between 250 and 400 millimetres a year. Scientists at ICARDA - the International Centre for Agricultural Research in Dry Areas - have been developing a new farming system that will make that fallow period even more useful. During the fallow they plant a legume, which is then grazed off by sheep. The plant they chose is medicago, or medics, as it is known. The plant grows locally so ICARDA tried out thousands of different types and chose one that did the job particularly well. But, as Mary Cherry asked Montague Keen, why medics and not something else.

Medics have a remarkable capacity to shed their seed, which then remain dormant for a year or two in the soil. that means that in year three or even in year two, they have a significant and commercially valuable legume crop which is highly nutritious to sheep and doesn't cost them anything to sow. It is self-seeded and remains dormant while the wheat or barley crop is growing. It then enables the stock carrying capacity of the land for sheep to be greatly increased. Some people have even suggested that it could be doubled. In theory that means that there could be an extra one hundred million sheep in the north African and Middle East territories if this system were universally adopted.

Most legumes require the the right bacteria to fix nitrogen. Medics

02- SG1 1056 01/09/86 LINES : T=58 P=27
therefore have to be inoculated. The plant originated in the Middle East and there are still plenty of varieties there. The strange thing is that they were taken up by the Australians and developed in Australia as a means of improving the stock carrying capacities of land and of avoiding the waste of fallowing in semi-arid areas. It was the Australians who thought that the system should be re-introduced into the Middle East. However, their varieties turned out to be unsatisfactory. They were not winter-hardy enough. ICARDA then took on the job of selecting the right sort of varieties, which would withstand the extreme conditions of drought and heat and cold, which are found in that area.

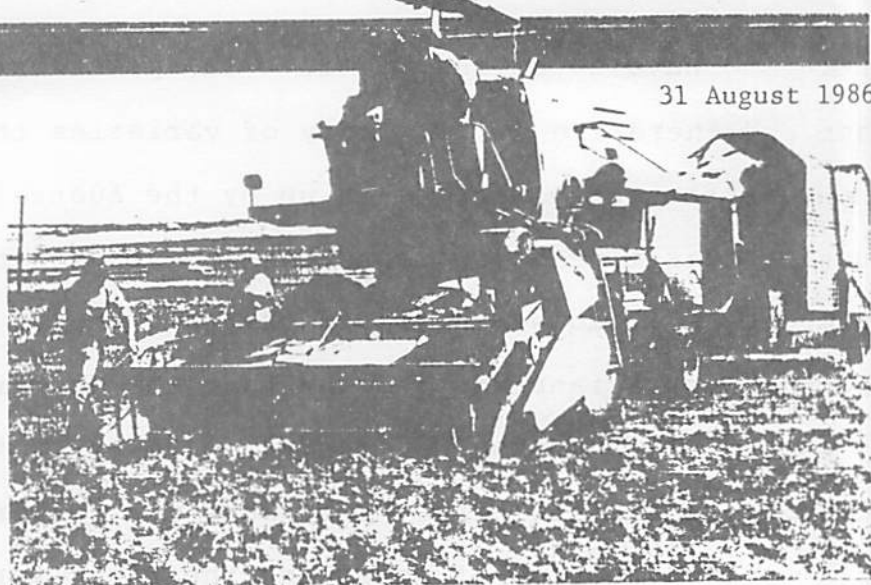
The original lot of seed has to be inoculated. Once the original lot has been inoculated the bacteria live on in the soil and continue to produce nitrogen, which is the basis of the fertility of the land and helps the next crop.

Most of the land throughout the Middle East and North Africa is very deficient in phosphate. They found in trials in various parts of the area, particularly in Syria that a considerable increase in the yield was possible. There was also an enormous saving in moisture. They also discovered that four fifths of moisture is wasted and not actually used by the plant for various reasons. This loss can be greatly reduced by having - with the aid of more phosphate a speedier growth of the plant, a quicker covering of the land. Therefore there is reduced soil erosion and evapotranspiration. The crop is then better able to withstand those periods of drought stress, which afflict the plant at different stages of its growth. It is harvested about 10 days or a fortnight earlier and so misses the dangerous

03- SG1 1056 01/09/86 LINES : T=58 P=
drought spell in late April or May, which can severely reduce the crop.

ICARDA,
P.O. Box 5460,
Aleppo,
Syria.

Machines shatter legume yield records



Combine harvesting with a straw and chaff collecting trailer has not been successful.

MECHANISING the harvesting of the Mediterranean lentil crop is proving a difficult challenge for those Arab countries seeking to solve the associated problems of low yields, high wastage, and acute labour problems. Lentils form an important part of farmers' incomes and of the national diet throughout much of this area.

But now there is real promise of one or more solutions; and they could bring about major changes in farming systems.

The problem of harvesting is not, of course, confined to lentils: similar although not identical difficulties apply to the two other leguminous crops for human consumption widely grown throughout Arab Mediterranean countries: faba (broad) beans and chick peas. But lentils illustrate almost all the difficulties and hint at some of the solutions.

Covering 2 million ha throughout the world, lentils have long been a major Mediterranean crop. They are fairly cheap; they have valuable nitrogen-fixing qualities and they provide a significant source of

protein for vast numbers of people. But the low level of mechanisation in both sowing and harvesting in the Middle East has encouraged farmers to grow cereals, which better lend themselves to mechanised drilling, weed control and harvesting.

The usual practice is to broadcast by hand after furrows have been opened up by duckfoot cultivators. Studies carried out by the International Centre for Agricultural Research in Dry Areas (ICARDA) in Syria, show that this demands nearly double the seed rate of a standard seed drill, and almost

by Montague Keen

double the amount of labour. It leaves the seed at depths varying from 0 to 10 cm in the ground, whereas the optimum depth for the drill is 4 to 6 cm. It makes mechanical weed control virtually impossible and mechanical harvesting highly unsatisfactory. Moreover it leaves surfaces less even, a factor which later gives rise to mechanical harvesting difficulties.

A simple seed drill followed by a leveller board will give substantial improvements and leave the seed bed in a better state for herbicidal application. An early application of a selective herbicide can minimise weeds in crop rows.

But the real problem with lentils arises from the high cost of harvesting methods. Normal practice is to pull up the entire plant by hand and then thresh the seeds out with the aid of an animal-drawn sledge. This leads to the loss of straw. Unlike the position in some of the Maghreb countries, however, lentil straw is often worth as much as the lentils themselves, and on occasion is exported to Saudi Arabia. But hand-pulling imposes a heavy demand on labour during the very short 4-7 day harvest period.

A standard cutter-bar harvester might seem the obvious answer; but unhappily this creates even greater losses through

shattering, and it also loses one third of the straw. If the crop is short, or is lodging or (as is often the case) is planted on ridges thrown up by the duckfoot opener, or if fields are stony, then mechanical harvesting can be fatally costly. The same applies if harvesting is combined with threshing: losses and breakage of seeds have been found to be as high as 30% to 40%. Nor has any acceptable system been found to collect the straw.

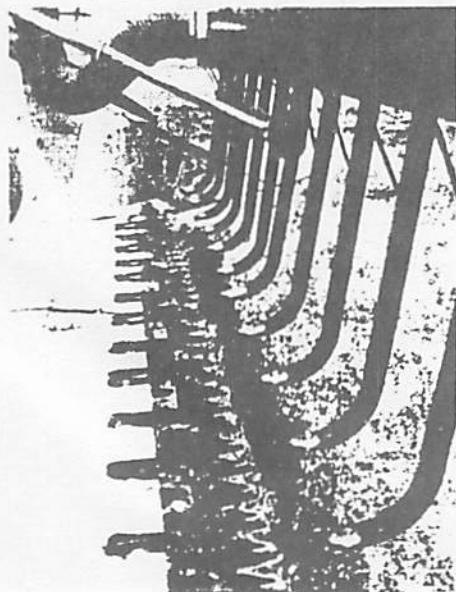
Work at ICARDA also funded by Canada's IDRC has revolved around two possible answers. One is to replicate entire crop hand-pulling by using cutter-blades 2.5 cm below the soil. This has greatly reduced the straw loss and should not be more wasteful of seed than hand-pulling, which normally takes place just before seed-ripening and when the lentil beans are in the yellowing phase, with still some green around. The plants are left to dry in the sun for between three and five days. This system nevertheless leaves the farmer to collect, stack and thresh the crop, however.

Reduced straw loss

An alternative approach is to harvest the whole of the plant before maturity — to prevent shattering — and combine it with a swathing device or trailer which will collect the plants and transport the material to a nearby threshing machine, although this will mean costly investment in specialist equipment employed for only a few days in the year.

An improvement on this would be to use a reciprocating mower but to cut the crop as low as possible. It has been found suitable where the surface is flat, and it is not harmed by stony soils because a very high reciprocating blade rate (1500 rpm) together with blades the front of which are cut off blunt ensure that all but the largest stones go safely over the top of the cutter bar.

However, to make this pto-driven system acceptable, it is essential to minimise the loss caused by lodging or collision with low-lying pod stems. For this ICARDA has devised two approaches. One is to seek to



A close-up of the double-knife cutter bar and blower pipes.

select varieties which are taller and more erect, so that the cutter bar passes clearly under low hanging pod-bearing stems — and several significantly improved varieties have already emerged which are pushing down harvest losses; and the second is a mechanical device, being extensively tested this season, in which blowers mounted above the cutter bar blow any loose lentil pods into the collection chamber for transport to the combine's thresher.

Radical solution

There may be another more radical solution. It has been under study for the last four to five years, and the first batch of 20 or 30 machines are expected to be tried out under field conditions this season: it is a complete lentil puller which simulates hand pulling and appears to suit a wide range of planting and husbandry conditions, even when the land is not flat, where there is bulging, or when the varieties are short-stemmed.

The machine has been developed with funds provided by the German Development Organisation (GTZ) in conjunction with ICARDA and a Turkish university. There is some doubt whether the plastic or rubber belt which is crucial to the safe transport of the pulled lentils will last long



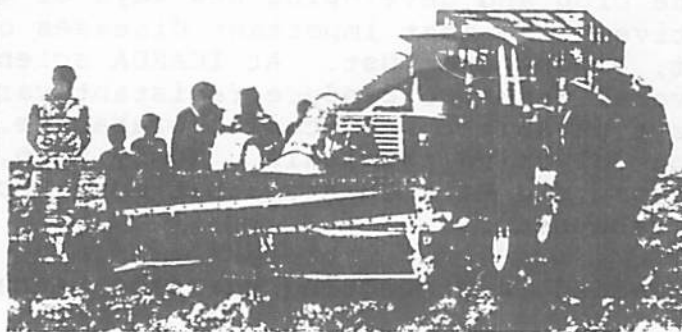
Traditional hand harvesting of lentils.

enough on stony ground to make the project economically worthwhile, however. The machine's ability to sort stones from

plant material has also to be put to practical tests.

The use of these sophisticated machines will become more economic when varieties are developed to extend the planting and harvesting season, but it is felt unlikely that harvesting can continue for longer than 100 days from the earliest to the latest maturing variety.

Hand harvesting of lentils represents between 20% and 60% of the entire production cost. It is becoming of critical importance in many countries to find workable mechanical solutions, preferably by a combination combining harvesting and threshing. There are good chances that, through one form or another, this solution will soon be found.



One of the trial lentil pulling machines which simulates hand harvesting with its suction blower.

=THE FARMING WORLD - 1430=
=ARAB FARMERS REAP LARGE BEAN CROPS=

Producer : David Dixon
Narration : George Macpherson

Tape no.6R/42G097G

=====

Faba beans are an important crop in Asia and Europe. In some places, like the Nile Valley and Egypt it could be considered to be the single most important crop. The International Centre for Agricultural Research in Dry Areas - ICARDA - has been given the job of improving the crop and developing new ways of growing it so as to be more productive. The most important diseases of faba beans are chocolate spot, blight and rust. At ICARDA scientists have been working for several years to produce resistant varieties. Another pest of faba is a parasitic weed called orabanche, which is very difficult to control using chemicals. Monty Keen, Editor of Arab World Agribusiness told Mary Cherry a bit more about ICARDA's work on protecting the faba beans.

ICARDA have succeeded in protecting the faba beans, largely by accumulating a vast range of germ plasm from all over the world and by selecting appropriate varieties for resistance. The resistance is not only to diseases and competitive weeds like orabanche, but also to degrees of drought. In the Middle East they are very dependent on rainfall and its regularity. One of their biggest problems is therefore to ensure that they have varieties that can stand up to periods of drought stress. So this is one of the factors, for which ICARDA have been selecting new varieties.

Farmers have recognised that the ivory tower approach that had previously characterised much research work in the Middle East is now being transformed. There used to be a 'We and they' attitude. But ICARDA and other organisations are encouraging researchers to get out into the field and show farmers where, how and what to do. They

are now testing out the new varieties with the aid of farmers, seeing the mistakes they make as researchers and the mistakes the farmers make. Researchers are now working together as a team with farmers in order to bring about an improvements, which will help both of them.

The results of their work spreads outwards. Other farmers tend to look over the fence and see the researchers now have dirt under their finger nails. This is a relatively novel and very encouraging feature of ICARDA's work.

The ordinary farmer will be able to get seeds of the improved varieties. Monty Keen recently attended a FAO Regional Conference in Ankara. (The region covers Turkey and the Middle East, virtually to India) He was struck by the determination of the various government speakers to ensure that all the efforts that they have been making to improve seed strains and varieties were not going to be wasted by an inefficient distribution system, which was subject to corruption or inefficiency or swindling or all three!

The main theme of the conference tended to be on seed improvement, on management-training and on control to ensure that the new varieties and the multiplication and certification of the multiplied stocks didn't get into the wrong hands. They wanted to ensure that they weren't contaminated or polluted and were effectively controlled, though in a fashion that didn't bring the dead hand of bureaucracy down on what should be a co-operative effort with free enterprise, but which protected the farmer against being swindled.

ICARDA,
P.O. Box 5466,
Aleppo,
Syria.

BALUCHISTAN TIMES

EDITOR: SYED FASEEH IQBAL

VOL X No. 325

QUETTA RABI-US-SANI 1, 1407.

SATURDAY DECEMBER 6, 1986.

DR. AMIR VISITS AGRICULTURAL PROJECTS

QUETTA, Dec 5:

The Chairman, Pakistan Agricultural Research Council Dr. Amir Mohammad arrived in Quetta this afternoon, on a short visit to the Province. Soon after his arrival he visited the Agriculture

Contd on back Page

DR. AMIR VISITS

Research Institute on Sariat Road.

Later he left for Dasht to see the Dryland Agriculture Experimental Area at Mian Ghundi.

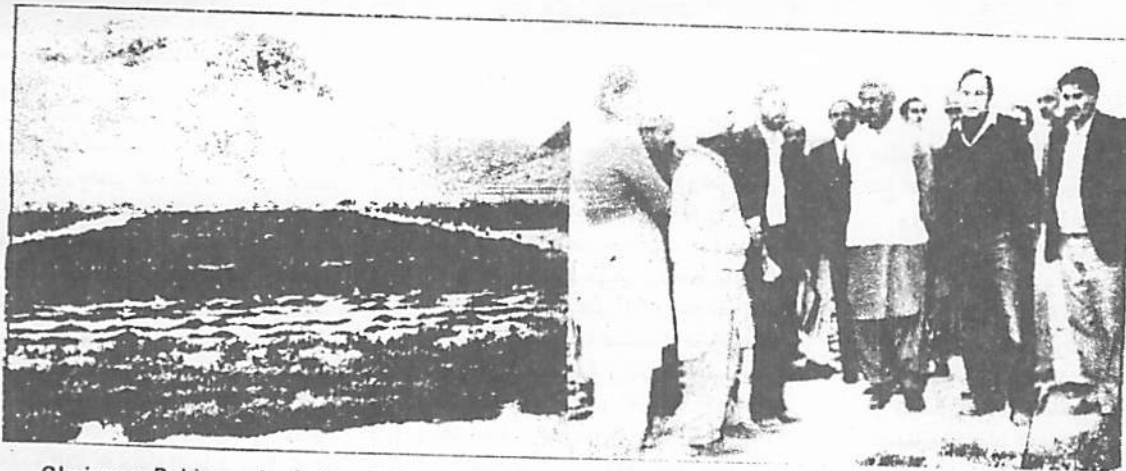
BALUCHISTAN TIMES

EDITOR: SYED FASEIH IQBAL

VOL X No. 326

QUTTA RABI-US-SANI 2, 1407.

SUNDAY DECEMBER 7, 1986



Chairman Pakistan Agricultural Research Council, Dr. Amir Mohammad inspecting experimental fields at Miargundi (Dasht) on 5-12-1986.



تجسم عمل استنباط المشاتل للفلول المصري

المقاومة لهذين المرضين حتى في فصل الشتاء مع امكانية مضاعفة المردود من المحاصيل وفي خاتمة هذه اللقاء اشار السيد الحبيب حليمة الى ان اتفاقية التعاون التي تجمع بين ايدكارد والمعهد القومي للبحوث الزراعية تمتد على 4 سنوات وتتجدد بصفة الية كلما ابدت الاطراف المعنية استعدادها للمواصلة . مع العلم انه سيقع دعم التعاون في مجال البحث العلمي الزراعي من خلال اسهام مؤسسات دولية اخرى في شتى برامج البحث الوطنية غير انه لن يكتب لمشروع البحوث النجاح والاستمرار ما لم توفر لها الظروف الملائمة للعمل وما لم نسخر الطاقات المادية وما لم نجند الكفاءات والخبرات البشرية . وهذه العوامل في تكاملها تعتبر ضرورة لتذليل الصعوبات وتجاوز المشاكل وهي ضرورية لاكساب البحث العلمي الزراعي في بلادنا نتطلع اليه من جدوى وفعالية وبعد عملي لا سبيل لبلوغه دون تضافر جهود كل الاطراف المعنية وتغانيتها وتكثيف مساعيها خدمة للبحث العلمي الزراعي

المحلي في فصل الربيع غير ان تجارب تاريخ البذر قد اثبتت انه يمكن تقديم وقت البذر الى فصل الشتاء لتحقيق زيادة هامة في الانتاج بحيث يزرع الحمص بصفة متزامنة مع زراعة الحبوب والجدير بالذكر ان عادة تقديم البذر كان معمولاً بها من قبل الا ان العودة الى البذر في الشتاء يقتضي منا استعمال مشاتل مقاومة للأمراض الموجودة والتي تصيب الحمص وخاصة منها مرض التبقيع الاسكوكيتي (تقشقة) الذي يلحق الاوراق . ومرض (فوزاريون) وهو الذي يذبل النبتة عامة ويترتب عنه تعفن الجذور . والملاحظ انه قد يكون الفلاحون اجبروا على تأخير وقت البذر لتلافي مرض الاسكوكيتي الذي كان يصيب مشاتلهم في ذلك الوقت نتيجة ارتفاع درجة الرطوبة في اشتهاء وربما كانت المشاتل المتوفرة في ذلك الوقت مقاومة نسبياً لهذا المرض الا انها بمرور الزمن تلاشت واصبحت غير قادرة على المقاومة . اما النتائج المتوصل اليها لحد الان على مستوى التجارب تعتبر طيبة للغاية ونأمل مد الفلاحين مستقبلاً بمشاتل جديدة تتميز بخاصية

ذلك اننا اهتدينا خاصة الى اهمية تحديد وقت البذر الذي يعتبر عاملاً حساساً في تحسين الانتاج كما تفلطنا الى ضرورة تكيف كمية البذر بالنسبة لكل نوع من انواع البقول الجافة المذكورة (الحمص - الفول - العدس) وقد تم ضبط هذه الكمية وتحديدها على اساس علمية

فاعتماداً على مشاتل محلية تمكنا من تحقيق نسبة تحسين في الانتاج تتراوح بين 20 و 30 بالمائة . مع العلم ان هذه المعطيات الجديدة التي توصلنا اليها في مجال تطوير الفنيات الزراعية من اجل تحسين مردود البقوليات الجافة قابلة للاستغلال الميداني الواسع النطاق

اما بالنسبة لاستنباط المشاتل الجديدة ذات الانتاج الوافر والقادرة على مقاومة الامراض والمقبولة من الفلاح والمستهلك فهي تقتضي زمناً طويلاً ومتابعة مستمرة وقد حققنا في شأنها خطى ثابتة ونتائج ايجابية ومتقدمة نسبياً لا سيما في زراعتي العدس والحمص اما بالنسبة لنوعي الفول فقد واجهنا في شأنهما كثير من المشاكل عادة ما يزرع الفلاح الحمص

تشهد مختلف مؤسسات البحث العلمي الزراعي في بلادنا منذ سنوات حركية دائبة شملت شتى الفنون الفلاحية واختصاصاتها وقد تنوعت برامج البحوث والدراسات الزراعية حسب حاجيات اوضاعنا الفلاحية ومشاكلنا القومية خدمة لاهداف مخططاتنا التنموية في القطاع الفلاحي . وقد توزعت برامج بحوثنا الوطنية على مختلف معاهد البحث ومحطاته المنتشرة في كل جهات الجمهورية . والجدير بالملاحظة ان العديد من برامج البحوث القومية تساهم في انجازها مراكز ومعاهد بحوث زراعية دولية ، وقد كان لتعاون تونس مع الكثير من المؤسسات الدولية في المجال الزراعي اثره الطيب ووقعه الحسن في دفع البحث العلمي الفلاحي ببلادنا والاسهام الفعال والايجابي في النهوض به وتطويره . وسعيا منا نحو تغطية اعلامية افضل لمشاريع البحوث العلمية الزراعية الوطنية التي يتم انجازها بالتعاون مع جملة من المراكز والمعاهد الدولية كانت لنا لقاءات بمديري هذه المشاريع الذين خصونا مشكورين بتقييمات شاملة تعكس فلسفة كل برنامج بحث ، اهدافه ، نتائجه ، اهم المراحل التي قطعها ، افاقه وطبيعة المساعدة التي تتدخل من خلالها المؤسسة الدولية المشاركة في السهر على حفظ المشروع تعهده وتحقيق مطامحه

متواصل وتجارب مكثفة والتحقيق الهدف القريب المدى المتمثل في تحسين مردود المشاكل المحلية المتداولة لدى الفلاحين حرصنا على تحسين طريقة الزراعة لا سيما من حيث تزيغ البذر وكيفية مقاومة الاعشاب الطفيلية مخضعين المشاكل المحلية عبر العديد من التجارب للاختبارات الميدانية وهو ما افنى بنا الى نتائج جد مشجعة

اما الهدف البعيد المدى وهو الذي يرمي الى استنباط مشكلات جديدة عن طريق التهجين تكون افضل انتاجا ومضاعة ضد الامراض المحلية وتكون مستجيبة لرغبات المستهلك والفلاح التونسي . فانه يتطلب وقتا اطول الا اننا قطعنا اشواطاً مشجعة في هذا المجال من خلال تجارب اجريت في محطاتنا الرئيسية ببلجة والكاف وغار الدماء وسجنان ، فضلا عن تعاوننا مع المدرسة العليا بالكاف وديوان الحبوب من اجل التنسيق والتكامل وتوسيع رقعة التجارب . اما مساهمة ايكاردا فهي تتمثل في ثلاثة مستويات :

- (1) تبادل المشاتل والاصول الوراثية والخبرات في ميدان زراعة البقوليات الجافة
- (2) تسمية خبير مقيم مختص في تحسين مشاتل البقوليات الجافة
- (3) تقديم تجهيزات وتسهيل عمليات البحث

اهم النتائج المسجلة

بالنسبة للهدف القريب المدى توصلنا الى عدة نتائج تفحص تحسين طريقة زراعة المشاتل المحلية وتنمية انتاجها وانطلاقا من الموسم المقبل سنعمل على اعلام المزارعين وتحسينهم بالفنيات الزراعية الجديدة ، من

النمو الاقتصادي تولت وزارة الفلاحة بالتعاون مع ايكاردا بحث خلية بحث في البقوليات بالمعهد القومي للبحوث الزراعية بتمويلات من مركز البحوث للتنمية الدولية بكندا

* اهداف المشروع

اعترضت سبيلنا العديد من المشاكل وكان من البديهي ان نلجأ فيها نذكر خاصة صعوبات الانتاج نظرا لعدم توفر مشاتل جاهزة تتكلم ومعطيات المناخ التونسي وخاصيته اما انواع المشاتل التي كانت متداولة ورائجة الاستعمال لدى الفلاحين فقد كانت مرتفعة الحساسية اذ تتلف محاصيلها الامراض التي تصيبها فتتلف بها بسرعة ومرد ذلك ضعف حصانتها ومناعتها ضد الامراض والاوربة المعرضة اليها باستمرار . فضلا عن رداءة المشاتل المتواجدة سجلنا نقصا ملحوظا في الفنيات الزراعية المعتمدة نظرا لانعدام التجارب في هذا الميدان

وبناء على هذه المعطيات الانفة الذكر كان من الطبيعي ان نتكثف مساعيها وتوجه اهدافنا القريبة المدى الى انتشال البقوليات الجافة والبحث عن الحلول الطرفية والسريعة لتحسين انتاج البقوليات وبالتوازي استقصاء الحلول الجذرية وتتمثل اساسا في استنباط مشاتل تتكيف والاضلاع المناخية المحلية . ولكن ابتكار مشاتل جديدة مرتفعة الانتاج ومقاومة للامراض عن طريق التجارب الميدانية والمخبرية بالتهجين وغيره من الاساليب العلمية . لا يمكن الا ان يكون مطمحا بعيد المدى نظرا لما يقتضيه هذا العمل من جهود وما يستغرقه من وقت تعليمها روح البحث العلمي التي تتطلب متابعة

ونستهل هذه السلسلة من اللقاءات بمديري المشاريع التعاونية بقاء جمعنا بالسيد الحبيب حليمة رئيس مخبر البقوليات الجافة بالمعهد القومي للبحوث الزراعية بتونس وهو يشغل خطة منسق مشروع تحسين انتاج البقوليات الجافة في البلاد التونسية . وكان هذا الموضوع محور الحديث الذي افادنا به السيد الحبيب حليمة مشكوراً

* تركيز المشروع

انطلق مشروع تحسين انتاج البقوليات الجافة في بلادنا سنة 1981 تجسيدا للتعليمة التي اولتها وزارة الفلاحة لهذه المواد الغذائية والبقول الجافة اهمية قصوى في نطاق المخطط السلاسي نظرا للدور الحساس الذي تلعبه في مجال تحسين محاصيل الحبوب باعتبارها تدخل ضمن الدورة الزراعية وهي تسبق الحبوب في اطار التداول الزراعي ذلك انها تسهم في اراء الارض من حيث نوعية التربة وملاحة الاوت التي تمتصها من الهواء فتتسرب عبر الاوراق والجزور لتلتصق في الارض وعقب ذلك تستغلها الحبوب التي تبذر بعدها وللقضاء بحث هذا المشروع ليشكل اول نواة بحث علمي تهتم بالبقوليات الجافة

ويعتني مشروع تحسين انتاج البقوليات الجافة الذي يساهم في انجازها المركز الدولي للبحوث الزراعية في المناطق الجافة (ايكاردا) بالفلول بنوعيه (المصري والعربي) والحمص والعدس ونظرا لاجتماع هذه العوامل المؤكدة على اهمية زراعة البقول الجافة وتأثير ذلك على

من مشاريع التعاون الدولي في مجال البحث العلمي الزراعي: مشروع تحسين انتاج البقوليات الجافة

الاعطاش الطويلة للبقوليات الجافة
تجسم مدى أهمية الاضرار التي تسببها



• من نتائج ابتكار مشاتل مقاومة لمرض

30 April 1986

أهمية الفوسفات في المحافظة على رطوبة التربة

لقد عالجت محروس الآدماءات الفائلة مان بعض التعبيرات الطيفية في الممارسات الزراعية في المناطق الشمالية من سوريا التي تحظى بمعدل امطار متدني جدا قد تؤدي الى زيادة معدل الرطوبة الطبيعية التي يمنحها نبات الشعير الى اربع مرات عن المعدل العادي

هذا ما ذكره لي الدكتور كونزو صوميل الذي يعمل في (المركز العالي للأبحاث الزراعية في المناطق الحافة) كتمال لما تم ايجاره في مزارع زراعة الشعير وتربية الاعنام ذات المعدل السنوي للأمطار البالغ بين ٢٠٠ - ٤٠٠ ملمبتر منذ ان بدأ المزارعون بالمسور ما يمكن ان تحققه الحديقة الماسية من الفوسفات لحاصيلهم . ولكن عند الفحص أحدث المالة في هذه الادعاءات تتلاشي بصورة محسنة

بعد دعوة المزارعين لتوصيح العوقات الرئيسية لقللة الانتاج الزراعي جرى كل مزارع من ١٦ مزارعا تم استطلاع ارائهم السمت الأول للأمطار أو الافتقار اليها . وقد تشعبت الدراسات ان نسبة ٢٠ / فقط من الامطار يستفيد منها النبات سيما الحرة المنقى منها بحسبه دون الاستفادة منه خاصة عن طريق الشجر ويستفرد الدكتور صوميل عن الامطار العربية بوحدها اكبر فاسدات للفوسفات في العالم ومع ذلك فان التربة العربية بعد من مزارع التربة التي تعاني من نقص كبير في هذا العنصر الحيوي . هذا ونحتوي اراضي المزارعين المذكورين مكونات فوسفارية تكون احيانا اقل من ٦ اجزاء من اللحرام بينما ٩ اجزاء من اللحرام تعتبر كافية بالكاد حتى بالنسبة للتربة الرطبة عادة

وقد كان لاستعمال الفوسفات تأثير مدهل حيث ساعد على النمو المبكر للنبات وبالتالي على تكوين نسبة قوية للنبات . وقد أدى ذلك الى تكوين جذور قوية ومنبهة مع تحسين قدرتها على امتصاص المواد الغذائية من التربة . وهذه الميزة يحرم منها بدرجة كبيرة النبات الاقل نموا وذلك قبل محاصرة نموها بحلول فصل الشتاء البارد

الزراعة في العالم العربي المجلد الثاني العدد الثالث

رغم ولاية الكاف

في المعهد القومي للبحوث الفلاحية

الصنف من ناحية الانتاجية على الصنفين القديمين في موسم 84-83 في الكاف، بلجة، الكريب، سليانة والوسلاتية بمعدل 79-48٪ وينهج المعهد بزراعة هذا الصنف في المكان شبه الرطب بصفة عامة والمناطق التالية بصفة خاصة: بلجة، بوسالم، ماطر، الفحص، زغوان، بوغراة وقطور الصنف طاج:

دخل هذا الصنف الى تونس في موسم 80-79 عن طريق مشاتل «ايكارد» وهو استرالي المنشأ وهو صنف متوسط المقاومة للبياض الدقيقي والسفحة والتقزم السائب ومتوسط الحساسية للهدا البني اما عن الامكن التي ينضج فيها بزراعته فهي المناطق شبه القاحلة

الصنف مروجو:

دخل الى تونس سنة 1975 وهو دانماركي المنشأ وهو صنف مناسب للمناطق الجافة وتكون زراعته من 1 الى 15 نوفمبر في المناطق الباردة مثل الوسلاتية، سليانة، تاجروين والكاف اما عن كمية البذر فهي 65 كغ/هـ اما بالنسبة للتسميد فيتم استعمال 20 وحدة ازوتية في المناطق الباردة توضح دفعة واحدة في بداية التجدير شكري مشري

المزارع التونسي حيث انها ذات انتاجية عالية، ملائمة للبيئة التونسية، تنضج مبكرا فتتلاءم بذلك اخرج فترات الجفاف في الربيع واقل حساسية لعدد من الامراض ما هو البرنامج الحالي لمحلة الكاف؟

ينحصر هذا البرنامج في اتجاهين: تحسين النوعية والزيادة ولقد حاول الفريق المشرف زيادة عن الكاف تقوية بعض جهات الكريب، السريس وتاجروين ببعض التجارب الخاصة بالحمص والفول ونوع اخر من الفول الصغير تحسين اصناف الشعير:

اعتاد المزارع على صنفين من الشعير وهما (مارتان وسيريس) وبفضل دراسات المعهد القومي للبحوث الزراعية تم احكام بنجاح ثلاث اصناف جديدة وهي كائالي: - الصنف «فلنر»:

دخل هذا الصنف الى تونس في موسم 84-83 وهو صنف نصف مبكر ينضج قبل الصنف سيريس بأسبوعين على الاقل وفيما يخص حساسية الامراض فهو مقاوم للتبقع الشبكي، ومرض التخطيط، متوسط المقاومة للبياض الدقيقي والتقزم الفيروسي وتغرق هذا

في سنة 1980 تم بحث فرع المعهد القومي للبحوث الزراعية (انرات) الا ان الاعمال والبحوث لم تطلق الا في سنة 1981 ونظرا لاهمية هذه المؤسسة في جهة فلاحية كجبهة الكاف كان لنا لقاء مع رئيس هذه المحطة الذي يقول، لقد عمل فريق هذه المحطة مدة ثلاث سنوات في ظروف صعبة بسبب اشغال البناء (مساكن الموظفين ومقر الادارة) لكن بفضل ارادة اعضاء الفريق ومساعدته (الايكاردا) اي المركز الدولي للبحوث الزراعية في المناطق الجافة تمكنا من تحقيق البرامج التقنية في ظروف مرضية

وسيكون هذا الفرع من ناحية الاطار الفني والعلمي من مهندس جامعي متخرج من المعهد الاعلى للفلاحة بتونس، ومهندسان مساعدان متخرجان من المدرسة العليا للزراعات الكبرى بالكاف فما هي اهداف المعهد؟

الهدف الرئيسي هو تحسين الطرق الزراعية للحبوب عن طريق البحوث والتجارب والتوصل الى انتخاب الاصناف التي تناسب المناطق شبه القاحلة (280-350 مم) او المناطق شبه الرطبة (اكثر من 350 مم) والتي تتفوق على الاصناف المتداولة حاليا لدى

الجوانب تراعي قطعاً عند اختيار الخبراء للعمل مع البرامج الوطنية كما يتم عندئذ ارسال الخبر المنتخب للبلد الذي سيعمل فيه لاتاحة الفرصة لباحثي البرامج الوطنية بالتعامل معه ويؤخذ رأيهم فيه قبل تعيينه وجرى العرف ان تؤخذ موافقة البلد المضيف دائماً في الخبراء الذين سيعينون فيها ولكن عند احضار خبر وعدم تأقلمه للعمل بالدولة المضيفة فانه عادة ما يسحب ثانية او يستبدل

اخرى الحدث : فتح، بن حميدة

كان جيدا لكنه اقل كثيرا من حجم الاعلام الذي سببه وهذا ضار جدا

الفلاح في الجمهورية التونسية وجميع انحاء العالم يعرف اصناف القمح المكسيكية وهذه ادت الى تحول دول عدة من مستوردة للقمح الى مكتفية ذاتيا في انتاجها وبعضها مصدرة للقمح ولكنه لم يعرف ان هذه الاصناف انتجها مركز دولي اخر مثل ايكاردا مقره المكسيك يعرف باسم السميت (CIMYT) تحول هذه الدول من مستوردة للقمح الى مكتفية ذاتيا ثم الى مصدرة لها كانت بغية هذا المركز

مثال اخر يمكنني ذكره هو الانتاج العالي لمحصول القمح والشعير هذا العام في الجمهورية التونسية فلقد سمعت العديد من المزارعين وكذلك بعض المسؤولين يرجعون هذا الى وفرة الامطار هذا العام وكذلك بعض المسؤولين يرجعون هذا الى وفرة الامطار هذا العام وحسن توزيعها لكنهم نسوا شيئا هاما جدا وهي الاصناف الحسنة الموجودة لدى المزارع والتي انتجت بالعمل المتواصل والمخلص لباحثي المعهد القومي للبحوث الفلاحية ومن امثلة هذه الاصناف بن بشير ، كريم ، تانيت ، فلولم توجد هذه الاصناف لدى المزارع لما وصل الانتاج القومي الى هذا الحد بمعنى اخر لو استمرت اصناف القمح القديمة مثل فلورس اورور واريانة 66



بين هذه الاجهزة الدولية ؟ وهل من خاصيات تميزها عن غيرها من المؤسسات فتظفي عليها طابعا خاصا ؟ وهل تنسق انشطتها مع المؤسسات الدولية الناشطة بتونس من جهة ومعاهد البحوث ومحطاتها بتونس من جانب ثاني ؟

لكل مركز او منظمة او هيئة دولية كانت او اقليمية تعمل في البحث العلمي الزراعي مسؤولية محددة لا يمكنها تجاوزها فعلى سبيل المثال يوجد في تونس كذلك مكتب اقليمي للمركز الدولي لتحسين البطاطا ولكن كما يدل الاسم مجال عمله بعيد تماما عن مجال عمل ايكاردا ولذا يصعب التعاون عند تبين الاهداف ولكن مشروعات او هيئات اخرى مثل مركز تنمية البحوث الدولي (CRDI) في كندا مثلا فانها تعمل بعض نشاطات ومشروعات ايكاردا سواء في تونس او في دول اخرى من دول المنطقة كما تتعاون ايكاردا مع المركز الدولي لتحسين الذرة و القمح في مجال تحسين القمح والتريتيكال ومع المعهد الدولي لبحوث محاصيل المناطق الاستوائية شبه القاحلة (ICRISAT) في مجال تحسين انتاج الحمص وكلاهما من المراكز الدولية التابعة للمجموعة الاستشارية لبحوث الزراعية الدولية (GCRAI) وليس لها ممثلين في تونس

اما من حيث التعاون مع معاهد البحوث والجامعات وتوفرت الامطار المناسبة ذات التوزيع الامثل لما نتج عن ذلك هذا الانتاج الوفير فهذا مثال اخر للعمل المخلص الجدي البعيد عن الاعلام ومن حيث كيف ارى امكانية تكثيف الحضور الاعلامي . فاني لا اعتقد انه لازم لانجاح عمل ايكاردا

ما هو نصيب تونس من برامج ايكاردا اي مساهمتها فيها ووفي انجالها ؟ كما شرحت سابقا لولا مساهمة الباحثين التونسيين في المشروعات وتعاونهم التام لما امكن لايكاردا او اي مركز اخر سواء دوليا او اقليميا من انجاز اي تقدم

كيف تبدو لكم علاقة ايكاردا بغيرها من المنظمات والمراكز والهيئات الدولية المختصة في البحث العلمي الزراعي ؟ واين تضعونها ؟

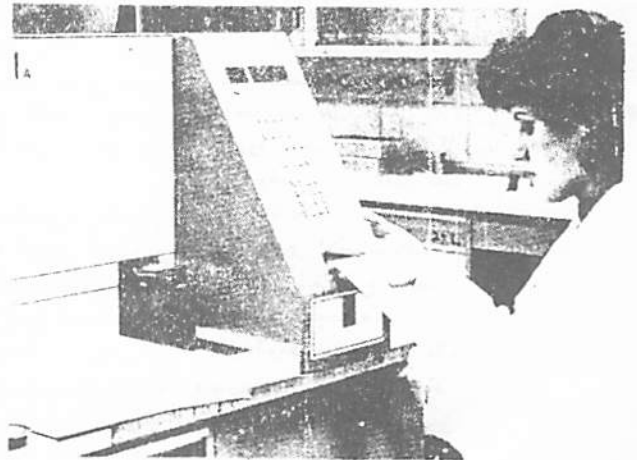
التونسية ومحطاتها فالتعاون قائم مع العديد منها وكلما امكن زيادة هذا التعاون فان ايكاردا لا تالو جهدا في توسيع هذا النطاق فيوجد تعاون مع مشروع النظم الزراعية مع المعهد القومي الفلاحي ومشروع تنمية المراعي في الوسط التونسي في القيروان مع ديوان تربية الماشية وتوفير المراعي وكذلك مع معهد الاراضي القاحلة بمرنين . الا انه كثيرا من المشروعات القائمة في تونس والتي لها طابع انمائي بعيدا عن البحث العلمي الزراعي او المشروعات الانتاجية فهذه طبيعة علاقة ايكاردا بها تكون قليلة

ما هي طبيعة التعاون مع البرامج الوطنية في البلدان المضيفة عامة ؟

طبيعة تعاون ايكاردا مع البلدان المضيفة تتكون من خلال الجهات الوطنية المعنية بالبحث العلمي الزراعي في مجالات عمل ايكاردا وكذلك الجامعات وتوجد اتفاقيات مع العديد من الجامعات سواء في دول المنطقة او الجامعات الاوروبية او الامريكية والتي يتم فيها ارسال المرشدين للحصول على مؤهل عالي (الماجستير او الدكتور) على ان يكون موضوع الدراسة يهم بلد الموطن وان يكون من اختصاص ايكاردا ويمكن في هذه الحالة لايكاردا ان تعمل او تساعد في تمويل هذه الدراسة

ولكن جميع اعمال ايكاردا مع دول المنطقة تكون من خلال برامجها الوطنية حيث تتعاون وتعمل معها وليس بمعزل عنها او منفردة ، ما هو مدى تالقلم الخبر الزراعي الاجنبي مع معطيات البلد ... الخ ؟

عادة ياخذ اي شخص اجنبي بعض الوقت ليتاقلم لمعطيات بلد اخر وقد يتفاوت هذا الوقت طولا او قصرا تبعا لتجربة هذا الشخص في العمل في دول مشابهة في ظروفها من حيث المعطيات والعادات والتقاليد الخ ... وهذه



البحث العلمي الفلاحي بتونس

تونس تعمل أساسا مع المعهد القومي للبحوث الفلاحية كما تتعاون مع العديد من الهيئات العلمية الأخرى مثل المعهد القومي الفلاحي ومعهد المناطق القاحلة وبعض المدارس العليا للفلاحة مثل المدرسة العليا للفلاحة بالكاف وكذلك مع ديوان الحبوب

ما هي مهام مكتب إيكاردا بتونس ؟

تتركز مهام مكتب إيكاردا بتونس في تنسيق أعمال إيكاردا مع المراكز والهيئات العلمية التونسية المختلفة والتعرف على النواحي الجديدة والتي يمكن لإيكاردا فيها المساهمة في دعم نشاطات بعض الهيئات الوطنية التي تعمل في الفلاحة كما يقوم المكتب بالأجراءات الإدارية اللازمة لتوريد المعدات والآلات الفلاحية والبحثة التي تستلزمها مشروعات الأبحاث المشتركة في تونس

ما هي النتائج التي حققها برنامج التعاون بين إيكاردا وتونس على مستوى كل هدف ؟

يمكن القول بأنه من خلال المشروعات المشتركة بين إيكاردا ووزارة الفلاحة أمكن تحقيق الآتي :

(1) استنباط ثلاثة أصناف من الشعير تم الموافقة على توزيعها وهي الأصناف تاج وروحو وفايز وهي أصناف عالية المحصول وأكثر مقاومة للأمراض من الأصناف المحلية . ويلان . الصنفان الأولان المناطق شبه القاحلة بالوسط التونسي والآخر المناطق شبه الرطبة

(2) تم انتخاب العديد من أصناف القمح الصلب واللين ذات المقاومة الجيدة للأمراض والتي تتميز بإنتاجها المرتفع وهذه الأصناف ما زالت في طور

الأعداد وينتظر في القريب العاجل البدء باعتمادها للتوزيع

(3) تم التعرف على بعض الأصناف المقاومة للأمراض والتي تعود زراعتها في موسم الشتاء (ديسمبر وجانفي) والتي تعطي مردودا عاليا بالمقارنة بالأصناف المحلية

(4) تم التعرف على المعاملات الزراعية اللازمة للمحاصيل البقولية التي تعمل عليها إيكاردا وهي الفول والعدس والحمص

(5) تم انتخاب بعض سلالات الفول المحلية والتي تتميز بوفرة إنتاجها وهذه ما زالت في طور التأكد من تفوقها في المردود

(6) منذ عام 1980 وحتى الآن تم تدريب حوالي 50 باحثا شابا من الجمهورية التونسية وحدها في المجالات التي تعمل بها إيكاردا وذلك من خلال دورات تدريبية متوسطة المدى لفترات من أربعة شهور إلى تسعة شهور وذلك في مجالات تحسين محاصيل الحبوب وتحسين المحاصيل البقولية وتحسين محاصيل الأعلاف والإنتاج الحيواني وكذلك في مجال الأنظمة الزراعية هلاء المتدربون ينتمون إلى المعهد القومي للبحوث الفلاحية والمعهد القومي الفلاحي وديوان الحبوب وبعض الجهات الأخرى

ما هي أهم المراحل التي قطعتها مسيرة التعاون بين تونس وإيكاردا ؟ وكيف تقيمون ما تم إنجازه في مجال هذا التعاون وكيف تتراعى لكم أفلق التعاون القريبة والبعيدة المدى ؟

أرجو أن أوضح أن تربية أو انتخاب صنف من القمح مثلا أو الشعير يأخذ من المربي مدة

طويلة جدا قد تصل إلى حوالي 11,5 عاما وكذلك تربية أو تدريب الكوادر الفنية يأخذ وقتا طويلا . فالعملية ليست فقط في مدة التدريب ولكن أكثر من هذا ، أهمية هي الفترة اللازمة للممارسة الأولى للنشاطات البحثية

ومن حيث المراحل التي أخذها التعاون يمكنني أن أوضح أنه في عام 1980 عندما طلبت وزارة الفلاحة من إيكاردا تعيين خبير ليعمل في المعهد القومي للبحوث الفلاحية لدعم برنامج تربية الشعير لم يكن في هذا الوقت بالمعهد المذكور باحث متخصص في هذا المجال فقامت إيكاردا بتعيين خبيرا اجنبيا في هذا المجال كما تم التعرف على باحث تونسي ارسل للتدريب في إيكاردا ليتخصص في تربية هذا المحصول لمدة تسعة اشهر وعند عودته عمل مع خبير الإيكاردا في هذا المجال . الآن فهو الباحث الذي يتولى أعمال التربية الكاملة في هذا المجال

وهذا مثال واضح لدور المراكز الدولية في دعم البرامج الوطنية حيث عند الحاجة والإمكانية توفر المراكز الدولية الخبراء لفترات محددة حتى يتم تدريب باحثين محليين يحلوا محلهم وبالتالي تنتهي مهمة الخبير الاجنبي ويتولى البرنامج الوطني أعمال بحثه كاملة .

فالمرحلة الأولى إذن كانت في مجال تربية الحبوب والشعير بصفة خاصة وتلتها مباشرة مرحلة تربية المحاصيل البقولية (الفول والعدس والحمص) والمرحلة الأخيرة هي مرحلة الأنظمة الزراعية أي نقل التكنولوجيا التي تكونت سواء من أصناف أو معاملات زراعية إلى المستفيد الأول الفلاح

ويمكنني القول بأن ما تم إنجازه لأن مرضيا جدا على جميع المستويات والمرحلة التالية أرى أنها العمل من تونس لخدمة دول المغرب العربي في مجالات عمل إيكاردا

البرامج والمشروعات التي يتم تنفيذها ببلادنا هل تلاقى بعض الصعوبات وما هي طبيعتها ؟ وكيف ترون إمكانية تجاوزه ؟

في أي عمل يقوم به الإنسان من المتوقع أن تكون هناك بعض صعوبات ولولا هذه الصعوبات لما كان للنجاح نكهة خاصة ولكن إذا زادت هذه الصعوبات أصبح من العسير تكلمة هذه الأعمال ولكن لا أرى صعوبات خاصة لا

يمكن حلها في المشروعات التعاونية القائمة في تونس

الآخرون أن مكتب إيكاردا في تونس مقصر شيئا ما على مستوى الحضور والإشعاع الاعلامي في بلادنا ؟ فما هي أسباب شبه الغياب الاعلامي ، وكيف ترون إمكانية تكثيفه ؟

أوافق تماما في هذا ولكن ما يهم إيكاردا وكذلك المراكز الدولية الأخرى العاملة في مناطق مختلفة من العالم هو ما يمكن تحقيقه للفلاح سواء من إنتاج أصناف أو سلالات عالية المحصول أو معاملات زراعية يمكن بها رفع أو زيادة المردود للمزارع وبالتالي للدولة وهذا يتأتى بالعمل فقط وليس بالاعلام

توفير الأصناف أو المعاملات للمزارع التونسي وزيادة إنتاجه هو هدف إيكاردا وبعد ذلك يأتي الاعلام وليس قبل ذلك . اني اعرف العديد من الأمثلة التي سبق فيها الاعلام المكثف العمل وكانت النتيجة النهائية أن شعر الفلاح بأن العمل وإن

مساهمة فعالة في دعم

المركز الدولي للبحوث الزراعية في المناطق أجافة

يعتبر المركز الدولي للبحوث الزراعية في المناطق الجافة من أهم مراكز البحث العلمي الزراعي / النشطة والمساهمة في إثراء حركة البحث في هذا الحقل الحيوي ببلادنا ودعم الجهود المبذولة في المجال من خلال تدخلاته المجدية والإيجابية في مختلف برامج ومشاريع البحث الوطنية المستوحاة من مخططاتنا التنموية ومطامحننا الاقتصادية وهي برامج ما انفكت تتسع وتنوع لتشمل شتى فنون الفلاحة وتقنياتها الحديثة في كل المجالات من زراعة وغراسة وحماية وأوبئة وتربية حيوانية وصيد بحري الى غير ذلك من مصادر التغذية . وهي بحوث تعكس في جملتها مشاغلنا وهمومنا الفلاحية . وحرصا منا على تسليط مزيد من الاضواء على دور هذا المركز وطبيعة النشاطات التي ينجزها في تونس ومهام مكتبه ببلادنا وأهم النتائج التي توصل اليها من خلال تعاونه المشترك مع خلايا البحث التونسية داخل معاهد البحث الزراعي ومحطاته حول العديد من الاهتمامات والاختصاصات . جمعنا لقاء لطيف ومفيد بالدكتور قراغا الكرام في تقييم شامل ونظرة ثاقبة وملمة بمختلف اطراف الموضوع عن مشاريع التعاون المشترك مع تونس معرجا عن ماضي هذه المسيرة التعاونية . منطرقا الى اوضاعها الراهنة ومشيرا الى افاقها بابعادها القريبة والبعيدة المدى

الدكتور أحمد كامل الممثل الاقليمي لمركز إيكاردا بتونس في حديث خاص لقراء الأمانة



1980 خبيرا في محاصيل الحبوب وامراضها و آخر في المحاصيل البقولية عام 1981 كما عينت ثالثا في الانماط الزراعية عام 1984 . وجدير بالذكر ان إيكاردا في عملها في

البيئة . ويتم هذه الابحاث بالتعاون مع علماء الدول المضيفة في المنطقة والجمهورية التونسية هي إحدى هذه الدول المضيفة . متى بدأت نشاطات إيكاردا في تونس ؟ لما كانت الجمهورية التونسية هي إحدى الدول الهامة بالمنطقة فقد تم إبرام اتفاقية بين الحكومة التونسية وإيكاردا في 11 مارس عام 1980 وتتضمن هذه الاتفاقية اطارا للتعاون في مضماري الابحاث والتدريب . وبمقتضى هذه الاتفاقية شملت النشاطات المختلفة عدة ميادين لتحسين انتاج الحبوب والبقوليات كما بدى كذلك في مشروع تعاوني لبحاث الانماط الزراعية (النظم الزراعية) . وبناء على طلب وزارة الزراعة التونسية فقد عينت إيكاردا في تونس عام

ولتحقيق هذه الاهداف تتعاون إيكاردا وتعمل على تنمية وتوطيد التعاون والاتصالات مع المعاهد الوطنية في دول المنطقة والمراكز الاقليمية والدولية الأخرى . ومنطقة عمل إيكاردا تمتد من باكستان شرقا الى المملكة المغربية غربا ومن اثيوبيا جنوبا الى تركيا شمالا . وقد قامت إيكاردا باقامة عدة برامج في دول غرب اسيا وشمال افريقيا لدعم البرامج الوطنية للابحاث بواسطة البرامج التعاونية والتدريب وبتبادل الزيارات العلمية وتبني مؤتمرات العمل والدورات الدراسية وكذلك عن طريق تبادل مواد الاصول الوراثية (اصناف المحاصيل) والمعلومات وكذلك تقييم المناخ ومراقبة الامراض النباتية والقيام بدراسات تتعلق باقلية المحاصيل الزراعية مع

لمحة سريعة عن إيكاردا
المركز الدولي للبحوث الزراعية في المناطق الجافة والذي يرمز اليه للاختصار باسم إيكاردا هو منظمة دولية مستقلة لا تتوخى الربح اسست للقيام بالابحاث الزراعية وله كيان قانوني . وإيكاردا واحد من مجموعة مراكز دولية تشرف عليها وتعملها المجموعة الاستشارية الدولية للابحاث الزراعية (ICRAI) التي شكلت برعاية منظمة الاغذية والزراعة للأمم المتحدة (FAO) والبنك الدولي للانشاء والتعمير (BIRD) وبرنامج التنمية التابع لهيئة الامم المتحدة (PNUD) وقد تم تأسيس إيكاردا عام 1976 للعمل كمركز دولي (ذو مسؤولية دولية) للابحاث والتدريب لتحسين انتاج الشعير والعدس والفول وللعمل كمركز اقليمي مع المراكز الدولية الأخرى للابحاث الزراعية لتحسين انتاج القمح والحمص ولتطوير هذه المحاصيل وانظمة تربية المواشي وعلاقتها بالمحاصيل العلفية

Translation

Newspaper Name: Al Thawra, Damascus, Syria
Date: 22 Jan 1986

Meeting of the Program Committee of ICARDA in Aleppo

ICARDA's 13th Program Committee Meeting began yesterday under the chairmanship of Dr Ralph Fischer.

The Director General of ICARDA, Dr Mohamed Abdulla Nour, and a number of the center's senior staff, were present at the meeting, which was also attended by Mr Hassan Sa'ud, the Syrian Deputy Minister of Agriculture and Agrarian Reform, and representatives from Spain, France, Turkey, Sweden, Greece, and Jordan.

In his speech Dr Nour outlined the center's projects and main accomplishments. He expressed his gratitude for the valuable support and assistance given to ICARDA by the Syrian Republic. He said that some of the center's projects would continue with their efforts to assist the national agricultural programs of Syria and other countries in the region.

In reply Mr Sa'ud said that the cooperation between ICARDA and the Ministry of Agriculture's research department had stimulated and promoted scientific research. The center, he said, has created new methods for scientific study and research and produced new cultivars of wheat, barley, and chickpea.

Mr Sa'ud said that Syria is rich in agricultural experience in which there is close collaboration with local, national and regional institutions and international organizations. Through joint projects modern technology could be applied to local agricultural research. He was confident that the Ministry of Agriculture would continue to collaborate with ICARDA to improve agricultural productivity.

The members of the Committee then went on to discuss the center's main activities and projects for 1984-85 and the coming year, including topics related to legumes, forages, pastures, sheep nutrition, training, international cooperation, germplasm storage and development, and the use of computers.

The Program Committee will submit a report on its observations to ICARDA's Board of Trustees which will meet in May 1986 in Aleppo.

Distributed by the Scientific and Technical Information Program, ICARDA, Aleppo, Syria

لجنة برامج البحوث الزراعية تعقد اجتماعها في حلب

من المحاصيل الزراعية الغذائية كالقمح والشعير والحمص كنيحة للتعاون الوثيق مع مديرية البحوث الزراعية في وزارة الزراعة .
واضاف معاون وزير الزراعة ان قطرنا يشهد حاليا نبضة زراعية تتطلب المزيد من جهود الهيئات والمنظمات الوطنية والدولية والاقليمية لاستنباط الاصناف الجديدة المحسنة ولادخال تقنيات حديثة في البرامج الوطنية للبحوث الزراعية ومن خلال البرامج العلمية المشتركة .

واعرب ايضا في ختام كلمته عن ثقته بان وزارة الزراعة في سورية ستستمر في تنفيذ البرامج العلمية المشتركة مع ايكاردا بهدف تطوير القطاع الزراعي وتحسين انتاجه كما ونوعا .

وبعد ذلك بدأ السادة اعضاء لجنة البرامج التابعة للمركز الدولي بدراسة ومناقشة المواضيع المدرجة على جدول اعمالها والتي تتضمن نشاطات وبرامج المركز للعام الزراعي ١٩٨٤ - ١٩٨٥ وخطته وعمله للعام الزراعي ٨٦ - ١٩٨٧ وسبل تنفيذها اضافة لبحث برامج الانماط الزراعية كالحيوب والبقوليات الغذائية والاعلاف والمراعي وتغذية الاغنام والتقرير الخاص ببرامج وخطط التدريب وتحضير الكوادر العلمية والتعاون الدولي في مجال البحوث وتنمية الاصول الوراثية وحفظها واستعمالات الكمبيوتر في خدمة هذه النشاطات .

وعلم ان لجنة البرامج ستقدم في ختام اعمالها تقريراً مفصلاً مع بعض الملاحظات الى مجلس امناء المركز الدولي للبحوث الزراعية في المناطق الجافة لدراسته واقراره بشكل نهائي خلال دورة انعقاده بحلب في مطلع شهر ايار القادم .

حلب - سانا :
عقدت امس لجنة البرامج للمركز الدولي للبحوث الزراعية في المناطق الجافة اجتماعها الثالث عشر برئاسة الدكتور رالف فيشر رئيس لجنة البرامج وحضور المهندس الزراعي حسن سعود معاون وزير الزراعة والاصلاح الزراعي ممثلاً للقطر العربي السوري وحضور ممثلين عن اسبانيا وفرنسا وتركيا والسويد واليونان والاردن والسيد المدير العام لايكاردا الدكتور محمد عبد الله نور وعدد من العلماء والخبراء وموظفي المركز الدولي .

وقد القى السيد المدير العام للمركز الدولي للبحوث الزراعية في المناطق الجافة كلمة عدد فيها الاجازات التي حققها المركز وعبر عن شكره وامتنانه للدعم والرعاية التي تلاقىها ايكاردا من القطر العربي السوري ممثلاً بقائده سيادة الرئيس حافظ الاسد رئيس الجمهورية .

وطالب السيد المدير العام للمركز الدولي للبحوث الزراعية في المناطق الجافة ايكاردا ببذل الجهود لتنفيذ برامج المركز الدولي كاملة وتحقيق اهدافها في دعم المشروعات الوطنية الزراعية في القطر العربي السوري وبلدان المنطقة كلها .

كما تحدث في الجلسة المهندس الزراعي حسن سعود معاون وزير الزراعة والاصلاح الزراعي في القطر العربي السوري فاكد ان ايكاردا ساهمت في تنشيط البحث العلمي وازادته طرق جديدة وتقنيات حديثة لدعم واستمرار البحث العلمي ومشاركة البحوث العرب السوريين فيها وزودت القطر باصناف وسلالات زراعية جديدة

الفول المصري

بحث عن مساهمات في أرض الجزيرة

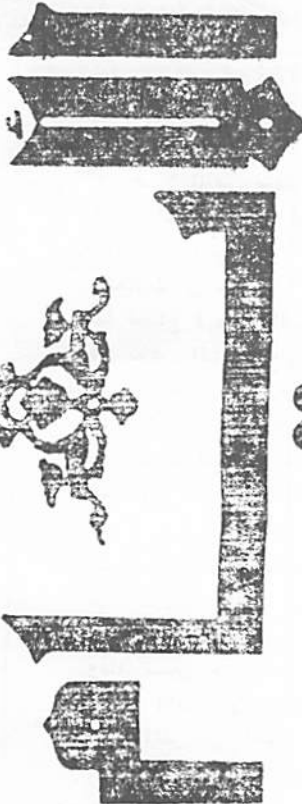
22 January 1985

فصل أحمد المكي
أعلام مشروع الجزيرة
الفول المصري يبحث عن مناطق جديدة يحتلها على الخارطة الزراعية بالبلاد فوق مساحة الثميين ألف فدان التي يزرع فيها حالياً والمحصورة مفلزارعين منها في (مرويش) داخل نطاق الإقليم الشمالي (والكربيه) في القلا وذلك نتيجة لتزايد الطلب عليه وتزدهوا كما أن هناك مشاريع هذا المحصول الغذائي مماثلة في مشروع الرمثاء بدمياط بسبب محدودات البجيرة المتصاعدة نحو المدن - ولكونه قد أصبح (الطبق) المتداول في وجبتين لأنه الأسهل تحضيراً نسبياً - ففاق الطلب انتاجيه المساحات المذكورة - وتصادت بالتالي أسعاره في الأسواق زمن هنا نشأت الحاجة الملحة لساحات اضافية .

وقد ٧ سنوات بدأ برنامج كبير بتوليه (إيفاد) عن طريق منظمة (ايكاردا) بهدف تطوير انتاج الفول المصري في السودان ولما بحث عن مناطق جديدة تضاف لتلك التي يزرع فيها في الشمال - مع التوصل لانسب المعاملات الفلاحية لتلك المناطق الجديدة - والبرنامج كبير يمتد من السلم حتى حلفا وأن المناطق جنوب الخرطوم هذا ما فهمته من بروفيسور عثمان احمد عجيب وهنسه البحوث الزراعية - في مقدمة حديثه في نقاش درويش بمشروع الجزيرة صبيحة يوم السبت ٤ يناير أثناء معانيه تجريبية زراعة الفول المصري هناك التفتي حضرها السيد محافظ مشروع دكتور فاروق احمد صالح مدير محطه ابحاث شجيرات والمنسق القومي للفول المصري اضافة للمدير الزراعي بالمشروع والسيد محي الدين محمد احمد نائب رئيس اتحاد مزارعي الجزيرة والمناقل وصاحب المزرعة التي تجرى فيها التجربة وخلال السنوات الثلاث الاولى يضيف بروفيسور عجيب - تم التوصل في حقول البحوث وفي حيازات صغيرة الى انتاجيه بلغت ١٢ - ١١ جوالي للفدان وهي التلمية هناك - فتقرر بالتالي اجراء تجارب في حيازات

العدد ١٧ جمادى الاولى ١٤٠٦ هـ • الموافق ٢٢ يناير ١٩٨٥ م • العدد رقم ٨٨٧ • السنة ٤٣٣

جريدة يومية سياسية عامة
تصنف لمرع كن دار الانبياء نام للطباعة والنشر



لجنة التحرير

جريدة اسبوعية :
ارشادية ثقافية :
اجتماعية تصدرها :
ادارة مشروع الجزيرة :
العدد ١٦١٣
الخميس

١٦ يناير ١٩٨٦
٥ جمادى الاولى ١٤٠٦ هـ



الفول المصري بمشروع الجزيرة

في عددنا الماضي سقط هذا الجزر من حديث الزميل فيصل عن موضوع « الفول المصري يبحث له عن مساحة في مشروع الجزيرة » نشرها اليوم مع اعتذارنا للقراء .

وتجارتنا في مشروع الجزيرة تسير بصورة حسنة بفضل امكانيات المشروع لكننا نحتاج لايمان واقتناع المزارعين - وبما ان هذه التجربة تجري في ارض تخص السيد محي الدين محمد احمد وهو نائب رئيس اتحاد مزارعي الجزيرة والمناقل فهي فرصة طيبة ليعكس نتائج تجربته .

عقب السيد عبدالله محمد الزبير محافظ مشروع الجزيرة : الجزيرة فتح صدرها للباحثين لانهم المتفرد المدخل لتكنولوجيا المحاصيل وانا سعيد بهذه المواقف التاريخية التي نستمتع فيها ونعلم - وهذه لحظات اعتد ان التاريخ سيسجلها واستطيع من الآن ان ارى المستقبل الذي نستشره في هذه اللحظات .

لطالما دارت تساؤلات في المشروع - أين المحاصيل الزائدة ؟ - اليس هنالك جديد ؟ الى متى القطن ؟

ومنذ سنين حين ادخل سياسة التنويع لانعاش الاقتصاد لم نضف الا الفول والقمح ومسايرهما منتشر في المساحات التي تقرر لا تزرع كلها - فمزال الكثير من الجهد والبذل يتلقون هنا في مشروع الجزيرة وفي دائرة البحوث الزراعية تجاه المحاصيل التي ادخلناها وتلك التي سندخلها مستقبلا في سبيل تأمين مسانرا الاقتصادية .

ثم اشار لتجربة فول الصويا والحبوب التي بذلت والجحاس الذي واكب تجربتها وكيف ان نتائج انتاجيتها لم تكن مجزية ولا مبشرة ولم يكن منطقيا ادخاله للمزارعين .

وفال : اذكر هذا المثال ونحن الآن بصدد الفول المصري وهو غداء للانسان وعلف للحيوان ومن اهم الامور التقييم الاقتصادي - يجب ان يكون مجزيا لان العائد هو المطلب الاساسي فحين حاذينا نجسنا من التكاليف الباهظة لرش القطن .

لذلك يجب اتباع دراسات اقتصادية دقيقة - فاذا تحققنا من العائد الجزئي فليست هنالك مشكلة في ايجاد المساحات التي نزرعه فيها فلدينا متسع في مسلسل القمح ونحن نطرح ليس فقط الاكتفاء وانما سنسعى لان نصل لمرحلة التصدير مثل اخوتنا المصريين خاصة وقد اصبح الفول المصري غذاء عالميا .

الفول المصري يبحث عن مساحات في مشروع الجزيرة

كتب فيصل احمد لى
فوق مساحة الستين ألف فدان التي يزرع فيها حاليا والمحصورة داخل نطاق الاقليم الشمالي - وذلك نسبة لتزايد الطلب على هذا المحصول الغذائي - بسبب معدلات الهجرة المتصاعدة نحو المدن - ولكونه قد اصبح « الطبق » المتداول في وجبتين لاسباسه الاسهل - والارخص نسبيا - ففاق الطلب انتاجية المساحات المذكورة - وتضاعفت بالتالى ابعاده في الاسواق - ومن هنا نشأت الحاجة الملحة لمساحات اضافية .

وقبل ٧ سنوات بدأ برنامج كبير تموله « ايفاد » عن طريق منظمة « ايكاد » بهدف تطوير انتاج الفول المصري في السودان والبحث عن مناطق جديدة تضاف لتلك التي يزرع فيها في الشمال - مع التوصل لاسباس المعاملات الفلاحية لتلك المناطق الجديدة .

هذا ما فهمته من بروفييسور عثمان احمد عجيب في مقدمة حديثه ذاك في تفيش درويش وسط مساحة واحد فدان « تلمح » بظفرة نباتات الفول

المصري صبيحة يوم السبت الماضي ، ومحافظ مشروع الجزيرة ومدير الادارة الزراعية - ومدير الشؤون الادارية ونائبه وليس اتحاد الزراعين وجمع غفير من الزراعين وآخرين يصفون باهتمام ظاهر .

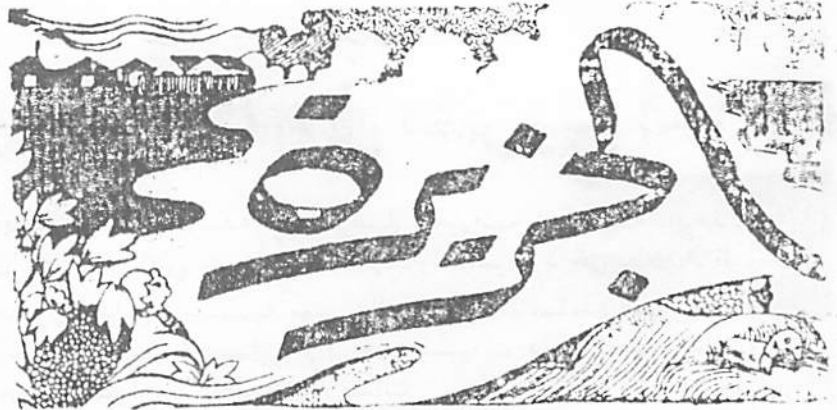
... وخلال السنوات الثلاث الاولى - يضيف بروفييسور عثمان عجيب - تم التوصل في حقول الابحاث وفي حيازات صغيرة الى انتاجية بلغت ١١-١٠ جوال للفدان وهي انتاجية ممتازة ، فقرر بالتالي اجراء تجارب في حيازات اكبر وبالفعل تم ذلك في مزرعة البحوث في الترابي في حواشيات بمساحة ٥ فدان فكان متوسط الانتاجية ٧ جوال للفدان مما شجع الفانمين بالتجارب على الاتصاف بالبنفس السزاردين هنا في حقولهم والمسلية والكريبه فوافقوا وزرعوا ويقوم هيئة البحوث الزراعية بتقديم الارشادات - وتحسد نوع البند للذفات التي تشكل خطرا على محصول الفول المصري وهي معروفه للعالماء واخطرها حفاة الخنادق « اليكمان »

ويضيف بروفييسور فاروق احمد صالح - مدير محطة ابحاث شمبات والمنسق للقوى للفول المصري والذي قام بانتخاب العينة (١.٤) كبيرة الحجم - والتي تجرى تجربتها في درويش تعتبر الفصل فترة لزراعة الفول المصري تلك المدة بين ١.٢٥ و ١١.٧ - وبالنسبة للزراعة عموما فان تجويد العمليات الطخية يخلف الانار الفساية والمشاكل التي تواجه انتاجية المحاصيل وتتم تجربة زراعته في الجزيرة في حوضين في سربة عرض ٦. - ٨٠ سم مع الحفاة على بعد ٢٠ سم بين كل نبتة واخرى - والفدان تكفيه ٥. - ٦. كيلو بذرة . بالنسبة لاري فيتم مرة كل ١٤ يوم في فترة النمو الخضري حتى مرحلة الإزهار - وبمدها يروى كل ٧ أيام وذلك نسبة لارتفاع درجة الحرارة في هذه المناطق وهي من المشاكل التي تواجه انتاج الفول المصري لذلك فان تقرب فترة الري يزيد من درجة الرطوبة ويكلف من آثار « شدة الحر » .

وايضا في هذه المناطق من المفصل البكير في بدء الزراعة وبما ان هذا الامر يعرض المحصول للأمراض يتنم علينا كعلماء ايجاد عينات تتاوم تلك الامراض وهذا ما نسعى اليه . بالنسبة للسماد فهو كمحصول بغولي لا يحتاج لسماد لكن هنا تم نثر البوديا في بداية التجربة . والرشي لتسكتين الصلة وحفاة الخنادق - اما الحشائش فمؤرة باو مرتين تكفيان . ويتم تلمح هذا المحصول في فترة ١٠٠ - ١٢٠ يوم وأزدياد درجة الحرارة يقلص فترة النضوج وهذا صار ان يقلل الانتاجية . اما الناحية الاقتصادية فان انتاجية ٥ - ٦ جوال تغطي التكلفة بل يصبح الفول المصري الفصل من أي محصول آخر .

جريدة اسبوعية :
 ارشادية ثقافية :
 اجتماعية تصورها :
 ادارة مشروع الجزيرة :
 العدد ١٦٦٢
 الخميس

٩ يناير ١٩٨٦
 ٢٨ ربيع الثاني ١٤٠٦ هـ



بعد تجربة زراعة الفول المصرى بالجزيرة

المحافظ يقول : -
 نرحب بادخال أى محصول غذائى فى
 اطار سياسة التكتيف والتوزيع

صرح السيد عبد الله محمد الزبير رئيس مجلس الإدارة
 ومحافظة مشروع الجزيرة بأنه يرحب بادخال أى محصول
 غذائى فى اطار سياسة ترويج وتكثيف المحاصيل بالمشروع
 سعياً لتأسيهم فى سدد الفجوة الغذائية والمشاركة فى العاش
 السعيد الميلاد .

والصاف بان الوطن ينتظر الكثير من مشروع الجزيرة ومن علماء هيئة
 البحوث الزراعية - جاء ذلك فى اللقاء الذى تم فى الساعة من صباح
 السبت الماضى بمتشيش درويش أثناء مائة تجربة زراعة الفول المصرى
 بمشروع الجزيرة والتي تتم باشراف هيئة البحوث الزراعية، والذي شارك
 فيه الى جانب السادة مدير الادارة الزراعية ، مدير الشؤون الادارية
 وممثلات الحصاد الزراعي بالمشروع
 والبروفيسر فاروق احمد صالح مدير
 ابحاث شجيرات والشمس القسومى
 للفول المصرى .

وقد ابدى الجميع رضاهم عن
 مسار التجربة والتي سم فى اطار
 برنامج لتطوير انتاجية الفول المصرى
 فى السودان والبحث عن مناطق جديدة
 لزراعته علما بان المساحات التى يزرع
 فيه بالديريات الشمالية لم تصمد
 نف بالطلب المتزايد على هذا المحصول
 وأعرب السيد المحافظ عن سمادته
 وحماسه للتجربة مع ضرورة ان تواكب
 مثل هذه التجارب دراسات لتقييمها
 المصداقيا .. وأضاف بأنه لن يكون
 هناك مشكلة فى ايجاد المساحات التى
 يزرع فيها الفول المصرى بمشروع
 الجزيرة .

5 January 1986

اول تجربة لزراعة القمح في الجزيرة

قام السيد عبد الله الزبيدي
محافظ مشروع الجزيرة
امس بمعاينة اول تجربة لزراعة
القمح المصري بمشروع الجزيرة
وذلك بقطاعي سدني ، والقيسي
تأتي في اطار برنامج تطوير
انتاجية القمح المصري بالبحر
والبحر من مناطق مستهدفة
لزيادة

والقاء السيد المحافظ بتجربة
انتاج القمح المصري
المشروع مرحبا بالنتائج التي
محصلة لذلك في اطار سياسة
توزيع وتكثيف المحاصيل
للإسهام في سد الحاجة
الغذائية والمشاركة في
اقتصاد البلاد

السيد فهد مرقس ٨٢٥٤

المراجعة ١٩٨٦/١٠/٢٥

الموجزات

Published: October 1985

Received: January 1986

ورغم ذلك فالمعلومات المعروفة عن الدور الذي يمكن أن يلعبه هذا المحصول في تحسين الاقتصاد المحلي تعتبر ضئيلة، ان انتاجية انواع قمح الخبز في المنطقة تتأثر بشدة بأمراض النبات، وعلى هذا فان ادخال اصناف جديدة من القمح مقاومة الى المنطقة يمكن أن يحل المشكلة ويقلل من الاعتماد الحالي على الاستيراد.

ويصدر الايكاردا نشرة نصف سنوية باسم راكيس

(Rachis) بهدف المساعدة في نشر

تبادل المعلومات في مجال الحبوب

بين العلماء والعاملين في مجال

الارشاد الزراعي بالمنطقة،

ويفضل ذلك أصبحت متاحة

ومنشورة، ولكن باللغة الانجليزية

فقط ولكي تصبح مثل هذه

النشرات أكثر جدوى وتأثيرا في

المنطقة العربية، فان ذلك بلا شك

يتطلب نشرها أيضا باللغة العربية.

ولقد بدأ مركز الايكاردا،

بموجب منحة مقدمة من مركز

البحوث للتنمية الدولية الكندي، في

العمل على تقوية الاتصالات

العلمية باللغة العربية، وكبداية

قام مركز الايكاردا بتعيين عالم

زراعي يجيد اللغتين لترجمة

محتويات نشرة (Rachis) والاجابة

على الاستفسارات باللغة العربية،

وتكثيف الانتاج الفكري العربي

عن الحبوب، وتقديم خدمات

المعلومات الأخرى باللغة العربية.

ويأمل مركز الايكاردا أن يتسنى له

في المستقبل تقديم كل خدماته

الاعلامية والمعلومات باللغة

العربية لشعوب المنطقة.

المراكز الدولية تقدم خدمات المعلومات باللغة العربية

يعتبر المركز الدولي للبحوث

الزراعية في المناطق الجافة

(ايكاردا) الموجود بمدينة حلب

بسوريا هو حلقة الوصل الرئيسية

بالشبكة العالمية لمعاهد البحوث

الزراعية الدولية التي تخدم

افريقيا والشرق الأوسط.

ان أحد الاختصاصات

الاساسية للايكاردا اجراء بحوث

انتاج الحبوب، وعلى سبيل المثال

فان الشعير يغطي نحو ١٠ مليون

هكتار في المنطقة، حيث أن سرعة

نموه وكفائته العالية في استخدام

المياه تجعلانه محصولا يمكن

الاعتماد عليه في التغذية أو

استخدامه علفا جيدا للأغنام.

This collection of news stories was made from the sources available to the staff of Scientific and Technical Information Program, and does not purport to be a complete record of the 1986 media coverage of ICARDA's work.

project also report over-
mortgages in their s-
re working on
serving cropping
ed production of
ers also hope
eed forages s'

rough
In Tur
family
Tur
ar

تونس

التربية ومطالبتها بالتعاون
قائم مع المدينتها وكذا امكن
زيادة هذا التعاون فان اتوسع مع
لا تالوا جهدا في توسيع مع
النطاق فيوجد تعاون مع
مشروع القومي الزراعي
مع المعهد القومي الزراعي
ومشروع تنمية المراعي
الوسط التونسي
دعما

the
arch stat
conducted in
ch, but our
nomy with grazing
or three years, we've
ecies perform with
and grazing."

Dr Thomson
fields in dry ar
barley cultiv
mers test
verch, L
present
as imr
nitro
gre
le

RY 23, 1986

مشاء
الزراعي

علم البحث العلمي

استطاع ادى انها العمل من
تونس لخدمة دول المغرب
المصري في مجالات عمل
ايكاديا
البرامج والمشاريع التي
يتم تنفيذها ببلادنا مثل
الصناعات وما
ويكث ترون
الانسان
منك



Faba beans

Fabulous beans: bigger yields from 's meat'

arch
luch

الزراعي
1986
15
1986

الزراعي
1986
15
1986

الزراعي
1986
15
1986

الزراعي
1986
15
1986

أكبر البحث العلمي الزراعي
الزراعي ودعم الجهد المبذول في
ج ومشاريع البحث الوطني
الزراعي ما انقلت وتنوع وحملية
من زراعة وغراسه وتنوع في
من زراعة وهي بحوث تنوع في
التقنية، وهي على دور هذا
مزيد من الاضواء التي توصل
ببلادنا وامم النتائج التي توصل
بها داخل معاهد البحث الزراعي
جسمنا لقاء لطيف ومفيد يلا
ي استجيب مشكورا لدعوى
المؤلف الموضوع عن هذا
مقطوعا

EL MOUDJAHID

RECHERCHE AGRONOMIQUE DANS LES ZONES SECHES
Coopération renforcée
avec l'ICARDA



Proud of his crop, this farmer in the Kafra El
Sheikh area is growing a high-yielding faba
bean variety developed by scientists in the
Valley Project.

the north, were labo
and harvesting
on irak
BIRTHING BIR

Lundi 30