

GCP/AFG/018/EC

Strengthening National Seed Production Capacity in Afghanistan

Seed Industry Privatization WORKSHOP PROCEEDINGS



Food and Agriculture Organization of the United Nations

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GCP/AFG/018/EC

Strengthening National Seed Production Capacity in Afghanistan

Seed Industry Privatization

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Seed Industry Privatization
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Editors

Sam Kugbei and Mogens Lemonius



Food and Agriculture Organization of the United Nations

This technical report is one of a series of reports prepared during the course of the project identified on the title page. The conclusions and recommendations given in the report are those considered appropriate at the time of its preparation. They may be modified in the light of further knowledge gained at subsequent stages of the project.

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CONVERSION FACTORS

1 US\$	= 42.8 Afghanistan Afghani (June 2005)
1 seer	= 7.0 kilogramme
1 jerib	= 0.2 hectares

ABBREVIATIONS

AIA	Afghanistan Interim Authority
AIDTDP	Agri-Input Dealer Training and Development Project
AKF	Aga Khan Foundation
ARIA	Agricultural Research Institute of Afghanistan
ASC	Afghan Seed Company
CIMMYT	International Maize and Wheat Improvement Center
CORDAID	Catholic Organization for Relief and Development Aid
DFID	Department for International Development
EC	European Commission
EMG	Emerging Markets Group
FAO	Food and Agriculture Organization of the United Nations
FHCRAA	Future Harvest Consortium to Rebuild Agriculture in Afghanistan
FS	Foundation Seed
GoA	Government of Afghanistan
GTZ	Gesellschaft für Technische Zusammenarbeit (German Technical Cooperation)
IAHS	Indo-American Hybrid Seeds
IARC	International Agricultural Research Center
ICARDA	International Center for Agricultural Research in the Dry Areas
IFCG	Integrated Farmers' Committee Group
IFDC	International Fertilizer Development Center
IP	Implementing Partner
IPO	Initial Public Offering
ISE	Improved Seed Enterprise
ISRA	Islamic Relief Agency
ISTA	International Seed testing Association
KfW	Kreditanstalt für Wiederaufbau (German Development Bank)
MAAH	Ministry of Agriculture and Animal Husbandry
MC	Mercy Corps
MSC	Multinational companies
NGO	Non Government Organization
NVDA	Nangahar Valley Development Association
OP	Open pollinated
PEACE	Poverty Eradication and Community Empowerment Programme
PM	Project Manager
QDS	Quality Declared Seed
RAMP	Rebuilding Agricultural Markets Program
SGA	Seed Growers' Association
SIDA	Swedish International Development Cooperation Agency
SOE	State-owned Enterprise
SPU	Seed Processing Unit
SSN	Social Safety Net
STA	Senior Technical Adviser
TAFSU	Technical Assistance and Feasibility Studies Unit
TPS	True Potato Seed
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
VARA	Voluntary Association for the Rehabilitation of Afghanistan
VSA	Village Seed Enterprise
WFP	World Food Programme

WORKSHOP BACKGROUND AND ORGANIZATION

Background

Efforts to create an organized seed industry in Afghanistan began with the establishment in 1978 of the Afghan Seed Company (ASC) as a Government Joint Stock Company for the production, processing, quality control, distribution and sale of quality seed. The ASC later became known as the Improved Seed Enterprise (ISE). It established Headquarters in Kabul and sub-offices in various provinces. However, not much was achieved before the conflict broke out in 1979.

From the early 1980s until 1992, FAO and UNDP undertook joint seed projects in Afghanistan in collaboration with the Ministry of Agriculture and ISE. The collapse of President Najibullah's Government in 1992 was marked by large scale looting of project facilities and a complete breakdown in the national command structure. From 1992 onwards, FAO therefore implemented its seed multiplication projects from Pakistan, through NGOs or directly with the local communities in Afghanistan. The latest joint FAO/UNDP effort was the Poverty Eradication and Community Empowerment (PEACE) Programme, which supported the FAO-Afghanistan effort during 1997-2002. It included Trust Fund projects designed to support household food security through the strengthening of community capacity in seed production.

The PEACE initiative was aimed at the restoration of peace in Afghanistan through poverty alleviation, good governance, and community empowerment in both rural and urban areas. Of the latter element seed was a major component. PEACE thus laid the foundation for development of a modern seed industry in Afghanistan.

The FAO/EC Project

The current EC and German-funded FAO projects, which commenced in January 2003, are the first seed projects being implemented independently by FAO-Afghanistan, following the PEACE Programme.

Objectives of the EC project are: (i) Appropriate varieties developed for farmers; (ii) adequate quantities available of Breeder and Foundation Seed; (iii) market-oriented quality seed production promoted and encouraged; and (iv) Government capacity strengthened in areas of policy formulation, legislation and regulations, including quality control.

To achieve these objectives, the Project conducts trials for variety screening and maintenance together with Breeder Seed (BS) production in close collaboration with the Agricultural Research Institute of Afghanistan (ARIA), supports the public sector through the ISE for the production of Foundation Seed (FS), makes contracts with NGOs and growers for the production of Quality Declared Seed (QDS), supports communities through village-level enterprise development, and works closely with the Government in formulating appropriate privatization policies and regulations for the seed sector.

Besides efforts by FAO and its implementing partners, other seed system development initiatives in the country are limited and include those of international agricultural research centres. Private sector activity in the seed industry is virtually absent.

Workshop objectives and programme

The workshop aimed at bringing together experiences and perspectives of key stakeholders in the Afghanistan seed industry, background and relevant privatization experiences of other countries, and technical knowledge of privatization experts. The Implementing Partners (IPs) were given the opportunity to present their experiences and views. Experiences from other countries and case studies provided lessons learned and insights gained by other seed organizations concerning the results of privatization programmes elsewhere.

Key topics of the Workshop included:

- The current status and role of the parastatal Improved Seed Enterprise and ways in which this organization can be re-structured along commercial lines.
- The role of agricultural research and the support research could provide to a privatized seed industry.
- Ways in which current NGO seed operations and those of groups of seed growers within farming communities could be transformed into sustainable seed supply entities in the private sector.
- The nature of farmer organizations and their role in a privatized seed industry.
- How to ensure Government commitment and support to a privatization strategy developed in the Workshop.
- Structure and optimum scale of operations of new sustainable small-scale seed enterprises.
- Requirements of the legal basis for privatization and how this will influence processes agreed in the Workshop.
- Possible social implications of the privatization programme and how these would be addressed.
- How the agreed privatization programme could be implemented and financed.

Case studies and presentations by the above mentioned various groups formed the basis for discussion and strategy formulation at the Workshop. Particular attention was paid to the active contribution by policy makers so as to ensure that political will and Government commitment were retained.

Some critical aspects of privatization were analyzed and discussed in-depth in specialized working groups. For the detailed workshop programme, see annex 1.

Organization and documentation

The Workshop was organized and financed by the FAO/EC Project "Strengthening National Seed Production Capacity in Afghanistan (GCP/AFG/018/EC) in collaboration with the European Commission and the Ministry of Agriculture and Animal Husbandry (MAAH). It had duration of two days and was held during 6 and 8 December 2004 at the Conference Hall of MAAH, Kabul.

78 seed and privatization specialists participated in the Workshop. Besides officials from the MAAH and ARIA, participants came from 7 international and national development and donor agencies. Eight NGOs involved in seed activities also participated together with seed specialists from ISE and 8 pilot seed enterprises of the FAO seed programme. The Workshop was attended by senior representatives from 3 seed companies in India and Netherlands. For a detailed list of participants, see annex 2.

Workshop Proceedings were prepared in August 2005 by FAO Consultant Mogens Lemonius who collaborated closely with Sam Kugbei (Senior Technical Advisor of the FAO/EC seed project) and the speakers to turn their PowerPoint presentations and other workshop notes into Proceedings chapters. The workshop organizers wish to thank the speakers for their assistance with this effort which made it possible to document the many interesting views and analyses produced by this meeting.

WELCOME ADDRESS

By H.E. Mostafa Jawad ¹

Distinguished delegates, I would like to convey the greetings and best wishes from the Minister of Agriculture and Animal Husbandry, H.E. *Sayed Hussain Anwary*. Regrettably, the Minister could not attend this opening session because of other important official engagements. I wish therefore, on his behalf, to welcome all participants and knowledgeable people from the agricultural sector to this important workshop.

The Ministry of Agriculture recognizes and appreciates the continuing efforts of FAO to support the agricultural sector in Afghanistan, especially during the decades of conflict. This current programme of FAO to promote privatization of the seed industry is relevant and timely, and we hope it will help alleviate many of the problems currently associated with seed delivery in the country.

For example, the Ministry is particularly concerned about recent reports that some farmers from certain provinces have received seed of untested, poorly adapted and non-released varieties, which have resulted in significant crop losses. This shows the need for effective regulation of the seed industry, and for attention to the dissemination of appropriate varieties. Not only those with high yield potential but also with other attributes such as drought tolerance and resistance to diseases.

Another important consideration is to select varieties that are preferred in the market place. This is particularly relevant in the case of rice. Much of the population prefers imported rice over locally produced rice because of quality differences. The availability of appropriate and desired rice varieties will therefore not only increase profitability at the farm level, but will also reduce the country's dependence on imported rice and use of foreign exchange.

These factors should be taken into account not only by the Government but also by private enterprises because they can only survive commercially and do well if they produce and sell seed of varieties with attractive features which consumers are looking for. Other factors that will influence the level of success of private sector participation in the seed industry include the availability of Breeder and Foundation Seed, and access for farmers to other complementary inputs such as fertilizer, herbicides and plant protection chemicals at affordable prices. The introduction of new practices backed by effective extension services is also highly necessary.

I wish you a successful workshop and hope that your deliberations, conclusions and recommendations will result in concrete action plans to help in the development of a stronger seed industry in Afghanistan for the improved welfare of farmers. Thank you and God bless you all.

¹ Deputy Minister of Agriculture and Animal Husbandry.

Keynote Address:

IMPORTANCE OF THE SEED INDUSTRY IN AFGHANISTAN

By Serge Verniau ¹

Mr. Chairman, His Excellency Minister of Agriculture and Animal Husbandry, Honourable Deputy Ministers, Representatives of donor agencies, Presidents of Departments of the Ministry of Agriculture and Animal Husbandry, Distinguished Delegates, Fellow Colleagues, Ladies and Gentlemen.

The mandate of FAO is to fight hunger in the world because hunger breeds poverty, war, disease and death. In the fight against hunger, FAO assists farmers with inputs to increase agricultural productivity. Amongst these seed is basic and essential.

Two weeks ago, the Council of FAO adopted the "Right to Food Guidelines" to help countries implement their obligations relating to the right to adequate food. Afghanistan is now entering a new era and it is good timing to help the Country's new President meet his obligation to construct an enabling environment for the people so that they can feed themselves in dignity, and to establish appropriate safety nets for those who cannot.

To increase the potential of Afghans to have proper access to adequate food, FAO seeks to strengthen the Country's seed sector with support from several donors, notably the European Commission and the Government of Germany.

For about 25 years, FAO has been committed to improving seed supply in Afghanistan. In doing so, almost 30 high yielding varieties of different crops have been tested, released, and accepted by farmers in various agro-ecological zones and now account for a large proportion of the cultivated area, particularly for wheat which is the country's main crop.

This year, Implementing Partners of FAO have produced almost 6,000 tons quality seed of 25 varieties that are adapted to the diverse agro-ecological zones in the country. All this seed has been tested in Afghanistan and in laboratories rehabilitated in partnership with ICARDA. In addition, Germany and Switzerland, through the FAO Emergency Program have provided funds to support the distribution of quality seed and fertilizer to vulnerable farmers, internally displaced persons, and returnees.

But more needs to be done to provide Afghan farmers with a wide range of adapted varieties because they lack sufficient choice. New varieties developed outside Afghanistan have to be tested and compared with the existing ones to ensure that farmers have at their disposal the best, high-yielding varieties, resistant to pests and diseases. It should be the varieties of today, which are adapted to the changes in climate – and not anymore the out-dated ones of yesterday.

It is nowadays particularly crucial in Afghanistan to avoid being confronted by farmers who say: "we are too poor; we have no choice but to grow opium poppy!". We must provide such quality inputs and services to Afghan farmers, that they can live the same

¹ FAO Representative in Afghanistan.

decent life as other farmers in the world who are growing legal crops and producing their own food.

Therefore, with changing conditions, FAO is moving its seed programme in a new direction that will ensure better sustainability and create greater impact at the farm level.

With the support of the European Commission and Germany, FAO has established 8 pilot, community-based seed enterprises as part of the seed industry commercialization strategy decided by the Government of Afghanistan. Another important step that is being pursued is the development of privatization strategies for the Improved Seed Enterprise, and the implementing partner NGOs. These strategies will form key elements of the deliberations at this workshop.

For over a period of about 10 years, our implementing partners, through their collaboration with FAO on seed activities, have accumulated a revolving fund which now amounts to nearly 5 million dollars. With the technical guidance of FAO, this fund is now being used as working capital for promoting sustainable commercialization of the seed industry.

As Afghanistan enters this new era in economic development, FAO will remain a neutral and faithful ally in ensuring that Afghan farmers have access to high quality seed of the best available varieties that fit their diverse farming conditions. A successful outcome of all these efforts would require the Ministry of Agriculture and Animal Husbandry to take an active and leading role in providing strong policy and regulatory support, and to harness effective linkages with research, extension and technology transfer initiatives.

In conclusion: FAO remains at the service of the farmers in Afghanistan to assist them in winning the battle against hunger by supplying them the quality varieties and seed they need.

THE AFGHANISTAN SEED INDUSTRY

A historical review and status of quality seed production

*By Sam Kugbei*¹

Introduction

Development of a seed industry in Afghanistan began in 1978 with the establishment of the Afghan Seed Company (ASC) as a Government Joint Stock Company. The initiative was supported with a 14 million US\$ loan from the Asian Development Bank.

From the outset, ASC was charged with seed production, processing and testing, development of labelling requirements, and granting official permits for sale and distribution of seed². The name of the Company was later changed to Improved Seed Enterprise (ISE) and assets brought to include 21 farms with total area of 11,768 ha.

Overview of FAO involvement

From 1982 till 1992 in-country seed multiplication programmes supported by FAO/UNDP included vegetable seed production and were conducted in collaboration with the Ministry of Agriculture and Animal Husbandry (MAAH) and ISE. This collaboration led to the establishment of seed laboratories, vegetable seed processing facilities, five small seed production and training farms, and a training centre.

Following the collapse and subsequent change of government in 1992, all facilities were looted and in 1993 FAO shifted its operational base to Pakistan. From there FAO implemented two seed projects through NGOs in Afghanistan or in direct collaboration with local communities. One was a cross-border project based on seed from Pakistan, and the other was organized with seed multiplication in Afghanistan of vegetables, wheat, maize and other crops.

During 1995-2002 the World Food Programme (WFP) collaborated with FAO in a Food-for-Seed scheme. It led to the organization of a substantial revolving fund which could be accessed by Implementing Partners (IPs). The UNDP-supported 1997-2002 PEACE Project also collaborated with the FAO seed programme. In 2002 FAO returned its operational base to Afghanistan.

With financial support from the Swedish International Development Cooperation Agency (SIDA), FAO activities in Afghanistan have included crop improvement trials and release of new varieties, and FAO continues to collaborate with MAAH, CIMMYT and ICARDA in these areas.

Since 2003, two seed projects have been organized: One for cereals with support from the European Community (EC) and one for other crops than cereals with support from Germany.

¹ FAO/EC Senior Technical Adviser, Strengthening National Seed Production Capacity in Afghanistan (GCP/AFG/018/EC).

² When conflicts erupted in Afghanistan in 1979 ASC activities were temporarily disrupted.

Implementing Partners in the seed industry

The Afghan seed industry is wheat-based and there is a strong need for diversification. The FAO project strengthens the capacity of local institutions (the IPs) to produce seed by providing them with technical assistance. For the various segments of the seed industry the implementing partners include:

- *For crop improvement:* The Agricultural Research Institute of Afghanistan (ARIA) at Mazar, Herat, Kunduz and Jalalabad; CIMMYT and ICARDA.
- *For Breeder Seed (BS) production:* ARIA at Mazar, Kunduz and Herat.
- *Foundation Seed (FS) production:* ISE branches at Herat, Mazar, Kunduz and Jalalabad.
- *For Quality Declared Seed (QDS) production:* NGOs (such as the Islamic Relief Agency (ISRA), Mercy Corps (MC) and the Voluntary Association for the Rehabilitation of Afghanistan (VARA)), ASP, ISE branches, the state owned NVDA, and 8 pilot private seed enterprises.
- *For seed testing:* MAAH laboratories rehabilitated by ICARDA and FAO at Kabul, Herat, Mazar, Kunduz and Jalalabad.

Crop improvement

The FAO crop improvement trials began in 1996 at several locations across the country including Herat, Nangahar, Kunduz, Mazar, Ghazni and Kandahar. These trials have since resulted in the release of 29 varieties (17 wheat, 2 barley, 3 rice, 4 bean, 2 chickpea, and 1 lentil). An overview of the number of varieties and lines which are being tested during the 2004/2005 season is in Table 1.

Breeder Seed production

In collaboration with FAO, ARIA produces BS on the Institute's farms at Herat, Kunduz and Mazar. The BS production expected in 2004/2005 season is in Table 2.

Table 1. Testing of varieties and lines in 2004/2005

Province	Number of varieties		Number of lines	
	Irrigated	Rain fed	Irrigated	Rain fed
Kunduz	105	105	496	313
Mazar	165	125	486	612
Herat	120	100	0	188
Total	390	330	982	1,113

Table 2. Expected Breeder Seed production 2004/2005, tons

Location	Tons		
	Wheat	Barley	Green Gram
Kunduz	3.0	-	-
Mazar	3.0	0.5	1.0
Herat	9.0	0.5	1.0
Total	15.0	1.0	2.0

Foundation Seed production

FS is produced by ISE on its farms at Herat, Kunduz, Mazar, and Jalalabad. The quantities expected in 2004/2005 are given in Table 3.

Table 3. Expected Foundation Seed production in 2004/2005, tons

Location	Tons			
	Wheat	Barley	Green Gram	Chickpea
Kunduz	20	-	2	-
Mazar	20	3.5	3	-
Herat	230	1.5	2	2
Jalalabad	30	-	-	-
Helmand	30	-	-	-
Total	330	5.0	7	2

Production of quality declared seed

QDS is available mainly for wheat and only small quantities are produced for other crops (such as rice, maize, barley, chickpea, lentil and mungbean).

For wheat the situation is as follows: The recommended seed rate for an average irrigated area of 969,000 ha is 175 kg per hectare which leads to an annual seed requirement of almost 170,000 tons. Rain fed wheat averages 797,000 ha. The recommended planting rate for rained wheat is 83 kg per hectare which results in an annual seed requirement of a little more than 66,000 tons.

The total quantity of wheat seed required for irrigated and rain fed wheat is thus close to 236,000 tons. However, the annual quality seed production is only 6,000 tons, resulting in a replacement rate of 2.6%.

Minimum standards for QDS of wheat are: Germination 80%, physical purity 98%, and variety purity 98%.

Table 4. Production by Implementing Partners of QDS planned for 2005

Partner	Locations	Tons	% of total production
ISE	Kabul, Heart, Mazar, Pulikhumri	2,250	37.5%
MC	Kandahar, Helmand	740	12.3%
VARA	Nimroz, Farah	730	12.2%
ISRA	Kabul, Logar, Jalalabad	730	12.2%
ASP	Mazar, Pulikhumri	200	3.3%
NVDA	Jalalabad	350	5.8%
Pilot Seed Enterprises	Baghlan, Balkh, Bamyán, Herat, Mazar, Taloqan	1,000	16.7%
Total		6,000	100.0%

It is expected that in the future private enterprises will account for a higher proportion of QDS production and that the seed industry will diversify into more profitable crops.

Seed testing and quality control

As already mentioned, ICARDA and FAO have rehabilitated and equipped seed laboratories in several locations. Some of these laboratories are now managed by FAO staff.

Only in 2004 was testing of seed lots carried out on a larger scale and took place in 4 laboratories. The number of samples tested until 15th. November 2004 are shown in Table 5.

Table 5. Number of samples tested in 2004 until 15th. November

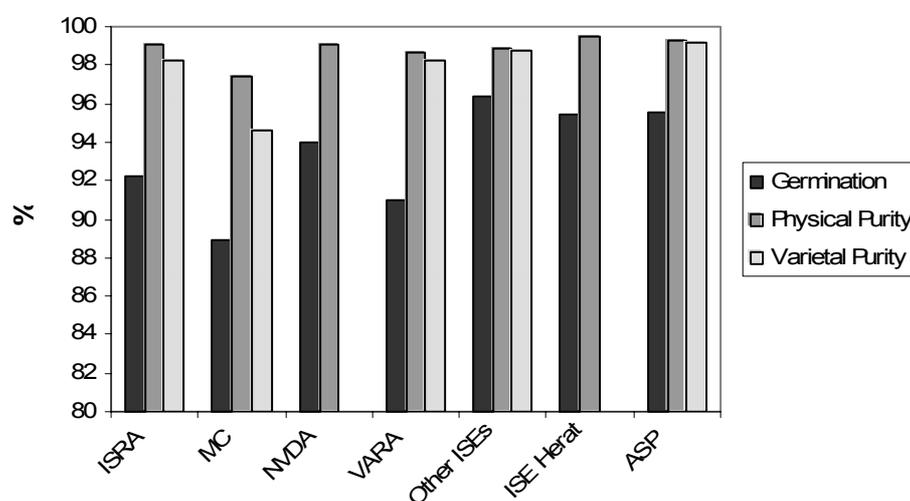
Seed Laboratory	Number of samples received	Tons of seed
Badam Bagh, Kabul	294	1,832
Herat	220	760
Mazar	151	1,015
Jalalabad	53	253
Total	718	3,860

The seed testing showed that the seed was of good quality. For physical and variety purity the average result for all IPs was above 90% and for germination above 80%. Nearly 90% of the samples met minimum quality standards. About 5% of the samples showed low physical purity because of poor seed cleaning and re-cleaning of the seed lots was recommended. The quality of the samples are shown in Table 6 and further illustrated in Figure 1.

Table 6. Quality of samples received by 15 November 2004

Partner	No. of samples accepted	No. of samples rejected	No. of samples reprocessed	Total samples submitted
ISRA	68	11	0	79
MC	66	39	26	131
VARA	48	1	7	56
NVDA	49	4	0	53
ISE Herat	220	0	0	220
Other ISEs	99	0	0	99
ASP	80	0	0	80
Total	630(87.7%)	55(7.7%)	33(4.6%)	718(100%)

Figure 1. Quality of seed obtained by partners.



Promotional activities

Altogether 10 field days with a total of 942 participants were organized in 2004. These included 2 in Kunduz with 202 participants, 4 in Mazar with 452 participants, and 4 in Herat with 288 participants.

Approaches to privatization/commercialization

Privatization could presently be organized at 3 main levels, i.e.:

1. Government or public sector (ISE branches).
2. Non-Governmental sector (NGOs as IPs).
3. Farming community enterprises.

The Improved Seed Enterprise

Status: State-owned enterprise with civil servant workers. It has a nationwide network of farms and other facilities and produces mainly wheat seed. Its operations are not profitable. Currently ISE seed operations do not receive financial but only technical support from FAO. Options for privatization are:

- ISE ownership and operations sold to foreign companies or investors.
- Government retains ownership but management of ISE is restructured along commercial lines.
- Foreign companies form joint venture(s) with ISE.
- Foreign companies use ISE as contract producer.

NGO operations as IPs

Status: NGO operations do not make profit. Current seed operations receive financial and technical assistance from FAO. There is no demand assessment and marketing efforts are very limited. Seed production is not market-oriented. Options for privatization are:

- NGOs form group enterprises in farming communities.
- NGOs form joint ventures with ISE.
- NGOs/ISE/Foreign companies form joint ventures.

Farming Community Enterprises

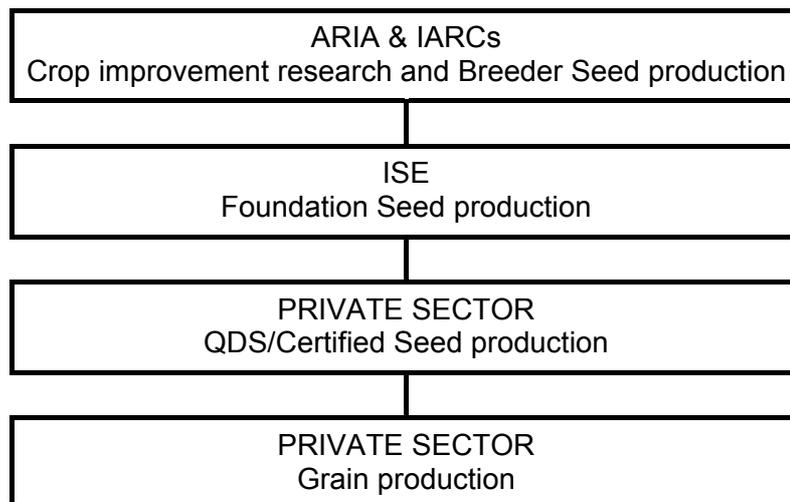
Status: Farmers produce seed as IPs. Up to 5,000 growers are receiving training and extension support from FAO in seed production. Many key individual farmers or groups can form small-scale seed enterprises. Options for privatization are:

- Growers form group enterprises in communities
- Key growers form individual small seed enterprises

Suggested future strategy for seed production

A possible future organization of and strategy for seed supply in Afghanistan is suggested in Figure 2. It is assumed that ISE will provide quality control and certification, and that both ISE and the private sector will be active in respect of extension and marketing. An efficient implementation of this organization would, however, require appropriate policy guidance with rules and regulations enforced through effective legislation.

Figure 2. A future strategy for seed supply



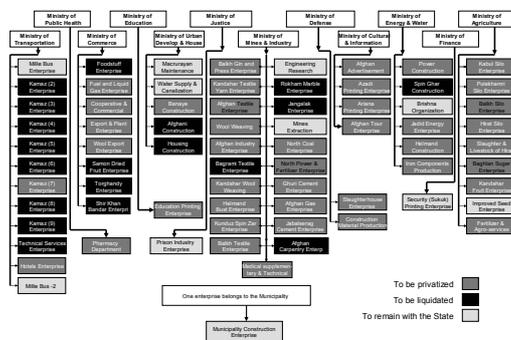
ECONOMIC RESTRUCTURING AND PRIVATIZATION OF STATE-OWNED ENTERPRISES

By R. S. Bernstrom¹

Introduction

The USAID-supported "Afghanistan Economic Governance" Project started in February 2004. It is being implemented by the Emerging Markets Group (EMG) in the Ministry of Finance. The EMG looks at 72 state-owned enterprises (SOEs) that are being managed by 12 line ministries under the Tasydi Law. 47 of these are based in Kabul and the remaining 25 in 8 provinces. The 72 enterprises employ a total of 18,000 people (See Figure 1).

Figure 1. Plan for privatization of state-owned enterprises



The Afghan Government is committed to privatization as an important component of its program to strengthen the private sector, provide sustained economic growth, and create jobs. All Ministers are committed to providing leadership to build consensus for privatization with the managers of their SOEs and eventually, in a joint campaign, to inform the general public.

Providing a sound Social Safety Net (SSN) is an important part of the strategy, both because of concern for the SOE employees and to create an environment where employees and communities will welcome private investors.

Current work programme

The Project is pursuing the following work programme:

- Rapid assessment of all 72 SOEs.
- Design of a SSN program.
- Valuation of all SOEs.
- Building of consensus among line ministries, managers, employees and communities.
- Amending the laws to allow for joint ventures, sale of shares, and liquidation.

The Ministry of Finance has requested a rapid assessment of the SOEs with the view to identify: (i) Enterprises which looked like potential candidates for successful privatization, and (ii) the potential number of liquidations.

¹ Senior Consultant/Team Leader, USAID Afghanistan Economic Governance Project, Kabul.

A next priority has been to design the SSN program. Furthermore, upon taking office in November 2004 the new Minister of Finance will request a valuation of all the SOEs, and the Ministry is currently working in partnership with the line ministries which administer the SOEs to build consensus. A joint seminar was recently held with the Ministry of Mines and Industries and the Ministry of Commerce to consult with the managers of 25 Kabul-based SOEs. A proposal to amend the Tasidy Law has been submitted to the Ministry of Justice. The amendment will allow for the development of procedures for corporatization or dissolution.

Results and issues

The rapid assessment gave the following results:

- 42 enterprises were assessed as being good candidates for privatization.
- 21 will most likely be liquidated.
- 10 need to remain in state ownership for the time being.

Development of the SSN is raising the following issues:

- Displacement of workers is politically sensitive since they experience a welfare loss.
- SSN intends to provide economic support to displaced workers.
- SOEs have too many employees and restructuring/privatization often results in reduction of the number of workers.
- SOE management and employees usually oppose privatization if job loss is not matched by support mechanisms.

Components of the Social Safety Net

The SSN has two components. Monetary benefits include a temporary severance pay for displaced workers, the size of which is tied to years of service, credit weeks, and salary level. In addition to the severance package, displaced employees are also entitled to statutory benefits under the Afghan Labour Act. This includes lump-sum payments and pension (if qualified). The monetary benefits will be based on four principals: (i) Fairness, (ii) affordability, (iii) efficiency and (iv) transparency

Non-monetary benefits consist of re-training, redeployment, and other support services and include counselling, career guidance, job search assistance, and small business support services. The selection of training programmes will be demand-driven and training providers will be used from among the Ministry of Labour, the Afghan Development Association, BRAC² and AGEF³.

Building consensus

The diagram in Figure 2 represents the strategy of consensus building. It begins within the Government, engaging all ministry stakeholders in the effort to win support from SOE managers, employees, the business community and community leaders, and eventually from the general public in Afghanistan.

In building support for privatization, the Project engages in the following information initiatives:

² Bangladesh Rural Advancement Committee.

³ Arbeitsgruppe Entwicklung und Fachkräfte im Bereich der Migration und der Entwicklungszusammenarbeit.

- Line ministries:
- All Ministers are supporting privatization.
 - The Project is partnering with relevant staff to plan and implement seminars for SOE managers.
- SOE managers:
- Organize seminars to explore the opportunities offered by private investment and to give managers training and tools for discussing privatization and the SSN with employees.
- Employees:
- Hold information meetings for employees before there is an investor to give ample time for decision-making.
- Local Government and business interests:
- In cooperation with line Ministries and SOE managers, meet with sensitive local government leaders or business leaders individually.
- Parliament:
- Have managers and employees of successfully privatized SOEs meet with parliamentary candidates from their regions.
 - Have information campaigns targeting newly elected parliament members ready for delivery immediately after elections.
- General public:
- Promote success stories of employees of recently privatized enterprises.
 - Promote success stories of former SOE employees who have successfully retrained or started a small business.

Restructuring and privatization methodology

There are some major impediments to privatization in Afghanistan. These are the lack of an appropriate legal framework, lack of relevant financial information on the SOEs, lack of political will, and the fact that the privatization process is not being undertaken by an independent agency.

To forward the restructuring and privatization process and to overcome the above impediments a number of avenues are being followed including: Liquidation, corporatization, sale of shares, public auctions, domestic and international tenders, long-term leases, management contracts, and direct negotiations.

The EMG plan for reaching out to investors operates with the elements shown in Table 1 and includes various donors such as USAID, the World Bank, the Asian Development Bank, Department for International Development (DFID) and others.

Figure 2. The strategy of consensus building

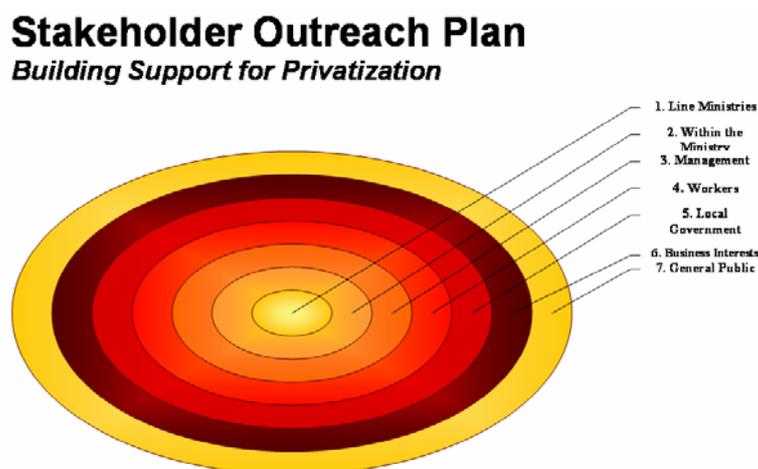


Table 1. Investor outreach plan

Outreach partners	Outreach tools
Afghan Investment Support Agency	<ul style="list-style-type: none"> • Web pages • CD-rom to give to investors which links through to current web-based information • Printed materials for trade missions • Trade show displays • Direct marketing to targeted investors
Afghan International Chamber of Commerce	
US Department of Commerce	
Commercial attachés from foreign embassies	
Afghan embassies abroad	

Progress

Until now, 3 SOEs have been privatized through long-term leases (Balk Gin & Press Enterprise, Kunduz Spinzar Enterprise and Baghlan Sugar Enterprise); 8 SOEs are in various stages of privatization; and 2 non-SOEs are being privatized.

With each successful privatization, such as the three mentioned above, the base of support to proceed with amending of the legal framework for privatization is being broadened.

VALUATION AND PRICING TECHNIQUES FOR STATE-OWNED ENTERPRISES

By Peter Witthaut¹

Assessing the potential for privatization

The proposed privatisation of the Afghan Seed Sector and its Improved Seed Enterprise (ISE) is definitely a new challenge for the Government and three questions should be answered:

1. Would it be preferable to sell the ISE assets or is it better to privatize the Company?
2. Would it be preferable to combine both the above with the view to divest excess seed processing capacity and then privatize the remaining business?
3. Which segments of the seed sector in general are to be privatised?

Selling Government assets and opening up for the private sector to establish seed enterprises does by no means exclude the Government as a "catalyst" which continues to contribute to seed sector development - and as a "regulator", monitoring and supporting a newly organized, competitive seed market within the country.

The following activities could be applied to assess not only the potential for privatisation of the ISE but also the seed production and marketing sector as a whole:

1. Assess the Government's strategic plan for privatisation of the seed sector and its impact on the business environment.
2. Evaluate the quality of the local seed market including segmentation, entry costs, distribution channels, and competition.
3. Project the stability of the seed sector economy as the privatization process goes forward.

Valuating the Improved Seed Enterprise

To estimate the value of the ISE is a difficult and important undertaking. Valuation is understood as ascertaining the possible price for which the Company can be sold. Such a price is composed of various elements, including paid cash and cash equivalent, investment and employment pledges, etc. The valuation approach is determined by two criteria: (i) The need for simplicity, and (ii) the need for objectivity.

To what extent an approach can be simplified, and how objective it must be, depends on the purpose of the valuation. For valuations connected with privatisation initiatives, a third criteria would be a need for transparency.

The book value of ISE provides an indication of the price. But in the end, the price will always be the result of negotiation. The price will therefore be influenced or determined by the market. Since valuations are complex and politically sensitive, and because the effects of valuations may not be transparent, the valuation team should proceed very carefully.

There is no such thing as a single "right" value or valuation procedure. An appropriate approach would have as its starting point the purpose of the valuation. A purpose-

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driven, transparent valuation process would be expected to deliver the required result: Support to the decision-making process for both the seller and the potential buyer.

Since the price is eventually agreed on through negotiations, the valuer can have an effect on the result through the preparation and provision of information which may strongly influence the positions of the negotiators.

The importance of objectivity and transparency

A valuation of ISE with the view to privatize the Company is expected to become a critical political issue. It is therefore important that the most objective and transparent process is designed. It is also important that appropriate agencies such as a national auditing agency, and respected and skilled local consultancy companies participate in the process. Those responsible for the privatisation should adhere to the utmost transparency so that they cannot later be accused by the public of having sold the State's assets too cheaply.

Privatisation of the seed industry is an element of a broader economic reform policy involving deregulation and liberalization. The reason why governments now engage in this reform activity is that many have pursued non-economic objectives for their public enterprise systems. Most publicly owned enterprises are therefore inefficient and loss making ventures, which are a burden to government budgets.

In order to ensure adequate transparency and objectivity, the Government should organize a privatisation committee in which independent bodies are represented (including representatives from the private sector) to oversee the valuation and the divestiture of the enterprise in question.

The need to foster competition

Privatisation provides an attractive route to wider ownership of private companies through an Initial Public Offering (IPO) of the shares to the public. In recognition of the changing role of the state in the new market-oriented economy, the Afghan Government has lately been pursuing commercialisation and privatisation of the government seed production and supply system. However, in order to achieve this, the Government should foster competition which is fundamental to improving the performance of the seed industry in a potentially competitive seed market.

Based on the rapid structural development in the seed industry there is a strong need to analyse the sector and develop a medium to long-term strategy and an action plan for the privatisation of the seed supply system. It is furthermore of paramount importance that as the seed industry is being privatized, the Government should reduce protection and ease barriers that hamper entry into the seed market. The ISE should be subject to the same rules as private seed companies and thus be in immediate competition with these companies.

To facilitate privatization of seed production and marketing, a seed policy and a new seed law should be formulated with the view to create a regulatory framework which will promote private sector seed production and marketing as well as reduce the Government's fiscal burden through a divesting of surplus capacity.

It is also recommended that a regulatory agency be set up to safeguard the quality and supply of seed.

Basic steps in the privatization process

The basic steps in the privatization of the ISE are:

1. Legal and constitutional, i.e. change the Company's status from a statutory body providing services to a non-service providing entity.
2. Commercialization, i.e. make financial, management and other changes to turn the ISE into a commercial type of enterprise.
3. Selling the asset(s).

Establishment of the ISE as a self-sustainable entity involves:

- Recording and evaluation of assets.
- Pensions and other employee issues resolved.
- Contractual obligations identified.
- Appropriate capital structure for the new company(s) agreed.

Valuation and pricing techniques

In general, the following techniques apply when privatisation of a state-owned enterprise (SOE) is being considered:

- If the assets are sold (liquidation). The liquidation value equals the sales price of assets minus liabilities and other commitments. The real economic value of the assets (useful life, art of technology etc.) should be established and a fair floor price set in advance before calling competitive bids, which in turn would lead to a realistic market value of the assets.
- If the business is sold. The value of the SOE is determined by reference to recent earnings, to future earnings potential, and/or to the capacity to pay dividend (the P/E or Price to Earning concept).
- Various combinations of the above.

Financial and environmental liabilities

The issues of financial and environmental liabilities are often problematic. Most probably, the ISE is only saleable without such existing liabilities. In the absence of a clear environmental legislation, potential investors face increased uncertainty and therefore risk. The costs of neutralising existing liabilities should be considered the responsibility of the accountable owner.

A solution to this problem is the procedure used by the German Treuhandanstalt². The buyers are required to take responsibility for existing liabilities up to a set amount which is fixed in advance. In the case of liabilities exceeding this amount, 90% of the exceeding amount is assumed by the Treuhandanstalt and 10% by the investor.

The price which is finally realised for the Company, depends largely on the willingness of the buyer(s) to guarantee employment or investment. It is obvious that the costs of redundancy and retrenchment, as well as the costs of social plans, have a large impact

² The Treuhandanstalt (THA) was established as a trust fund in 1990 and is subordinate to the German Minister of Finance and Economy. It became legally the intermediate owner of some 8,500 independent, East German enterprises and seeks to organise their privatisation after the unification of East and West Germany on October 3rd, 1990. As a public institution, the THA assumes a de facto liability for failing public enterprises. It defrays only actual losses and is therefore not a holding company in the basic sense. Since the THA has the task to privatize and use public property it has to adapt the structure of the enterprise economy to the requirements of the market while taking particular care to protect the redevelopment measures being taken by enterprises to become competitive. For this purpose, the Treuhandanstalt has had to break up the structures of the enterprises to develop competitive businesses and to promote an efficient economic structure overall.

on which price can be obtained. Some of the corporate valuation methods that are being applied are summarized in Table 1.

Table 1. Overview of important corporate valuation methods

Generally related to the past	Generally related to future
<p><u>Replacement Value:</u> Replacement "as is"; replacement "anew"; replacement with "state-of-the-art" technology.</p>	<p><u>Discounted Cash Flow Value (Earnings Value):</u> Discounted future earnings/going concern.</p>
<p><u>Book Value (Net Book Value):</u> Initial cost of capital assets/ depreciation/ liabilities.</p>	<p><u>Price to Earnings Multiplier (Market Value):</u> Stock market value or standard market value e.g. earnings multiples, earnings per share.</p>
<p><u>The Adjusted Book Value:</u> Close to the market value; it considers inflation and exchange rates.</p>	
<p><u>Liquidation Value:</u> Capital assets valued at sales price/liabilities.</p>	

Determining the equilibrium price

The art of company valuation lies in joining together analyses of the past and the future. The information gained by examining return determinants of the past, i.e. those which were gathered with hindsight, are taken into consideration when assessing the future. They, together with the information provided by the analysis of the future, shape the picture of the expected returns.

The valuator must focus on the so-called equilibrium price principle when performing valuation in connection with the possible sale or purchase of the Improved Seed Enterprise. The equilibrium price is understood to be the maximum price that a potential buyer would pay, or the minimum price that a seller will accept.

For the potential buyer valuation also means comparison. Will the investment required to buy the seed company result in returns that are comparable with the returns to be obtained by investing the money in an alternative activity? Thus the equilibrium price is estimated by valuing future returns.

Valuation teams should consider the principle of an equilibrium price in order to reach an estimate of the optimal proceeds. The fair market value can be established through dividing the earnings (or, if applicable, pre-tax income) by the capitalization rate.

The capitalization rate is the perceived investment risk which includes several elements such as (i) "risk free rate" which reflects the interest rate on government bonds (for example 8-9%), (ii) risks related to running a private company, (iii) industry risks, and (iv) other factors of similar nature. The total risk level may be 25% which is then considered the capitalization rate. Instead of the actual capitalisation, easily verifiable capitalisation levels are considered.

If the management of the SOE has been preparing annual budgets for several years, measured results against budget estimates, and suitably revised its budgets for the future, then the discounted future cash flow method may be a better way to estimate value. However, has that not been done then the capitalisation of earnings method should be applied.

DEVELOPING AGRICULTURAL INPUT DEALERS IN AFGHANISTAN

An opportunity for the seed industry

By Jerry Turnbull³ and Mir H. Hashimi⁴

The "Agri-input Dealer Training and Development Project" (AIDTDP) runs from February 2004 through August 2006 with support from the Ministry of Agriculture and Husbandry (MAAH), United States Agency for International Development (USAID), and the Rebuilding of Agricultural Markets in Afghanistan Project (RAMP). The AIDTDP seeks to pursue the following:

Goal: Increase agricultural production, productivity and rural incomes.

Purpose: To develop agricultural input (seed, fertilizer, crop protection products and small farm implements) markets by training and developing the agricultural input dealers to ensure availability of competitively priced quality inputs and knowledge for their proper use.

Key objectives:

- Promote establishment of open, competitive, integrated input markets.
- Increase technical knowledge and business ability of input dealers/traders.
- Improve market transparency.
- Develop and fortify business linkages between importers and suppliers.
- Establish agriculture input dealer associations.

To meet its objectives the Project is pursuing the following major activities:

- Agricultural input dealer training programs.
- Develop agricultural input dealer linkages with suppliers (regional and international).
- Develop agricultural input dealer linkages with financial institutions.
- Agricultural input dealer association building.
- Input market information systems.
- Production of technical leaflets, charts and posters.

As the AIDTDP is being implemented it seeks to develop and strengthen the flows between industry and markets as illustrated in Figure 1. In doing so the Project works with dealers to provide them with skills required for marketing and sales in an open market and for interacting with farmers in an active manner.

To better serve the needs of the dealers and to understand the background of the dealers an ongoing dealer survey was conducted in 18 provinces in early 2004. It included 1,212 dealers including importers, wholesalers, wholesalers/retailers and retailers. Survey results concerning education are given in Table 1.

From the survey can be seen that there is a framework for the seed industry to work with in Afghanistan and that these dealers can:

- Offer a sales outlet.
- Offer technical services.
- Work with the growers to develop value-adding marketing programs.

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⁴ Senior Agronomist, AIDTDP, International Fertilizer Development Center, Kabul.

There is no doubt that the system of private agricultural input dealers in Afghanistan offers the seed industry a means to get improved seed to the farmers. To further develop this opportunity it is recommended to link seed growers with the dealers and to develop and implement (i) an education program for dealers about improved seed, and (ii) a seed sales and marketing plan with specific sales goals.

Figure 1. A simple marketing system

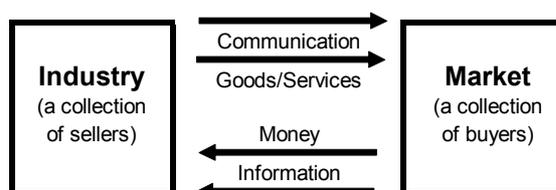


Table 1. The level of education of the dealers surveyed in 18 provinces expressed as a percentage

Education level	Importers	Wholesalers	Wholesalers/ retailers	Retailers
No education	0	47	28	50
1-6 years formal education	20	24	7	15
6-9 years formal education	20	5	39	14
9-12 years formal education	40	24	23	19
University training	20	0	3	2

PRIVATIZATION AND MARKET FAILURES

Challenges for a sustained seed market development in Afghanistan

By Koffi N. Amegbeto¹ and A.J.G. van Gastel²

Introduction

The Government's Development Strategy for Afghanistan, as reflected in the National Development Framework Document (AIA, 2002), is designed around three main pillars, one of which is the creation of sustainable growth where a competitive private sector becomes both the engine of growth and the instrument for social inclusion. The Agricultural Development Strategy emphasizes the provision of agricultural services including seed, fertilizers, farm machinery, agro-chemicals, and animal health products by the private sector. The Strategy specifically targets a combination of formal and informal systems to meet farmers' demand for quality seed. It calls for the multiplication and distribution of seed through networks of contract farmers in the short term, while in the medium term for the setting up of a private sector-led seed production and distribution network, accompanied by a policy agenda for seed certification and quality control.

The development of a formal seed system in Afghanistan started in the late 1970s with the organization of a state-run seed system, the Afghan Seed Company (ASC) which later changed to Improved Seed Enterprise (ISE). It produced wheat seed, vegetable seed, and seedlings - accounting for less than 8% of the total quantity of seed used by farmers. According to some experts, the Government never had an organized formal seed program, because ISE operated almost independently of the Government and has been termed as both government and private sector seed supply³. Private sector investments and industry-based seed activities have been limited. Amid various seed intervention schemes implemented by a number of organizations and NGOs, farmers have relied mostly on informal seed supply, either saving part of their harvest or exchanging seed with other farmers, communities, or local traders (Kugbei and Longley, 2003).

The local seed system is therefore still largely managed by farmers who did not specialize to take advantage of (i) the vacuum resulting from the lack of a well functioning formal seed program and (ii) the absence of regulations that may have worked against a competitive or free-market seed industry⁴. Consequently, the seed system chiefly supplies seed of local varieties rather than of improved varieties which could increase productivity, contribute to better resource allocation, and add to food security. In other words: Resources are being misallocated because of market failures.

Examining privatization schemes

In Afghanistan, privatization is meant to encourage private companies to enter the seed industry, or to facilitate establishment and promotion of small seed enterprises which

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² Head, ICARDA Seed Unit, Aleppo, Syria.

³ The statements in this section about seed supply and the status of the government seed programme are from the "Future Harvest Consortium to Rebuild Agriculture in Afghanistan, 2002".

⁴ FHCRAA (2002) reported the presence of 2 private-sector seed producers/suppliers in Baghlan, who produced, cleaned and distributed seed of improved varieties. However, they went out of business when free distribution of emergency seed began.

can supply quality seed to farmers. Previous studies of privatization schemes emphasize the need to reduce transaction costs in order to make improved seed cheaper and more affordable for poor farmers (van der Meer, 2002; Kugbei and Zewdie, 2002). Most studies also analyze market prices and the economic viability of seed enterprises within a static framework - based on profitability per unit of land. However, examination of dynamic aspects, especially the projected business cycle for new enterprises, also needs to be studied in order to aid entrepreneurs to better schedule future activities and adopt appropriate diversification and risk management strategies.

This Paper addresses two issues:

- The challenges to the private sector of meeting seed demand by making improved seed more affordable to small-scale farmers.
- Sustaining seed demand and seed related businesses in the presence of market failures.

Specifically, the Paper addresses the necessary competitiveness of new seed enterprises required to increase their market shares, and how the adoption rates of improved seed affect the life cycle of a seed business. To illustrate the above mentioned issues the Paper draws upon the conceptual frameworks of: (i) Market equilibrium under imperfect competition, and (ii) the agricultural technology adoption process.

Why seed markets fail

Markets are not always perfect. However, market outcomes are supposed to be efficient, both with regard to allocation and productivity. Market failure generally refers to situations where market forces do not serve the perceived "public interest" which in the case of seed would be the transfer of high-yielding varieties to a large number of farmers in order to improve their yields, food security, income, and livelihoods.

The two main reasons why markets fail are: Sub-optimal market structures and the enterprises' inability to turn costs/benefits into higher seed prices and thus into microeconomic decision-making concerning the markets. The most cited factors are: (i) The presence of market power and (ii) the externalities.

Market power results in too few goods being produced in non-competitive markets and too many goods being produced in competitive markets. This could be said of the Afghan seed sector for the supply of improved and local seed of different crop varieties respectively.

Externalities occur when the production or consumption of a good has some spill over effects but these are not reflected in the market price of the good. A prominent example is the case of improved seed of self-pollinated varieties, which farmers can multiply and use for a number of years after the initial purchase (van der Meer, 2002)⁵.

Many factors may contribute to a sub-optimal market structure, resulting in a lack of business incentives. They include entry barriers (due to indivisibilities and high setup costs), the presence of institutions (such as social networks which may exclude some potential market participants) and of production and trade networks, high transaction

⁵ There are many self-pollinated crops (wheat, barley, chickpea, lentil, etc.) grown in Afghanistan for which commercial hybrid seed are not available.

costs (due to geographic dislocation and dispersion of demand), bad infrastructure, and risks and uncertainties.

Issues shaping the markets in Afghanistan

Production and marketing of quality seed require specialized knowledge and minimum investment in seed production, processing, and cleaning equipment, none of which are easily accessible to farmers in Afghanistan. Distance from markets, and devastation of the countryside and the infrastructure by decades of war are at the heart of a range of transaction costs that reduce the incentive and ability of people to access and use markets to their advantage. Other factors such as poor security, illegal taxation, and extortion on roads also hamper market access.

Evidence suggests that production and trade networks shape market outcomes in a non-competitive manner. According to Tufts (2004), rural Afghan “markets” are shaped by issues of credit, exchange, trade, and transport as well as by personal situations caused by social networks and by family, tribal, and client relations. War and shifting power dynamics have altered trade networks, changing the people involved in and controlling these networks, and the type of goods traded in the market systems.

Because of (i) market failures that prevent the development of more competitive seed markets, (ii) the product differentiation between improved and local seed, and (iii) the number of farm units involved in the supply of different seed, the structure of the seed markets in Afghanistan is characterized as imperfectly competitive.

It can be shown that the seed demand curve is kinked and can be described conceptually as follows:

- On the one hand, a representative enterprise supplying improved seed operates on the demand segment showing the quantities it will sell at different price levels of seed of local varieties.
- On the other hand, the representative enterprise supplying seed of local varieties sets prices equal to marginal costs, and at equilibrium, operates along the segment of the demand curve that has the same elasticity at any given price as the overall industry demand curve⁶.

Analyzing prospective seed enterprises in northern Afghanistan

Data collection

An analysis of prospective village-based seed enterprises in Kunduz and Taloqan in the rain-fed areas of Northern Afghanistan, where the introduction and distribution of improved seed have been somewhat limited⁷, was carried out with focus on the staple food crops wheat, rice, and maize (ICARDA, 2003). Data on seed production costs were obtained from the seed enterprises' crop budgets. Some price or cost variables can be observed directly in the market and could be compared.

An enterprise supplying improved seed must enhance its capability to close the gap between its average production costs and the price of substitute seed of local varieties⁸. In the above analysis, the costs of seed production for a given crop is

⁶ Detailed elaboration on the conceptual framework is available from the author upon request.

⁷ Additional data is being collected in cooperation with operational village-based seed enterprises under the Rebuilding Agricultural Markets Program (RAMP) for more extensive analysis.

⁸ It is worth noting that current market prices of improved seed do not reflect the equilibrium prices under imperfect competition as numerous organizations currently subsidize seed distribution in Afghanistan.

compared to the price of its substitute local variety to determine the required range of cost reduction after accounting for normal profit margins and all other costs.

Calculating rate of variety adoption and development in seed demand

Theoretical and experimental research indicate that the S-shaped curve characterizes the aggregate adoption process of new agricultural technologies fairly well (Bera and Timothy, 1990; Rogers, 1983; Feder and O'Mara, 1982). Technology adoption studies have approximated this process using a discrete time distribution based on the logistic function (Bera et Timothy, 1990) or the inverse triangular probability density function (Kristjanson et al., 2002). Following the same approach in the above study, and assuming a target ceiling of adoption and a timeframe for its achievement, the rate of adoption for each year was estimated. Demand (d_t) for seed of the improved variety by new adopters in a given year (t) is defined as the rate of adoption multiplied with the total area cultivated and the seeding rate.

$$d_t = \beta_t * TA_t * SR_t \quad (1)$$

where β_t is the rate of new adoptions (i.e. the proportion of the cultivated area that is planted with improved seed); TA_t , the total area of land cultivated to the crop; and SR_t , the seeding rate. Estimation of the corresponding demand is straightforward for hybrid seed where all adopters are assumed to replace their seed stocks yearly. Hence, seed demand equals the growth in aggregate adoption and compounds throughout the projected period (N) until maximum adoption is reached, according to equation (2) below.

$$D_t = \sum_1^N d_t \quad (2)$$

Adopters of a self-pollinated variety will demand, on average, new stocks of improved seed after (h) growing seasons, generating a lag effect in the cumulative demand (D_t) a seed enterprise will face over time. Consequently, demand compounds over time in accordance with the following equations:

$$D_t = d_t \quad \text{for } 0 < t \leq h \quad (3)$$

$$D_t = d_t + D_{t-h} \quad \text{for } h < t \leq N \quad (4)$$

Previous ex-post impact studies⁹ suggested a period of 15 to 20 years for the adoption of agricultural technologies in developing countries (Elbasha et al., 1999). In the simulations below, the length of time until maximum adoption takes place is projected to be 15 years. The ceiling level of adoption when all potential adopters have taken up the new variety has been set at 80%, which is a very optimistic scenario since farmers may not easily abandon their preferred local varieties¹⁰.

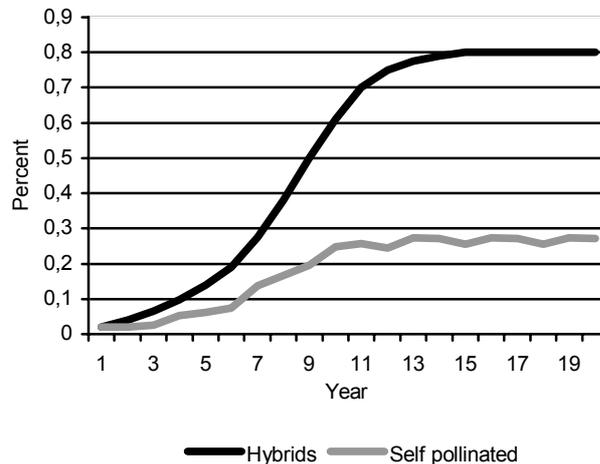
These parameters were used to derive the aggregate adoption curves for hybrids and non-hybrid seed (Figure 1). Adoption patterns were used to project demand for

⁹ An ex-post impact study assesses the impact of new technology after dissemination and adoption of the technology by end-users.

¹⁰ Empirical studies have shown what is defined as "disenchantment discontinuance" effect characterized by a reversal in the adoption process that generates a cumulative distribution of adoption, which is not always a non-decreasing function. This reversal is assumed away in the current study.

improved seed of self-pollinated wheat and rice, and seed of hybrid rice. The seeding rates of 80 kg ha⁻¹ and 100 kg ha⁻¹ were used for wheat and rice respectively, assuming a farming community where 5,000 hectares of these crops are cultivated in the first year with a subsequent average growth of 1% a year.

Figure 1. Cumulative adoption curves for improved crop varieties



Over time, the seed demand curve will result from the adoption of the commercialized crop varieties, and it is expected that a seed business will boom as the level of adoption increases. However, it is also well documented that the rate of adoption both of improved seed and of other agricultural technologies depends on many factors, including perceived benefits and risks, price and ongoing costs, ease of use, compatibility with local conditions, promotion, etc.

Results and implications

The need to reduce seed production costs

An important indicator of a seed enterprise's performance is thus the share of the overall seed market that the enterprise is able to capture. This indicator can be improved by increasing operational and cost efficiency, and competitiveness. Data from the seed enterprises in Kunduz and Taloqan (Table 1) show that the current production costs of improved maize seed was 176.60 AFA/seer¹¹, while grain, which is a substitute for improved seed, was sold at 40.00 AFA/seer. The difference between these two estimates is 77% of the seed production costs. The average cost of improved maize seed production would therefore need to be reduced with 77% in order for the seed enterprise to compete effectively and sell seed to a large number of maize farmers who currently save their own seed.

Similarly, the average production costs of improved seed of wheat and rice have to be reduced by 52% and 38% respectively. While these targets seem large and challenging to new seed enterprises striving for high profitability, their full range does not need to be filled before market shares increase because of product differentiation and the superior qualities embedded in improved varieties compared to the local ones. Nonetheless, other factors such as bumper harvests, and/or increased seed or grain importation that would depress local prices, are likely to counteract these advantages of differentiation and quality, and make it more difficult to improve seed enterprises'

¹¹ 1 seer = 7 kg.

competitiveness. Therefore, adequate policy support is required to provide incentives and encourage village-based enterprises to fulfil their role in the seed sector privatization scheme as stipulated in the National Development Framework Document for Afghanistan.

Table 1. Targets for average cost reduction by seed enterprises **

Crop	Grain price at sowing time, AFS/seer	Current production cost for improved seed, AFS/seer	Target for cost reduction (difference between grain price and current seed production costs), AFS /Seer	Targets as % of current production costs
Wheat	80	166.8	86.81	52
Rice	100	162.6	62.57	38
Maize	40	176.6	136.58	77

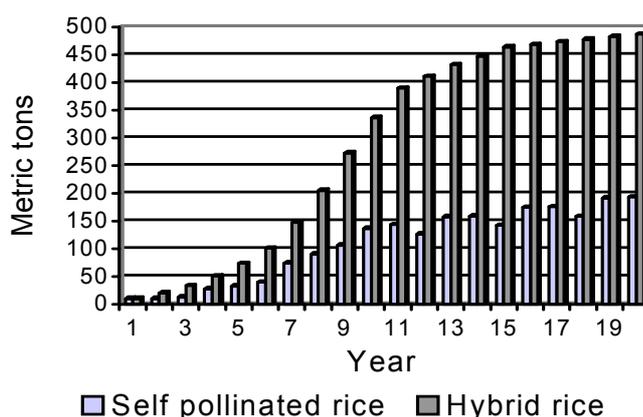
** Derived from ICARDA (2003), Seed Unit Annual Report.

Demand for seed of hybrids versus open-pollinated varieties

The cumulative adoption curve of self-pollinated varieties is dominated by that of hybrids because of the lag effect in seed replacement (Figure 1). These curves served as the basis for estimating future seed demand or potential market size for a seed enterprise in a community where 5,000 hectares of the crops considered are cultivated.

The projected volume of seed demand is far greater for hybrids than for self-pollinated crops Figure 2 illustrates the situation for rice. Demand for seed of hybrid rice compounds systematically according to the rate of adoption. It increases from 10 tons in the first year to 20 tons and 33 tons in the following years before reaching 464 tons by the end of the 15th year. Beyond this period, the demand for seed will increase slightly according to the projected growth rate in cultivated area. For self-pollinated rice, seed demand varies from about 11 tons a year in the first three years to reach the maximum of 142 tons by the 15th year.

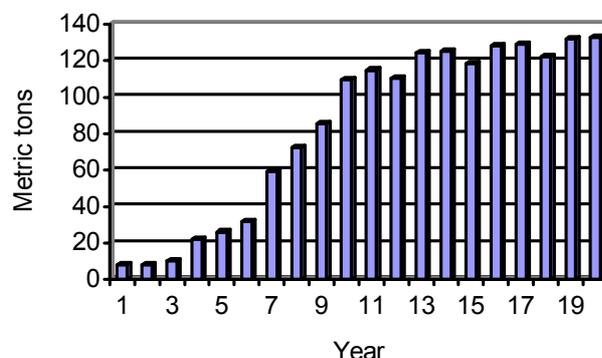
Figure 2. Projected seed demand for hybrid and self-pollinated rice



The scenario for wheat is shown in Figure 3. For self-pollinated wheat, seed demand is projected to increase from about 9 tons per year in the first three years to 27 tons per year in the subsequent triennial period, reaching a maximum of 133 tons.

Demand projections follow a smooth pattern for hybrids while being cyclical for self-pollinated varieties owing to the time farmers take to replace their seed stocks. This pattern adds an obvious element of instability and risk associated with seed business based on self-pollinated varieties.

Figure 3. Projected seed demand for self-pollinated wheat



The above simulations substantiate why private seed businesses are more attracted to hybrid seed than to non-hybrid seed. Specifically, there is a greater potential for business growth in hybrid seed while that opportunity is reduced with two thirds for production and marketing of seed of self-pollinated varieties. In the latter case, this opportunity may be further reduced if the farmers who buy seed subsequently engage in informal seed exchange with other farmers or communities, which is very common in Afghanistan.

Furthermore, under low-input and less favourable farming conditions in some marginal areas, which are not reached by the formal sector and therefore will be potential markets for village enterprises supplying seed, farmers may find hybrid varieties less attractive. This is because of the risk of crop failure, the cost of hybrid seed, and/or the farmers' inability to replace their seed stock annually or to apply required crop management practices. As a result, village-based enterprises may deal only with seed of self-pollinated varieties for which demand projections are relatively lower than for hybrids.

Strategies to increase seed sales and sustain demand

A number of issues emerge from seed enterprises' need to improve efficiency and increase market shares. Although activity budgets showed that the village-based seed enterprises could obtain profit margins of 5%, 14% and 209% for wheat, maize, and rice seed production respectively (ICARDA, 2003), these margins would be achieved at relatively high seed prices and therefore with only limited quantities sold. Strategies to promote these enterprises include:

1. Introduction and adoption of low cost but efficient seed production and processing technologies to keep prices for improved seed much lower and thus make them affordable to farmers¹².
2. Enhancing the management skills of new entrepreneurs to allow them to minimize production, processing and distribution costs.

¹² Technology adoption certainly increases production costs, as it requires investment; However, at the same time, the costs could decrease substantially over time as these technologies are used in an optimal way.

3. Provision of seed business development and management services coupled with technical and marketing research support.
4. Government support to reduce transaction costs through improved market information, and better road and market infrastructure in rural areas.
5. Development of enabling economic environments, business incentives, and direct government support to enterprises supplying seed in less favourable areas.

Similarly, the dynamics of the seed demand curve over time and particularly the low demand in the early years of introduction of new varieties has implications for seed enterprises' optimal size at the time of establishment and the scale of their operations. Because of market failure, village-based seed enterprises cannot factor the benefits of farmers' continued use of self-pollinated varieties into their prices for fear of rendering them less affordable.

Emerging enterprises may sustain seed demand over time by implementing a combination of strategies. They should adopt a strategy of low prices with the view to penetrate the market and rapidly build their market share for improved seed. This strategy may be coupled with an appropriate diversification approach to produce not only seed of well-known and currently used varieties, but also other crop and livestock products for consumption and commercialization in their communities.

It would be necessary for a new enterprise to establish its reputation by following recommended production and processing techniques, and by renewing their stocks of Foundation Seed in a timely manner. Incorporation of a strong marketing and extension component in the enterprise's activities is likely to raise farmers' awareness, promote the use of improved seed, and expand demand. In order to keep their customers, seed enterprises should also improve their services by providing good delivery and technical information to farmers.

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SURVEY OF THE SEED MARKET IN AFGHANISTAN

By Sam Kugbel¹

The problem

There is a lack of information in Afghanistan about the effective demand for seed of the major crops. Without this information it is difficult to promote production of seed with the view to sell the seed to farmers at commercial prices.

Objectives of the survey

To generate more information about seed demand the FAO/EC project "Strengthening National Seed Production Capacity in Afghanistan" (GCP/AFG/018/EC) in May-June 2004 organized a survey with assistance from the Coordination of Afghan Relief Survey Unit (formerly called the Afghan Survey Unit) to:

1. Examine the seed buying behaviour of farming households across the country with the view to estimate the potential market demand for quality seed of the major crops.
2. Investigate possibilities for market-oriented seed production in areas that demonstrate a potentially effective demand for seed.
3. Examine the nature of prices and farmers' attitudes regarding variety choice and seed use, and explore ways to influence these to promote market demand for quality seed.

It was expected that the survey would provide answers to the following questions:

1. What are the key sources from which farmers obtain seed for major crops and what are the relative importance and merits of these sources?
2. What proportion of farmers' seed needs of major crops is met by cash purchases and how large could this get?
3. What are the likely key factors that will influence growth of the commercial seed market at the farm level?
4. What are potential seed buying farmers looking for when making the decision to buy seed of new varieties or replace seed they currently use?
5. What are the relative effects of change in price on the demand for seed of major crops grown by farmers?²
6. Would locating small-scale enterprises in communities influence farmers to buy more quality seed? What factors could contribute to enhance this process?
7. What diversified crop portfolio would be suitable for pilot enterprises in particular farming communities?

Methods

The Survey was preceded by training of the enumerators during which all questions were thoroughly reviewed and the necessary modifications made. The modified questionnaire was pre-tested and the final version translated into Dari alongside the English text. The questionnaire was then used to interview a random sample of 3,508 households in communities within 6 provinces, including 220 villages in 20 districts where Implementing Partners of the FAO seed programme were active in seed multiplication. Random samples of households were selected from lists of households compiled by the Extension Department of the Ministry of Agriculture and Animal

¹ FAO/EC Senior Technical Adviser, Strengthening National Seed Production Capacity in Afghanistan (GCP/AFG/018/EC).

² Data from the Survey did not allow for this question to be examined in detail.

Husbandry. The Survey covered the main field crops: Wheat, rice, potato, cotton, vegetables, pulses, and oil crops.

The number of villages and households surveyed for each crop in each district and province is analyzed in Table 1. A wide range of household types was represented in the sample. More than half of the households had small farms (with less than 5 jerib³ cultivated area), which reflects the overall situation in Afghanistan's agriculture. The size of cultivated area is examined in more detail in Table 2.

Table 1. Number of households interviewed

Province	District	No. of villages	Number of households which grow these crops							
			Wheat	Rice	Cotton	Vegetables	Oil crops	Pulses	Potato	Total
Baghlan	Doshi	6	52	58	-	40	-	-	11	161
	Pulikhumri	13	51	51	30	61	14	24	36	267
	Baghlan I	14	50	50	31	38	40	30	31	270
	Bamyan	9	50	-	-	-	-	-	50	100
Bamiyan	Kahmard	9	50	-	-	-	-	-	50	100
	Yakawlang	11	50	-	-	-	-	-	50	100
	Enjil	8	57	4	4	52	-	-	-	117
	Gozarah	5	49	50	30	18	-	3	33	183
Herat	Pashton	6	46	-	30	42	-	-	30	148
	Kushk	9	50	-	-	19	-	50	0	119
	Khan Abad	16	51	51	30	65	43	32	-	272
Kunduz	Kunduz	19	66	54	40	42	42	36	-	280
	Chardora	8	52	50	36	42	38	32	-	250
Balkh	Balkh	12	55	-	56	54	33	18	-	216
	Sholgara	15	58	58	0	0	37	32	-	185
	Dehdadi	10	50	-	33	46	34	33	-	196
	Chamtal	7	54	-	30	43	41	31	-	199
Nangahar	Surkhud	13	60	-	7	32	-	-	-	99
	Kama	17	68	52	15	29	-	-	-	164
	Khogyani	13	32	-	10	40	-	-	-	82
TOTAL		220	1,051	478	382	663	322	321	291	3,508

³ 1 jerib = 0.2 hectare

Table 2. Size of cultivated area

Cultivated area, jerib	Number of households interviewed	Pct.
Less than 5	1,995	57%
5 – 10	829	24%
11 – 15	267	8%
16 – 20	189	5%
More than 20	228	6%
Total	3,508	100%

Results and discussion

Adoption of improved varieties

Farmers' adoption of improved varieties is analyzed in Table 3. The Survey found that use of improved varieties is most common for wheat and rice, and far less for other crops. The use of improved varieties of all crops is most common in Herat and the use of local varieties of vegetables is widespread in all provinces except in Herat.

Local varieties of most crops are commonly used in Baghlan, Balkh and Kunduz whereas households using more than one variety (high biodiversity) are mostly found in Bamyan.

Farmers' awareness and perceptions about varieties

Farmers seem reasonably aware that new varieties are available for crops such as wheat, rice, potato, cotton and pulses, but appear less knowledgeable about new varieties for vegetables and oil crops.

Introduction of new varieties of vegetables would, however, be profitable because farmers do not grow seed of vegetables themselves but tend to buy vegetable seeds from the local markets, especially in Herat and Nangahar provinces.

In Herat and Nangahar awareness about new varieties of all crops seems particularly high, which may well be because there is more international seed trade in these two provinces.

Table 3. Farmers' adoption of improved varieties

Province	Crop	Percent of households who used these number of varieties (*)			
		0 improved variety	1 improved variety	2 improved varieties	1 local variety
Baghlan	Wheat	2	95	2	3
	Rice	3	96	1	3
	Potato	4	96	0	4
	Cotton	46	54	0	44
	Vegetables	88	12	0	86
	Pulses	39	61	0	39
	Oil crops	95	5	0	96
Balkh	Wheat	18	71	10	32
	Rice	0	98	2	19
	Cotton	24	76	0	24
	Vegetables	65	35	0	57
	Pulses	50	50	0	51
	Oil crops	99	1	0	99
Bamyan	Wheat	3	77	20	100
	Potato	0	73	26	12
Herat	Wheat	0	56	43	59
	Rice	0	35	63	28
	Potato	0	81	19	3
	Cotton	0	92	8	3
	Vegetables	0	89	11	5
	Pulses	2	54	44	22
Kunduz	Wheat	4	95	1	4
	Rice	13	85	3	25
	Cotton	22	78	0	22
	Vegetables	63	36	1	37
	Pulses	25	69	6	26
	Oil crops	69	31	0	69
Nangahar	Wheat	4	67	26	6
	Rice	19	60	21	17
	Cotton	3	97	0	3
	Vegetables	5	93	1	5
MEAN	Wheat	5	77	17	34
	Rice	7	75	18	18
	Potato	1	83	15	6
	Cotton	19	79	2	19
	Vegetables	44	53	3	38
	Pulses	29	59	13	35
	Oil crops	88	12	0	88

(*) Each row adds up to more than 100% because many farmers were counted for more than one attribute. 0 means less than 0.5%.

Table 4. Farmers' awareness and perceptions about improved and local varieties

	Baghlan	Balkh	Bamyan	Herat	Kunduz	Nangahar	Mean
<i>Percent of households who have heard about improved varieties:</i>							
Wheat	99	94	100	100	99	99	99
Rice	99	100	-	100	99	100	100
Potato	96	-	100	100	-	-	99
Cotton	85	83	-	100	92	100	92
Vegetables	25	47	-	100	51	97	64
Pulses	81	75	-	100	87	-	86
Oil Crops	22	8	-	-	84	-	38
<i>Percent of households who think the improved varieties are better than the local ones:</i>							
Wheat	99	87	100	100	100	97	97
Rice	98	100	-	100	96	100	99
Potato	97	-	100	100	-	-	99
Cotton	85	76	-	100	100	100	92
Vegetables	97	98	-	100	89	98	96
Pulses	78	100	-	98	100	-	94
Oil Crops	100	100	-	-	80	-	93

Seed sources

Farmers' seed sources for six crops are analyzed in Figures 1-6. The Figures examine by province the percent of households obtaining seed from each of four sources: (i) Other sources, (ii) local market, (iii) other farmers, and (iv) own seed production.

Figure 1. Wheat

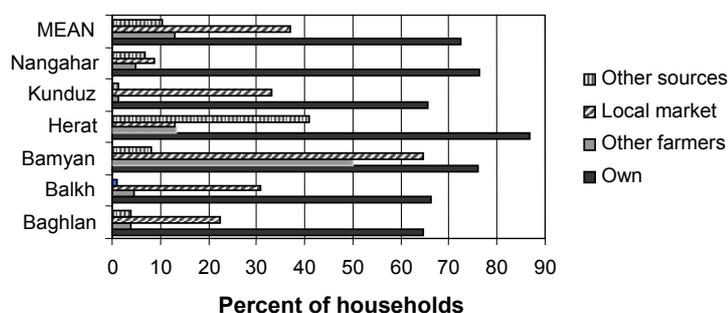


Figure 2. Rice

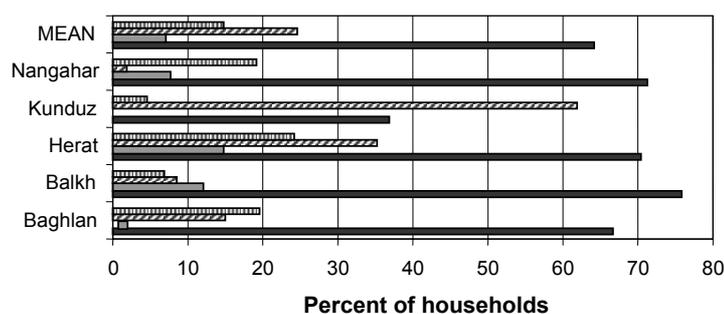


Figure 3. Cotton

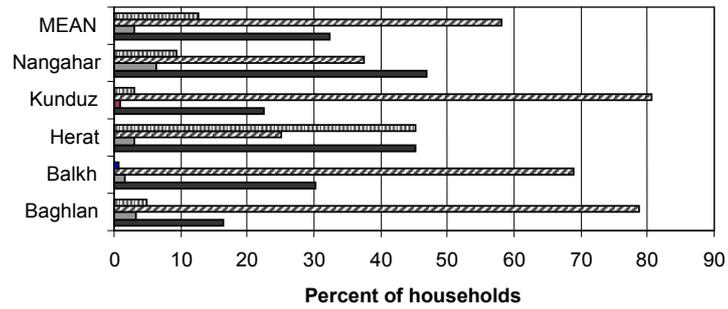


Figure 4. Potato

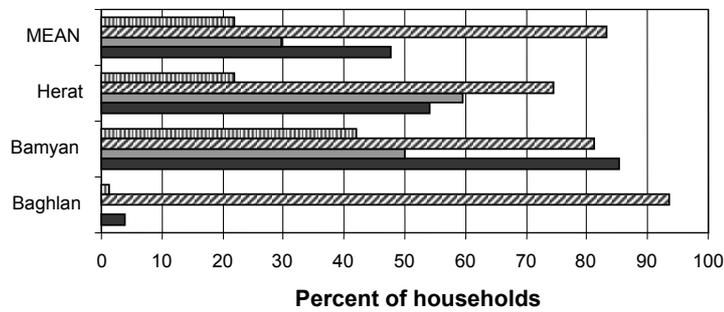


Figure 5. Pulses

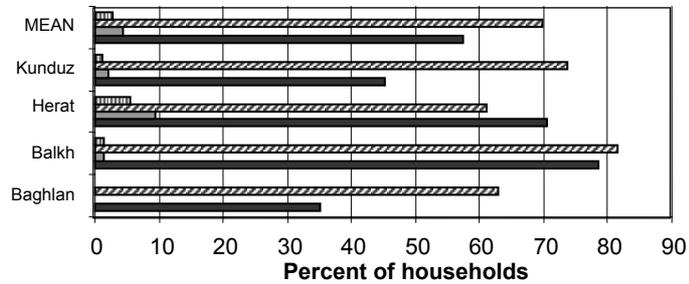
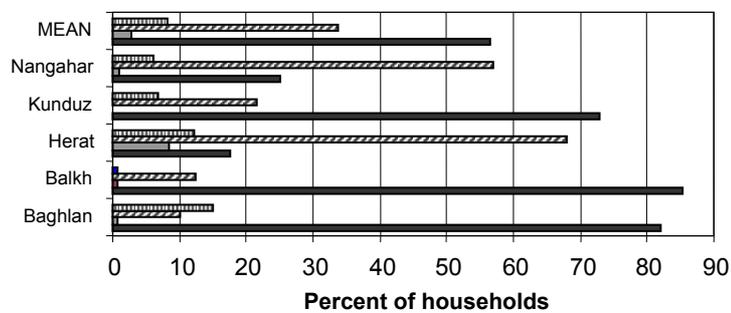


Figure 6. Vegetables



Farmers' motives when buying wheat seed

Farmers' reasons for buying wheat seed are analyzed in Figures 7 and 8. The Survey suggests that farmers want to buy seed because their own capacity to meet their seed needs is limited. Subsequently they choose to go to the local market to buy the seed they need because they don't have access to other sources (such as contract growers, dealers, or aid projects) where they could obtain seed of better quality⁴ and maybe even at subsidized prices.

The farmers consider quality, especially non-admixture with other seeds, when they purchase quality seed from other sources than the local market, and data from the Survey indicate that farmers' might consistently buy seed from such other sources if there were reliable suppliers who could make good quality seed available whenever farmers needed the seed.

Figure 7. Reasons for buying wheat seed in the local market

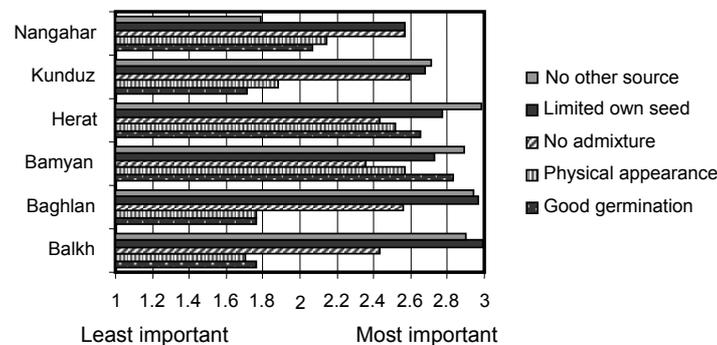
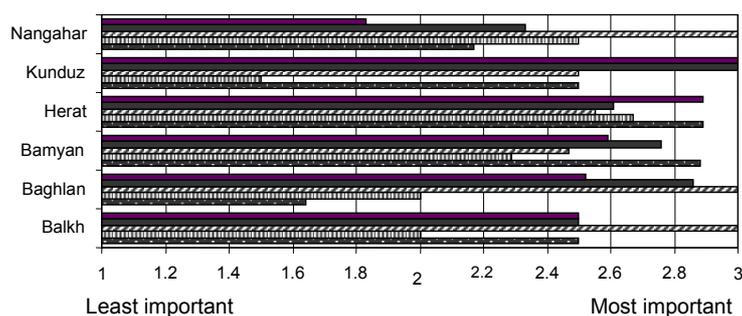


Figure 8. Reasons for buying wheat seed from other sources
(such as other growers, dealers or aid agencies)



⁴ The Survey used two seed quality concepts: (i) Quality Declared Seed (QDS) which is a category of seed defined by FAO and meeting specific quality requirements which in Afghanistan includes min. 80% germination, 98% physical purity, and 98% varietal purity; and (ii) Quality Seed which includes QDS and other seed products of a better quality than grain. Quality Seed in this Survey is defined either by the sources (seed from the bazaar is not quality seed whereas seed from a contract grower or a project is Quality Seed) or by the price (unsubsidized Quality Seed costs about twice the grain price).

Seed prices

The prices farmers pay for the quality of seed available in the local markets or for the same quality from other sources are about the same as they pay for grain. However, if the farmers buy (unsubsidized) Quality Declared Seed (QDS) they would have to pay twice the price of grain. For wheat seed these aspects are illustrated in Table 5.

Table 5. Prices of wheat seed expressed in percent of QDS and the grain price

	Baghlan	Balkh	Bamyan	Herat	Kunduz	Nangahar	Mean
Price in local market (Afs/seer)	47.65	53.13	55.26	47.20	50.95	69.87	54.01
Price from other sources (Afs/seer)	45.43	57.50	54.71	53.41	50.50	60.02	53.60
Mean price (Afs/seer)	46.54	55.32	54.99	50.31	50.73	64.95	53.81
Mean price as % of QDS price	50%	60%	60%	50%	50%	70%	60%
Mean price as % of grain price	90%	110%	110%	100%	100%	130%	110%

The question is whether the difference between the price of seed from the local market and the price of QDS from other sources reduces farmers' demand for QDS, or whether they would buy this higher quality of seed at today's price margin (because they are then assured high quality standards) if such quality seed was available.

Irrespective of what the answer might be to this question, it still remains a challenge to convince more farmers about the attributes of quality seed so that they may be willing to pay a price which is sufficiently high to enable seed enterprises to make profit and survive.

Estimating seed demand

A comparison between the quantity of seed actually bought in the markets and from other sources with the total amount of seed required to plant the cultivated areas, would provide more insights into the potential demand for seed. This is done in Tables 6 and 7.

Table 6. Amount of seed bought in the local market and from other sources as percent of total seed used

	Baghlan	Balkh	Bamyan	Herat	Kunduz	Nangahar	Overall
Wheat	36%	21%	39%	48%	32%	15%	31%
Rice	38%	7%	-	40%	65%	7%	36%
Potato	94%	-	77%	67%	-	-	78%
Cotton	84%	80%	-	59%	85%	38%	77%
Pulses	58%	48%	-	42%	67%	-	46%
Vegetables	16%	3%	-	82%	22%	88%	25%

Table 7. Calculation of replacement rates

	Total cultivated area (ha)	Seed rate (kg/ha)	Total seed requirement (tons)	Total quantity of seed bought by farmers (tons) (*)	Of which quality seed (tons) (**)	Replacement rate	
						Total	Quality seed
Irrigated wheat	969,000	175	169,575	52,568	8,818		
Rainfed wheat	797,000	83	66,151	20,507	3,440		
Total Wheat	1,766,000		235,726	73,075	12,258	31%	5%
Rice	185,000	116	21,460	7,618	2,275	35%	11%

(*) The total amount of seed in all categories bought by farmers from all sources; (**) defined as the proportion of the total amount which is bought from other sources other than local markets or bazars and thus in this analysis categorized as quality seed.

The difference in replacement rate for wheat between 31% for all seed purchased and 5% for quality seed - and for rice between 35% and 11% - may be partly due to the higher price of seed from other sources.

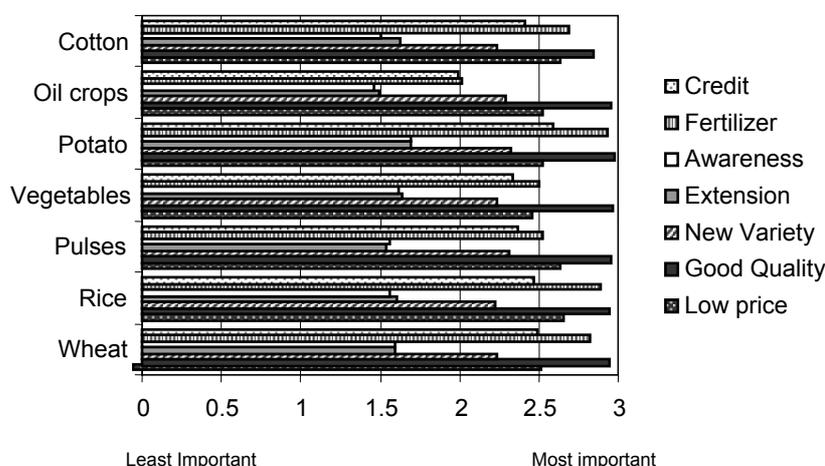
The Figures suggest that there is a yet unexplored market for QDS (or seed products of similar high quality) if farmers know that the seed is available and the high quality is a reliable attribute.

Factors influencing the market for seed

Factors influencing the seed market are analyzed in Figure 9. On the whole, it seems that (i) the quality status of the seed and (ii) the marketing of seed in combination with fertilizer are the most critical factors that would influence farmers' demand for seed. Other important factors are (iii) seed prices, (iv) availability of new varieties, and (v) credit.

Therefore, enterprises that have access to new varieties, can assure good quality seed, and can sell it together with fertilizer at reasonable prices would be able to generate substantial demand from farmers.

Figure 9. Factors influencing market demand for

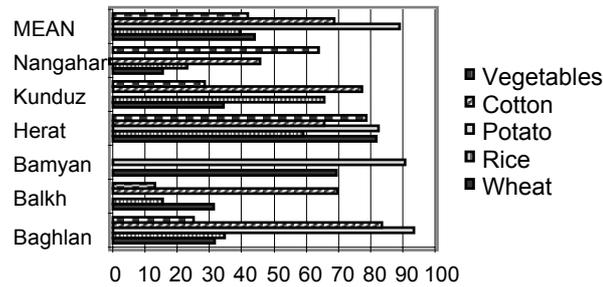


Choice of product portfolio based on market potential

On the whole, a higher proportion of households is willing to buy potato and cotton seed than seed of the other crops. See Figure 10.

Herat demonstrates the highest market potential for seed of many crop combinations. Seed enterprises in Baghlan would do wisely in marketing wheat seed together with either potato or cotton seed. In Bamyan they should focus on seed of wheat and potato, in Kunduz on wheat with rice or cotton, in Nangahar on vegetables, and in Herat on several combinations including vegetables.

Figure 10. Percent of households willing to buy seed



THE ROLE OF INDIA'S PRIVATE SEED INDUSTRY IN AGRICULTURE

By Manmohan Attavar¹

India's seed industry: Milestones

Meeting the demand for seed

Seed is a relatively small component among agricultural inputs but it has a cascading effect on agricultural productivity and the national economy.

India's seed industry which includes both private and public sector companies and corporations has over the past four decades grown in size and level of performance. During the 60's the Green Revolution motivated the farmers to go for quality seeds. To meet the huge demand for seed, the Government therefore started the National Seed Corporation, the State Farms Corporation of India and 13 State Seed Corporations.

Initially, variety development and seed production was confined to the public sector, and until the announcement of the New Seed Policy in 1988, the industry was largely dominated by public sector organizations. But the Government also allowed the private sector to multiply and market seeds of so-called notified varieties. Eventually, the Seed Control Order from 1989, which permitted import of seed under an Open General License, had a very positive impact on private sector development of improved varieties and this led to a real seed revolution in India.

The domestic demand for seed of various crops increased from 0.6 million tons in 1996 to 1.2 million tons in 2002-2003. Presently, at least 75% of the hybrid seeds of field and vegetable crops is being marketed by private seed companies. More than 200 private seed companies now share 75% of the seed trade in value and 60% of the volume.

All seed, except Breeders Seed, is produced by contract farmers under a buy-back agreement with the companies. Seed production occupies nearly one million hectare and is the largest sector of rural employment with more than 10 million people involved.

Export activities

In the cases of cotton, okra, tomato, hot peppers, sweet peppers and cucurbits, hybrid seed production is carried out by hand, and the quality of Indian seeds is in general considered high in SAARC (Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka) and South Asian countries.

The government is also supporting seed export activities and has set an ambitious target of 20-30% growth in seed exports over the next 5 year period. At the same time, Indian seed companies strive aggressively to obtain a larger share of indigenous and global seed markets by focusing on improvements in skills and knowledge, and by increased investments in research and development facilities.

Access to cheap and capable manpower is a strong point of the Indian seed trade because seed production is highly labour intensive. This manpower advantage is compelling many multinational companies to source their seeds from Indian companies, or to set up subsidiaries in India.

¹ Chairman, Indo-American Hybrid Seeds (I) Pvt. Ltd., Bangalore, India.

The acceptance by agricultural markets of products produced from quality seeds enriches the farmers and enhances national food security.

Vegetable seed production

Meeting the need for food

The supply of seed of high quality vegetable crops has shown a phenomenal growth in the past decade and statistics from the Ministry of Agriculture indicate that there has been a 13% increase in area and a 13.4% increase in vegetable output from 1996 to 2001.

India now produces 92 million tons of vegetables from an area of 6.8 million hectares. This supply of vegetables significantly contributes to meeting the country's increasing need for food.

The new improved open pollinated varieties (OPs) and hybrid varieties with better productivity and market acceptability have replaced local OP types and the credit for the high seed replacement ratio of 79% in vegetable crops goes to private seed companies.

The key role of research and development

Access to new improved varieties and hybrids goes through investments in research and development, and private seed companies are focusing on result-oriented research with the view to develop and introduce innovative varieties and hybrids. Presently the private seed sector contributes 95% of the total vegetable seed production. A review of India's experience with 30 years of development suggests that private companies are far ahead of the government both in respect of research and development, and when it comes to an overall contribution to agriculture and horticulture.

For any new product to be popularized, information must be disseminated at farmer's level, followed by demonstration. Products must be popularized quickly because the product lifecycle is short.

As a result of the substantial investment in research, private companies release more hybrids than OPs and most of the hybrids are high yielding, distinct, uniform, stable, disease and pest tolerant, and display wide adaptability.

Benefits from the supply of quality seeds

The supply of quality seeds offers several benefits such as:

- Quality seed can reach remote areas and thus contribute to increased overall agricultural productivity.
- The increased productivity of quality seed generates interest among farmers to invest more in this important input.
- Guaranteed returns from quality seeds of OPs reduce farmers' interest in more expensive hybrid seeds.
- The availability of quality seed products accompanied by detailed agronomic advice strengthens the agricultural extension services.
- Improved crop profitability encourages the use of other, costly inputs like fertilisers, water and pesticides.
- High productivity of hybrids encourages diversification into vegetables and cash crops.

Seeds should have high purity (physical and genetic), germination and vigour. This can be achieved by producing the seeds under the right environmental conditions with proper nutrition, correct isolation distances, proper pollination procedures, and efficient post harvest handling including seed drying, cleaning, and storage.

Private and public seed companies in India and Afghanistan may cooperate to draw up short and long term programmes to improve the productivity of the following crops:

- Cereals: Aromatic rice, wheat, barley, and maize.
- Vegetables: cabbage, cauliflower, broccoli, carrot, beet, onion, tomato, okra, peppers, eggplant, melons, chick peas, peas, and true potato seeds.
- Fruits: Pomegranate, citrus, apple, apricot, figs, walnut, and grapes.

The Indo-American Hybrid Seeds Company

Focus and facilities

Indo-American Hybrid Seeds (IAHS) was established in 1965 as a partnership firm and was converted into a Private Limited Company in 1997.

IAHS is engaged mainly in development and production of hybrid seeds of vegetables, cotton, rice (aromatic & non-aromatic), oilseeds and ornamental plants, and in biotechnology products. The Company has a portfolio of products meeting the needs of various agro climatic conditions and the farming community's different cropping requirements. It is the company in India with the most extensive facilities for custom seeds production and it caters to domestic as well as export markets in USA, Europe, Russia, and the Middle and Far East.

IAHS has excellent Research and Development facilities with 35 scientists. The Company's seed testing facilities meet the requirements of the International Seed Testing Association (ISTA) and are approved for the issuance of orange and blue certificates.

The Company has a total of about 280 acres of land allocated to research and production activities in Bangalore, Hyderabad, Ranebennur, Dharwad and New Delhi. It also has a very strong country-wide farmer network for contract seed production, supplying seed to state-of-the-art seed processing facilities at Bangalore, Ranebennur and Hyderabad.

The Company has the largest greenhouse facilities in India for the production of hybrid vegetable seeds and a commercial tissue culture laboratory, including hardening facilities, with a production capacity of 5 million plants per annum.

IAHS is one of the five largest companies in India and markets its seeds through an experienced all India sales and marketing network under the 'Indam Seeds' brand. The marketing organization includes a distributor and retailer network with approximately 50,000 outlets. The Company structure includes a separate Product Management Unit which promotes products at farmers' level and publishes the quarterly, technical publication "Vatika", reporting on the latest trends in agriculture.

Achievements and awards

IAHS was the first company to introduce hybrid seed of vegetables in India. It was also the first company to undertake commercial seed production in temperature- and humidity-controlled greenhouses.

Furthermore, IAHS was early in establishing a modern, commercial tissue culture laboratory and eventually developed protocols for 80 different plant species in agriculture, forestry, plantation and ornamental crops.

In 1995 and 2000, the Company received the Indian National Award for Excellence in Research and Development. This award is instituted by the Directorate of Scientific and Industrial Research of the Government's Department of Science & Technology, and IAHS is the only company which has won this award twice. IAHS has also on several occasions received Export Awards from the Agricultural and Processed Food Products Export Development Authority of the Ministry of Commerce.

Products and services

IAHS works with vegetable seeds, field crops, biotechnology, flowers and ornamentals, turnkey greenhouse projects, and fruit crops. In hybrid vegetables IAHS products include tomato, hot pepper, bhendi, cabbage, cauliflower, watermelon, capsicum, gourds, brinjal and several other, minor crops. OP vegetables include: tomato, onion, bhendi, carrot, coriander, radish, chillies, spinach, gourds, and amaranthus.

IAHS is one of the first companies in India in the private sector to develop a genetic engineering laboratory. In tomato the Company is presently undertaking the production of transgenics which will have resistance to tomato viruses. The Company has also initiated efforts to produce haploids in cabbage, leading to better uniformity in hybrids. A diagnostic kit for screening banana planting material for mosaic disease has been developed. Similar work has been initiated for bunchy top virus in banana.

The Company is able to offer the following support to seed sector development:

- Consultancy services for setting up commercial tissue culture facilities.
- Micropropagation protocols for ornamentals, plantation and agro forestry crops.
- Contract production of tissue culture plants.
- Commercial diagnostic kits for detection of viruses in banana, capsicum and tomato.
- Contract production of high quality hybrid seeds of vegetables.
- Training in molecular biology techniques.
- Electrophoresis and iso-electric focusing tests for other companies.
- Turnkey projects for greenhouse construction.
- Seed testing and issuance of orange and blue certificates for other seed companies.

IAHS' seed testing laboratory is accredited by the International Seed Testing Association (ISTA) since November 2002 and provided by ISTA with laboratory reference no. INML07. This laboratory is a pioneer ISO25 laboratory in India and is authorized to issue international certificates to all private and public sector seed traders. The Laboratory also offers training in seed quality testing and ISTA standards to staff in government and private seed organizations and is presently providing such training to Ministry of Agriculture officers from the Democratic People's Republic of Korea.

DEVELOPMENT OF THE BEJO SHEETAL SEED COMPANY IN INDIA

and a possible approach in Afghanistan

By B . Mazumdar¹

Introduction

The seed scenario in India began to change with the Green Revolution in the early 1970s. Initially the development was focused on field crops. But gradually a substantial increase in the need for vegetables led to an increased demand for good quality vegetable seeds. Because of this, departments in the Indian Government placed emphasis on development of good varieties of vegetables. Breeding programmes were started in various agricultural universities, by the Indian Council of Agricultural Research, and by other Institutions - mainly with the view to develop good open-pollinated varieties (OPs).

However, from the late 1970s hybrid seeds of vegetables arrived in the Indian seed markets. This led to the organization of private seed companies in India and these companies initiated their own research programmes to develop hybrid seeds.

From 1984 the Indian economy was opened up for foreign investors and foreign seed companies came to India, either to start their own businesses or to form joint ventures with the purpose to enter especially the hybrid seed sector. The initial approach was to import hybrid vegetable seeds from America and Europe for sale in India. But gradually it was understood that in India's diverse climate conditions locally bred hybrids would give better results.

Establishment of Bejo Sheetal Seeds Pvt. Ltd

With this approach in mind, Bejo Sheetal Seeds Pvt. Ltd. (BSS) was formed in 1986 as a joint venture between M/s Bejo Zaden b.v. of Holland, a leading vegetable seed company in the world, and Sheetal Hybrid Seeds of India. BSS began research in tropical crops such as: Tomato, chilli, capsicum, okra, melons, gourds, eggplant, onion, pumpkin and true potato seed (TPS), and during the last 15 years the Company has released 232 hybrids of various vegetable crops.

At present, BSS has 215 acres of land used for breeding purpose. The Company has its own tissue culture laboratory, plant pathology laboratory, some facilities for biotechnology work, and 13 acres of poly houses for research activities. The staff includes 55 agricultural researchers, working with vegetable seed technology.

Temperate seeds of a wide range of vegetables are bred by Bejo Zaden in Holland and from these materials BSS selects hybrids suitable for different regions in India. Seed of suitable hybrids are subsequently imported and sold in India.

Present activities

Research

After establishment of BSS, breeding work in vegetables started on tomato and onion at the Company's research farm in Jalna. Gradually breeding work with chilli, brinjal, okra, capsicum, melons and gourds followed. Cucumber breeding began in 1999.

¹ General Manager, Bejo Sheetal Seeds Pvt. Ltd., Jalna, India.

In 1989, BSS organized a pathology laboratory to support disease resistance breeding in vegetable crops such as tomato, chilli, brinjal, and melons. After initiation of the TPS project, a tissue culture laboratory was started to strengthen the efforts to maintain TPS parent material for production and research. During the last five years BSS has conducted off-season breeding in plastic houses of capsicum, melons, and tomato. As the expansion of research and variety testing activities continued, two separate research stations were started at Varanasi in Uttar Pradesh and at Khjuraho in Madhya Pradesh.

Production

With the development of BSS hybrids of tomato, brinjal, melons, okra and other crops, commercial production of hybrid seed of these crops began in 1989 at Ranibennur in Karnataka. Then hybrid seed production of chilli, capsicum, gourds, and onion gradually started at Jalna in Maharashtra.

BSS also organized hybrid seed production in China, mainly of capsicum and chilli.

Tropical vegetables

Brinjal: Presently BSS has more than 500 hybrids of which, however, only 10-15 hybrids are sold in the market. The most popular hybrids are Kalyan, BSS 539 (Janak), Raveena, BSS 332 and BSS 430 (Darpan).

Chilli: About 1,500 chilli hybrids and parents of various size, colour, pungency and shape are available in BSS research departments and the Company has a market share of about 30% of this crop in India. Each year more than 100 new chilli hybrids are developed but only 20-25 of these are eventually commercialized. The most prominent hybrids are BSS 273 (Anmol), BSS 378 (Garima), BSS 414 (Jalwa), BSS 365 and BSS 304.

Capsicum: Presently, 1,100 capsicum lines and hybrids of different shapes and sizes are in the pipeline. Various capsicum colours including yellow, red, white, purple blue and orange have also been developed. However, only 5-8 hybrids have been released for sale including BSS 89, BSS 399, BSS 400., and BSS 401.

Gourd: All the gourds viz. bottle gourd, bitter gourd, ridge gourd, and sponge gourds are in the research programme. The most popular hybrids in the market are: Bottle gourds Shramik and BSS 333 (Akash); bitter gourds Priya and Prachi; sponge gourds Sita and Gita; and ridge gourds Radhika and Anamika.

Melon: Presently about 100 muskmelon and 50 watermelon hybrids have been developed. Out of these only 4 muskmelons including BSS 1000, BSS 404 and BSS 438, and 3 watermelons viz. Bejo 2000, BSS 56 and BSS 408 are in the market.

Okra: This is a very important vegetable in the Indian subcontinent. Presently 250 BSS hybrids are in the pipeline. Research on Yellow Mosaic Virus (YMV) tolerant hybrids is being carried out and at this time only 5 hybrids are in the market: Anokhee, Indranil, Karishma, BSS 594 and BSS 596.

Onion: BSS has developed short-day onion hybrids of good pungency and star ability. Available in the market are: Orient, Flare, Lucifer and BSS 262 (White).

Tomato: More than 2,000 hybrids and lines of tomato, both determinate and indeterminate, are available. Breeding work is currently concentrated on disease resistance, specially against Tomato Leaf Curl Virus and Bacterial Wilt. Focus is also on development of hybrids with long shelf life. The prominent hybrids in the market are: *Determinate*: BSS 211, Ronco, BSS 423, BSS 437, and BSS 420. *Indeterminate*: Tolstoy, BSS 418, BSS 488, BSS 467 and BSS 368 (nematode tolerant)

Temperate vegetables

BSS' Dutch collaborator Bejo Zaden, who is a world no. one in cabbage, carrot, and long day onion, conducts research for temperate vegetables in Holland. Subsequently trials are carried out in India and other places, leading to identification of temperate hybrids that are suitable for various climate situations. In India the following varieties are available: Cabbage: Fieldman, Invento, Gideon, Ramada and Bronco. Cauliflower: Amazing and Lateman. Beet: Action. Carrot: Samson 196, Johnny, and Carson. Broccoli: Fiesta, Lucky and Bellstar.

Apart from the above mentioned crops BSS also sells seed of crops such as Brussels sprouts, leek, kohlrabi, Chinese cabbage, red cabbage, parsley, celery and spinach.

True potato seed

To further the development of potato production in India and other developing countries BSS has done research concerning true potato seed since 1997. It is known that TPS is a low-cost technology with which potato production can be boosted in situations where a high disease level and low yields are major constraints - provided good TPS seed is available. BSS has developed and distributed TPS of 8 hybrid potato varieties in different countries in Africa and Asia. Results from the last six years' of work with this technology gradually indicate that TPS is a good alternative in the search for better potato yields.

Marketing

After establishment of the joint venture in 1986, BSS began marketing of hybrid seeds in India from 1998 through its own marketing system. The Company had then developed its own strong research base and was able to cater for any seed need. India is a vast country with a diversified climate and culture. So to reach every corner of the farming community is a tough task. However, through efficient marketing and management, the Company has succeeded in establishing a brand and in gaining important market shares (such as 30% of the Indian market for chilli seed).

Export

In line with agreements between Bejo Zaden in Holland and Bejo Sheetal Seeds, BSS has the right to market hybrid seeds in SAARC (Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka) and in other neighbouring countries such as Myanmar and Afghanistan, and BSS is presently supplying seed to Pakistan, Bangladesh, Sri Lanka and Nepal.

Companies

The Sheetal group of companies is engaged outside development and marketing of hybrid vegetables, and is involved not only in OP vegetables but also in cotton, field crops and others. These activities are looked after both in India and abroad by Safal Seeds & Biotech Ltd.

Joint ventures

It is the objective of BSS to work for betterment of the farming community. To serve this purpose the Company has engaged in joint ventures with the Government of India and with private partners in other countries such as China and Bangladesh. These are:

- West Bengal Hybrid Seeds & Biotech Pvt Ltd, a joint venture between the Department of Horticulture, Government of West-Bengal and Bejo Sheetal Seeds.
- Shan Yang Goofing Seed & Seedlings, China, a private sector joint venture.

A possible approach in Afghanistan

Study of the seed market

To assess the actual need for seeds in Afghanistan as well as the economic potential for seed producers and farmers, a local organization should be employed to help with a study of the seed market for different crops. At the same time a seed marketing strategy may be formulated.

Since the main constraint would appear to be availability of good quality seeds at affordable prices, BSS may be able to supply quality vegetable seeds to Afghan farmers through local private agencies. Furthermore, experts from BSS may from time to time visit areas in Afghanistan to assist in identifying crops and hybrids suitable for local growing conditions. At the same time counterparts from Afghanistan may visit BSS activities in India with the view to study the important role of quality seed for India's farmers.

Joint venture

In the same manner as BSS and collaborating companies have organized joint ventures in India and other countries, an approach could be considered in Afghanistan where a joint venture company may be formed with the intent to work particularly with:

- Seed production of Cole crops.
- Export of seeds to other countries.
- Marketing of seeds in local areas.
- Research activities to meet local needs.

Conclusion

Bejo Sheetal Seeds is very strong in research and now also in marketing, and the management of the company is always ready to look after the farmer's interest not only in India but also in neighbouring countries. The Company considers that it is high time to extend BSS full support to the development of the seed sector of Afghanistan so that the country, within a short span of time, can become self-sufficient in seed.

PRIVATIZING SEED PRODUCTION IN SOUTHWEST AFGHANISTAN

By Vas Aggarwal¹, Michael Bowers², Atiqullah Khan³ and Mohammad Lal⁴

Introduction

FAO and its Implementing Partners (IPs) have been engaged in production and sale of Quality Declared Seed (QDS) in Afghanistan for 11 years. Mercy Corps (MC), as one of the IPs, is supporting seed operations in Kandahar, Helmand and Uruzgan provinces of the southwest of Afghanistan. Last year MC-supported operations produced 1,000 tons QDS of wheat.

The Mercy Corps approach

As part of a Letter of Agreement (LOA), MC receives foundation seed (FS) of wheat through FAO and sells the seed to its contract growers for a price which corresponds to FS production costs. FAO also provides MC fertilizer which MC sells to its contract growers at 10% less than the fertilizer market prices. FAO also contributes US\$ 55 towards management and administrative costs for each tonne of QDS that MC procures from its contract growers. MC pays the growers cash for the seed at a premium above the grain price.

This year, Mercy Corps is selling wheat seed to its customers at US\$ 350 per tonne to customers including the FAO Emergency Programme and at US\$ 244 per tonne to ordinary farmers. Revenue generated as of April 2005 amounts to 639,000 US\$ which remains with MC as custodian. Anticipated usage of the revenue includes capitalization of enterprise, reinvestment in newer technology, and operating costs for enterprise start-up.

Resources and activities

At this time Mercy Corps has 120 contract growers with 45 in Kandahar, 50 in Helmand and 25 in Uruzgan.

The staffing includes 1 project manager for agriculture, 1 project manager for seed, 3 seed agronomists, 1 finance and administrative officer, 1 mechanic, 6 guards, 3 store keepers, 6 extension workers and 1 driver.

Equipment and tools include 3 seed cleaners, 2 generators, 2 sowing machines, 3 motorbikes, 1 vehicle, 3 rub halls (tents), 1 computer, office furniture and various small field equipment such as sprayers, sickles, shovels etc. All of this is fairly old. Seed activities during 2003-2004 are outlined in Table 1.

Organizing a private seed company

The organization of a private seed company could be based on one or more of the following groupings⁵:

¹ MC Seed Consultant.

² Country Director, MC Afghanistan.

³ Deputy Agricultural Project Manager, MC Southern Afghanistan Quality Seed Supply.

⁴ Seed Manager, MC Southern Afghanistan Quality Seed Supply.

⁵ More background and details concerning the proposals presented in this summary are in the authors' report: Moving quality seed production from NGOs to private seed sector in South West of Afghanistan, Nov 6 - Dec 8, 2004, 45 pages.

- Individuals and their families such as key farmers, merchants, traders, former extension officers, seed sector employees etc.
- Small companies, which would form a partnership such as a farmers' cooperative.
- Community based groups, working together with NGO support.
- A company organized as a subsidiary of larger regional or international seed company.

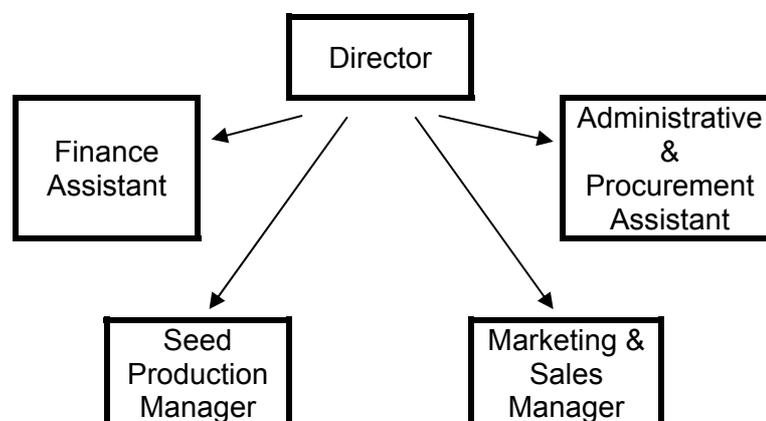
Table 1. Seed activities in 2003-2004, tons

Location	Crop/Variety	Quantity produced		Quantity sold	Balance
		Uncleaned	Cleaned		
SUMMER 2003:					
Kandahar (Maiwand)	Maize Sarhad yellow	82.0	75.0	75.0	0.0
	Mungbean local black	47.0	44.5	44.5	0.0
Helmand (Bosh)	Maize Sarhad yellow	100.0	91.0	91.0	0.0
	Mungbean Nayab green	30.0	28.0	28.0	0.0
Urozgan (Dehrawood)	Rice B-385	20.0	19.0	19.0	0.0
Grand total 2003		279.0	257.5	257.5	0.0
WINTER 2003-04:					
Kandahar (Maiwand)	Wheat	492.5	460.4	349.0	111.2
Helmand (Bosh)	Wheat	652.5	603.6	322.4	281.2
Grand total 2003-04		1,145.0	1,064.0	671.4	392.4

A group of motivated farmers (one of them a contract grower) and traders have already shown interest in setting up a company covering two provinces i.e. Kandahar and Helmand. The Group is considering seed production of wheat, maize, black mungbean and fodder crops. Later, the Group will consider expanding into vegetable crops, and sale of fertilizers and pesticides.

Before engaging in this and making a final selection of participants, MC would need to conduct wide advertising of the initiative. If the suggested enterprise is to be based on the concepts of MC's current QDS production, the structure could be as shown in Figure 1.

Figure 1. Possible seed company structure based on current MC-QDS production



Assumptions

To make the above structure work we assume that the enterprise will produce about 1,000 tons QDS annually which is the same as the present MC wheat seed production. This quantity would be sufficient to allow for payment of staff and fixed costs, currently calculated at about US\$ 55 per ton. Should a smaller quantity be produced, staffing costs will need to be reduced, which may affect efficiency and viability of the company.

A study by FAO estimates the need for wheat seed in Southwest Afghanistan to be about 7,000 tons. There should therefore be a market for a seed supply of 1,000 tons. In fact, the demand is higher than that and there is also a need for seed of other crops than food crops.

The role of Mercy Corps and the donor community

In collaboration with the donor community MC would be able to assist new companies in obtaining legal status and to merge MC seed production activities into the seed programmes of new companies.

MC may also be able to provide technical support - for example employ short-term adviser(s) with experience in agronomy, crops, varieties, seeds and marketing. MC could work closely with the new companies in testing and promotion of new crops at the level of farmers' fields. This would include help to develop promotional materials and dealers' networks so as to accelerate marketing and sale of seed.

It might be possible to sign an agreement with FAO for the provision of financial assistance to cover initial set-up costs. This could then be paid back over a longer period of time with a modest rate of return, or could be provided as a grant. We could try to lobby for a seed subsidy, either from the Government or from international agencies, or help getting financial resources from lending institutions such as the Afghan International Bank, where the set-up could be that the amount loaned is guaranteed by donors such the USAID-supported Rebuilding Agricultural Markets Programme.

Mercy Corps would collaborate closely with new enterprises to explain MC operations and thereby contribute to a seamless transition of MC activities to the new enterprises. This collaboration could be further developed to include monitoring and possibly a regulatory relationship to ensure that the financial support provided to the new enterprises is only used for the intended purposes.

MC could play a role as coordinator between FAO and new companies concerning supply of Foundation Seed and fertilizers at favourable terms, and could subsequently assist relief programmes such as the FAO Emergency Programme to continue buying QDS of wheat at US\$ 350 per tonne.

Mercy Corps and the donor community could in particular:

- Assist with formulation of Government seed regulations and policies that favour the setting-up of private seed enterprises and discourage distribution of seed of bad quality.
- Support dealers and traders showing interest in selling and marketing QDS.
- Support Government and NGO campaigns to educate farmers and create awareness of QDS.
- Facilitate the provision of Government support in case of crop failure.
- Contribute to assure peace and security.

Major Risks include:

- Inflation and currency devaluation.
- Asset destruction resulting from lack of security and/or natural disasters.
- Poor production due to unfavourable weather conditions.
- Unfavourable government seed laws and regulations.
- Poor roads and communication.
- Unexpected increases in input prices.
- Low demand for seed.
- Reduced revenue leading to difficulties with the repayment of loans and credits.

The Business Plan

A business plan is summarized in the following Tables 2 to 11. The assumption is that there will be a production the first year with contract growers in Kandahar and Helmand of 1,000 tons of seed including 700 wheat, 50 barley (winter), 100 maize, 100 mungbean and 50 rice (summer).

It is further assumed that MC will purchase seed from the contract growers at current MC prices which are: Wheat 222 US\$/ton, barley 149 US\$/ton, rice 267 US\$/ton, maize 171 US\$/ton and mungbean 278 US\$/ton.

Table 2. Staffing and administration costs, US\$

Items	Amount
Director	6,000
Production Manager	4,800
Marketing/Sales Manager	4,800
Finance Officer	3,000
Administrative Assistant	3,000
Extension Worker	2,000
Sales Assistant	2,000
Cleaner	1,800
Office rent and processing facilities, \$600/month	7,200
Office supplies, utilities, and maintenance etc.	3,000
Fuel, interest, spare parts etc.	5,000
Computer and printer	2,000
Total	44,600

Table 3. Capital items – investment and depreciation, US\$

Capital items	Amount
Office furniture	500
Motor bikes (2)	2,000
Seed cleaner (2)	7,000
Small farm tools	500
Bag stitching machine (2)	800
Scale (2)	600
Generator (2)	6,000
Vehicle	20,000
Rub hall (10x24x3.35m)/store construction (2)	25,000
Total investment	56,400

Annual depreciation based on 10 years of life	5,640
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Table 4. Equipment to farm rented land - investment and depreciation, US\$

Items	Amount
380HP Tractor and air compressor	11,000
Ploughs and ridger	1,000
Harvester	2,000
Thresher	3,000
Maize sheller	900
Total investment (*)	17,900
Annual depreciation based on 10 years of life	1,790

(*) Above is the cost of one tractor and required machinery to cultivate about 30 hectares of land and produce 110 tons of seed, resulting in a depreciation cost of \$16.27 per ton.

Table 5. Costs of wheat seed production per hectare

Description	Unit	Quantity	Unit cost, US\$	Total costs, US\$
Land rent	ha	1	1	260
Disc plough (fuel and lubricants)	hour	1	10	50
Land plough (fuel and lubricants)	hour	1	10	50
Fertilizer application	day	1		6
Foundation Seed	kg	125	0.3	36
DAP	kg	125	0.6	75
Urea	kg	200	0.3	60
Bird control (labour)	day	1		25
Weed control (herbicides)	kg	0.5	2.77	14
Rouging (labour)	day	2	6	12
Harvesting	day	1		40
Threshing	hour	1		30
Production costs, total				658
Transportation				20
Cleaning Costs				40
Treatment (fungicide)				9
Cost of bags				20
Storage fumigation				8
Processing costs, total				97

Note: Estimated yield= 4,000 kg/ha.

Table 6. Seed production costs (before cleaning) on rented land

Crop	Total cost of production	Estimated harvest	Value of straw	Cost of seed minus value of straw	Value of seed including value of straw	Cost of seed after deducting value of straw
	US\$/ha	Kg/ha	US\$/ha	US\$/ha	US\$/ton	US\$/ton
Wheat	658	4,000	380	278	165	70
Barley	638	3,500	325	313	182	89
Rice	684	4,500	0	684	152	152
Maize	586	5,000	275	311	117	62
Mungbean	517	2,500	345	172	207	69

Source: Mercy Corps staff in Kandahar.

Table 7. Estimated costs of QDS production

Costs in case of procurement from contract growers compared with production on rented land.

Crop	Cost of unclean seed, US\$/ton		Additional costs, US\$/ton			Cost of QDS, US\$/ton			
	Contract growers	Rented land with (+) and without (-) value of straw		Variable costs (transport, cleaning, storing, treating, rejects etc.)	Fixed or overhead costs (wages, salaries, repairs, capital goods and office costs etc.)	Farm machinery depreciation (rented land)	Procured from contract growers plus variable and fixed costs	Produced on rented land plus variable and fixed costs and machinery depreciation, with (+) and without (-) value of straw	
		2	3					4	5
		+	-					+	-
Wheat	222	70	165	24	50	16	296	160	255
Barley	149	89	182	19	50	16	218	174	267
Rice	267	152	152	34	50	16	351	252	252
Maize	171	62	117	24	50	16	245	152	207
Mungbean	278	69	207	37	50	16	365	172	310

Notes: Fixed or overhead costs are calculated as follows:

Total annual cost of capital items = 5,640 US\$.

Total annual cost of operations = 44,600 US\$.

Total = 50,240 US\$ for a total production capacity of 1,000 tons, resulting in an average cost of 50.24 US\$/ton.

Source: Mercy Corps staff in Kandahar.

Considering Table 7 it should be noted that the costs of seed production are lower on rented land if the company can afford to invest in the necessary machinery and equipment. Seed production on rented land also gives additional income from straw which is of high value, and it is possible to exert more control to secure seed quality. There is also a greater opportunity to obtain higher yields on rented land because of easier adoption of better varieties and management practices.

On the other hand, seed procurement from contract growers places the production risks with the growers. Procuring of the seed therefore becomes relatively easy and hassle free.

Estimation of the sales price of QDS

Calculation of the QDS price will depend upon the source of the seed and includes the following scenarios: (i) Seed procured from contract growers, (ii) seed produced on rented land where the value of straw is taken into consideration, and (iii) seed produced on rented land where the value of straw is not taken into consideration. These issues are further analyzed in Table 8.

Profit estimates vary depending on the cost of seed production. Seed produced on rented land, when considering the value of straw, results in lower production costs and thus provides a better chance of higher profits, whereas seed produced on rented land, without considering the value of straw, is the second best option for higher profits. Seed procured from contract growers is the least profitable option due to high procurement costs. These points are analyzed in Tables 9 and 10.

It will be difficult for a company to invest in the machinery required to produce all its seeds on rented land. In the first few years, the company will therefore to a large extent need to rely on procurement from contract growers. A realistic sales price of QDS should therefore be based on the price of seed procured from contract growers. When using that as a sales price, profit margins become much higher for seed produced on rented land, especially when the value of the straw is considered. The company would therefore be inclined to produce seed on rented land.

Table 8. Calculating the sales price for QDS under 3 different scenarios, US\$

Crop	Costs of QDS procured from			Sale price of QDS after adding company profit margin and marketing costs (10%) + retailers profit (5%) = Total 15%		
	Contract growers, plus variable and fixed costs	Rented land with (+) and without (-) value of straw, plus variable and fixed costs and machinery depreciation		QDS produced by contract growers	QDS produced on rented land with (+) and without (-) value of straw	
		+	-		+	-
Wheat	296.49	160.26	255.26	340.96	184.30	293.55
Barley	218.38	180.19	273.05	251.14	207.22	314.01
Rice	351.46	242.76	242.76	404.18	279.17	279.17
Maize	245.04	152.96	207.96	281.80	175.90	239.15
Mungbean	365.04	159.56	297.56	419.79	183.49	342.19

Source: Mercy Corps staff in Kandahar.

Table 9. Calculating the profit for seed produced with contract growers

Crop	Expected quantity of QDS produced	Price of QDS produced by contract growers	Total cost of QDS	Sale price of QDS produced by contract growers	Total sale amount of QDS	Profit
	Tons	US\$/ton	US\$	US\$/ton	US\$	US\$, total
Wheat	700	296	207,543	341	238,672	31,129
Barley	50	218	10,919	251	12,557	1,638
Rice	50	351	17,573	404	20,209	2,636
Maize	100	245	24,504	282	28,180	3,676
Mungbean	100	365	36,504	420	41,979	5,475
Total	1,000		297,043		341,597	44,554

Table 10. Calculating the profit for seed produced on rented land

Crop	Expected quantity of QDS produced	Price of QDS produced on rented land with value of straw considered	Total cost of QDS	Sale price of QDS based on seeds procured from contract growers	Total sale amount of QDS	Profit
	Tons	US\$/ton	US\$	US\$/ton	US\$	US\$, total
Wheat	700	160	112,182	341	238,672	126,490
Barley	50	180	9,010	251	12,557	3,548
Rice	50	243	12,138	404	20,209	8,071
Maize	100	153	15,296	282	28,180	12,884
Mungbean	100	160	15,956	420	41,979	26,023
Total	1,000		164,582		341,597	177,016

What prices can farmers afford?

Seed prices depend on the costs of QDS production and on the profit margins required by the seed company and the retailers. Farmers, however, are probably only willing to pay a price close to the market price for grain. Investigations of grain and seed prices have shown that while seed prices in the marketplace for mungbean and rice are higher than QDS production costs plus profits, the opposite is the case for seed of wheat and maize (see Table 11). Quality seed production of those crops may therefore require Government or FAO support.

Table 11. Market prices for grain in 3 provinces on 16th. November 2004, US\$/ton

Crops	Maiwand, Kandahar		Bost, Helmand		Dehrawood, Urozgan	
	Range	Average	Range	Average	Range	Average
Wheat	220-360	290	220-280	250	270-360	315
Maize	170-190	180	160-170	165	170-190	180
Mungbean Black	470	470	450	450	430	430
Mungbean Green	320	320	300	300	280	280
Rice	290-870	580	310-890	600	220-720	470

Due to limited private seed sector experience and history in the Southwest, any new private seed company will need technical assistance and other help. Mercy Corps and FAO assistance will therefore be essential for the organization of private sector seed activities in southwest Afghanistan. It will also be necessary for the Government to create favourable conditions for private seed sector development through introduction of better seed laws, tax and import duty relief, better access to Foundation Seed, awareness of the value of improved seeds, better technology, and price support.

PRIVATIZING THE VARA SEED PROGRAMME

By H. Smolders¹, N. Mojadedi² and Shah Mahmood³

Introduction

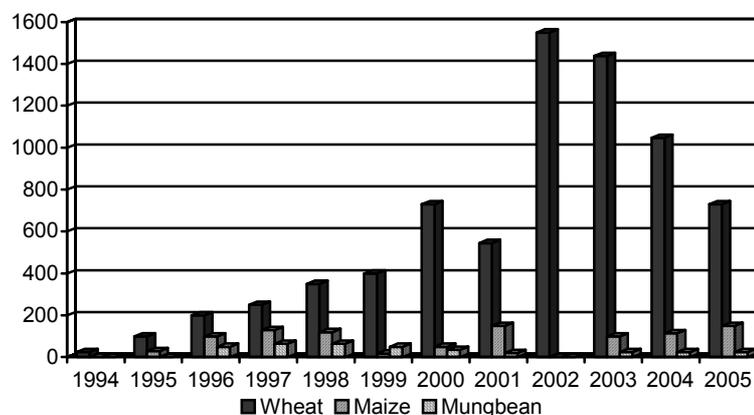
VARA (Voluntary Association for the Rehabilitation of Afghanistan) has been involved in emergency relief work in Southern Afghanistan since 1990 and is one of the three main Implementing Partners (IPs) within the nation-wide FAO/UNDP supported emergency seed programme in Afghanistan. Since 1991 this NGO has produced and distributed seeds of food crops, primarily of wheat, with FAO/UNDP technical and financial assistance.

Seed production and distribution

The VARA seed production programme employs 5 permanent staff at the NGO's seed processing unit (SPU) in Dilaram in Farah province and 6 auxiliary staff. 2 agronomists at the VARA Head Office in Kandahar supervise the seed programme on a part-time basis. Daily labourers are hired when needed. The Programme collaborates with 500-600 contract growers in 35 villages.

The Dilaram SPU has a capacity of 2,000 tons of wheat seed. The actual production since 1994 is shown in Figure 1. and included in 2004 10 wheat varieties, 1 maize variety, and 1 mungbean variety. In addition, VARA has also produced small quantities of chickpea and cumin seed.

Figure 1. VARA seed production 1994-2005 (plan), tons



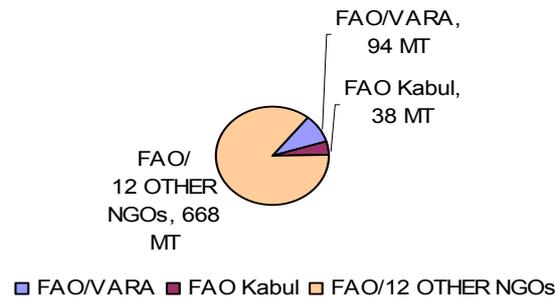
Seed distribution is coordinated by FAO, or sometimes by other donors such as CORDAID (Catholic Organisation for Relief and Development). In 2004, a total of 800 tons seed was distributed by 13 different NGOs, including VARA. See Figure 2. Surplus quantities of processed seed stored at the SPU amounted to 220 tons and were re-supplied to seed growers in Bakhwa and Grishk for the production of Quality Declared Seed (QDS).

¹ Seed Consultant, Voluntary Association for the Rehabilitation of Afghanistan (VARA)

² Executive Director, VARA.

³ Project Manager, VARA

Figure 2. VARA wheat seed distribution in 2004



The organization and economics of seed supply

The FAO pricing and seed dissemination system allows for VARA (and other IPs) to be paid for its services and operates as follows:

- FAO provides Foundation Seed (FS) and fertilizer free of charge to VARA (1 bag of urea and 2 bags of DAP with each bag of FS). VARA supplies the FS and fertilizer to its contract growers on credit and is paid back at harvest time in cash or kind. At that time a 10% administration fee is added.
- After processing, QDS is collected from the SPU by various IPs for distribution to designated farming communities upon notification by FAO about the results of quality testing. VARA is paid 350 US\$/ton by the FAO Emergency Seed Programme and additional 55 US\$/ton in service charges from the regular FAO Programme Budget. The money from the sale of seed is deposited in the VARA revolving fund.
- In the designated communities, seed is supplied to farmer-landowners in exchange for grain (one bag of seed and three bags of fertilizers against four bags of grain). The grain is subsequently distributed to landless, vulnerable families in the community.

The above prices are based on a calculation indicating that VARA's processing and management costs amount approximately to 87 US\$/ton or nearly 4 AFA⁴/kg QDS of wheat in case the NGO should pay for all inputs. However, currently FAO pays for bags, labels and chemicals. This reduces VARA's processing and management costs with 55 US\$/kg which coincides with the amount paid by FAO as service costs.

The seed procurement price paid to contract growers in 2004 was 24% above the August grain price of 9.8 AFA/kg for wheat. As a result, the growers were paid 12.2 AFA/kg produced seed.

Total costs for wheat seed leaving the SPU at Dilaram are approximately 16 AFA/kg. By adding 15% in marketing costs and a 10% dealer margin, the costs reaches almost 20.5 AFA/kg at the point of retail. To this has to be added the dealer's profit. 20.5 AFA corresponds to about twice the grain price.

Presently VARA needs more training and investments if it is to be transformed into a commercial seed enterprise working with food crops. Most farmers are also not prepared to pay the price for quality seed required to make seed production a profitable business but would rely on farm saved seed, or procure their seed through the informal farmer-to-farmer system.

⁴ 1 US\$ = 42.8 Afghanistan Afghani (AFA)

The potential for privatization

THE VARA seed programme is, however, located in an excellent production environment in South Afghanistan supported by desert climate, year-round irrigation facilities, and mild winters. The area is excellent not only for seed production of food crops but also for a large range of other seed crops, including vegetables, industrial crops, and flowers. At the same time, VARA has been working for many years with a large number of seed growers. This provides opportunities for engagement in other types of seed business.

VARA is therefore of the opinion that it would be possible over a 5-10 years period to develop a domestic seed market for major crops in South and Southwest Afghanistan of about 7 million US\$. A more detailed analysis of this assessment is in Table 1.

Table 1. Potential domestic seed market in South and Southwest Afghanistan

Crop	Area, ha	% seed replacement	Seed market volume, tons	Market value, US\$
Wheat	169,000	10%	2,100	1,000,000
Barley	25,000	5%	156	75,000
Maize	25,000	10%	63	125,000
Pulses	14,000	5%	40	40,000
Vegetables (excl. tubers)	9,000	34%	30	7,000,000

Privatization Strategies

Development of business units

To exploit this opportunity a commercial holding company with a strong brand name⁵ should be developed separately from VARA, initially with three business units:

- One for seed of food crops such as wheat, maize, and pulses, working on a commercial basis with private seed growers' associations (SGAs) and with each association handling 200-500 tons.
- One for seed of vegetables, also working with private SGAs producing seeds for the domestic market and on contract with international seed companies.
- One for seed of flowers, working in collaboration not only with male but also with female SGAs, and producing seeds on contract with international seed companies.

A diagram for such an organization is depicted in Figure 3.

Fine-seeded vegetable and flower crops require special know-how and quality supervision. Excellent seed of these crops can be produced by women-operated SGAs inside the housing compounds. This may help to make better use of the existing labour force and raise additional income for Afghan families.

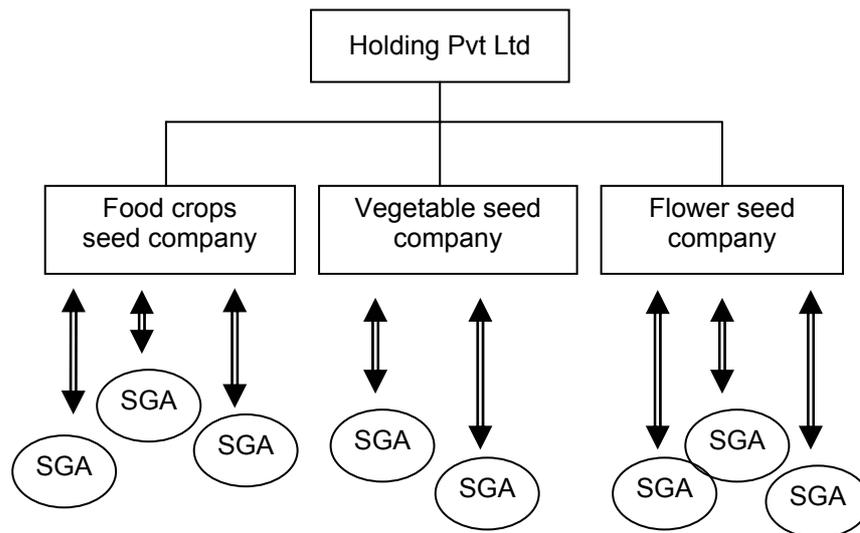
Funding

It is suggested that the above organization could be funded through issuance of shares worth 2 million US\$. These shares, which do not all need to be issued at once, should

⁵ Such as Siestan pvt. Ltd. which has been suggested by VARA staff. Siestan is the ancient name of a province in South Afghanistan, also involving part of Iran.

be allocated in equal amounts to four categories of investors viz. (i) international companies, (ii) farmer associations, (iii) private individuals, and (iv) NGOs. By allowing each category of investor to invest maximum 25% of the total amount of shares (0.5 million US\$), this structure would prevent a single party from dominating the business and conflicts of interest from occurring.

Figure 3. Diagram
SGA = Seed Growers' Association



Operations

A key component would be different SGAs operating as independent private units each with their own working capital and assets. The SGAs should be organized with the best performing seed growers and selected farmer entrepreneurs. An SGA should be furnished with a 300-500 tons go-down, a small office, and various equipment for the production and distribution of quality seeds. SGAs may produce seeds under the Holding Company's brand if the required quality conditions are met. SGA members will receive training and advice in profitable business operations. The Holding Company will support a dealer network and provide links with the SGAs.

SGA activities should not be limited to food crop seeds. Business can also include contract seed production for the Holding Company's vegetable and flower units. In addition, SGAs may opt for fertilizer dealerships and/or venture into industrial crops like cotton, sunflower, saffron and/or spices like cumin and saffron.

To make each SGA more viable, the Holding Company should perform as the focal point for supply of various services and products (FS, bags, labels etc.). Seed prices should be related to quality. To reduce costs, SGAs may sell seed of food crop directly to dealers in local markets.

External capital and other support will be needed to facilitate market penetration with seed prices being gradually increased as farmers' awareness of the benefits of quality seed is being mobilized. External development agencies such as VARA, CORDAID and others will need to assist with financial and technical support including advice and training.

Potential Bottlenecks and Solutions

Variety research and testing needs to be emphasised and should take place both in the public and private sector. Financing mechanisms to support this are required and could be set up by an Agricultural Research Council. Variety release procedures must remain relaxed.

There should be no interventions in the free market for seed, that would upset the operations of SGAs and private seed enterprises.

A code of conduct needs to be worked out for the seed sector. More seed testing stations are required, and the regulatory environment must be strengthened.

THE ISRA STRATEGY FOR PRIVATIZATION

By Muhammad Ayaz Haider Zai¹ and Abdul Mutalib²

Introduction

The Islamic Relief Agency (ISRA) is an international, non-government, non-profit, humanitarian relief organization with headquarters in Khartoum, Sudan. The NGO has 40 country offices located in Africa, Asia, Europe and USA.

ISRA-Afghanistan was established in 1984 to support Afghan refugees in Pakistan by providing assistance in agriculture, education, health, social welfare, engineering, and construction. In 1992, ISRA shifted most of its activities to Afghanistan where it has continued to provide humanitarian support.

ISRA support to seed production

ISRA's Department of Agriculture is mainly involved in production and processing of improved seed of summer and winter crops, vegetables, and fodder crops. However, the NGO previously also contributed to the establishment of fruit nurseries and operated a plant protection program.

Support to production of improved seed began in 1994 in collaboration with FAO and the World Food Programme (WFP). Initially, farmers were supplied with improved wheat seed against payment in grain. Later, the ISRA Seed Project introduced cash payment and the NGO is now considering to privatize the seed activities.

The ISRA Seed Project operates three processing units located in Nangarhar, Kabul, and Logar Provinces. Quantities of seed handled by the Project are in Table 1.

Table 1. ISRA supported seed production and processing 1995-2004, tons

Year	Wheat	Rice	Maize	Total
1995	100	30	70	200
1996	100	50	80	230
1997	200	50	100	350
1998	400	50	100	550
1999	1,000	75	150	1,225
2000	1,000	75	200	1,275
2001	1,000	100	200	1,300
2002	3,500	35	100	3,635
2003	1,400	-	140	1,540
2004	861	-	150	1,011
Total	9,561	465	1,290	11,316

Privatizing the seed project

Goal

The goal of the Seed Project is the establishment of a simple, self-financing seed enterprise with a suitable organization and infrastructure including seed processing

¹ Assistant Manager, ISRA Agricultural Programme, Afghanistan.

² Agricultural Coordinator, ISRA Agricultural Programme, Afghanistan.

facilities. Funding of operations will be based on credit arrangements to be established between ISRA and the participating farmers.

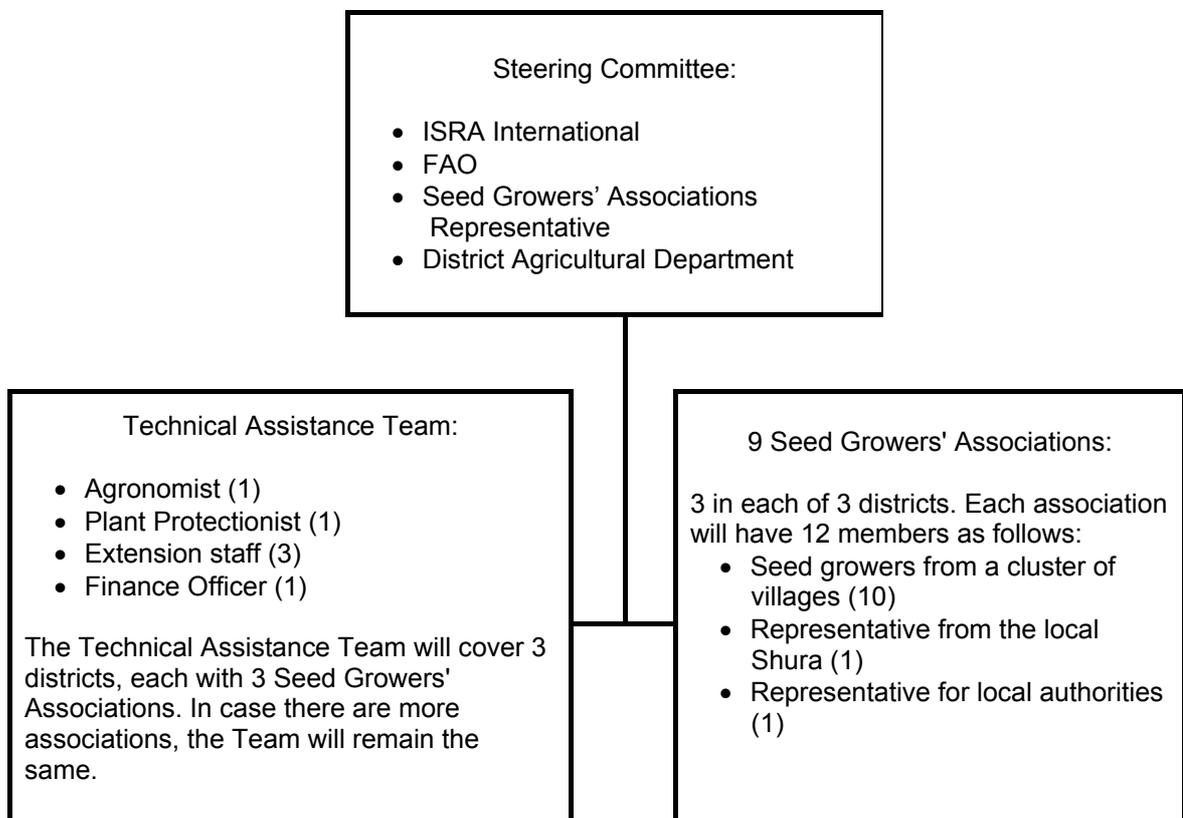
Development objectives

- Contribution to the fight against temporary and chronic food insecurity.
- Alleviation of poverty.
- Increased income to farmers through improved agricultural production.
- Farmers assisted in introduction and use of improved inputs (such as improved seed of better varieties, suitable fertilizers, and other appropriate input support).

Organization of the seed enterprise

The seed enterprise may be structured as illustrated in Figure 1.

Figure 1. Suggested components of the seed enterprise



It is envisaged that there will be 3 important bodies. Of these, the Seed Growers' Associations (SGAs) will be of particular significance. It is proposed that there will be one SGA for a cluster of adjacent villages and three such SGAs per district. To organize a SGA the following procedure should be followed:

Step 1: ISRA conducts a survey to identify (i) the local Shura members, (ii) skilled and respected farmers, and (iii) officials from relevant local authorities.

Step 2: The above individuals are invited to a meeting for a detailed discussion of the objectives and importance of the suggested seed organization.

Step 3: Participation in the SGA is considered and eventually the following representatives will be elected for each SGA: 10 experienced farmers, 1 local Shura member, and 1 representative from the relevant authorities. After having selected its chairman, the SGA will perform the following activities:

- Prepare the seed production and distribution plan.
- Establish internal and external relationships with IPs for inputs and technical support, social affairs, etc.
- Accept seed quality standards.

The SGA will also:

- Build trust within and outside the community.
- Identify and select qualified and interested farmers for the future.
- Distribute inputs among the farmers.
- Secure proper use of machinery provided by FAO/ISRA.
- Collect payments.
- Create interest among farmers in the Project and in the related opportunity to make profit.
- Prepare a seed production plan in line with farmers' demand.
- Consider and ensure extension support and farmer-to-farmer exchange of know-how.
- Make equipment and machines available to the farmers.

Farmers selected for participation in the Project will include both major land owners and small land holders. They should be experienced and progressive, interested in quality seed production, honest, and in good standing with their neighbours.

After the SGAs have been organized and rented offices at district level, they will assist in identification and appointment of qualified staff for the Technical Assistance team (TAT) as indicated in Figure 1. ISRA may participate in identification and selection of technical staff.

The TAT will:

- Provide advice and technical guidance to SGAs
- Supervise field work.
- Arrange technical and extension services.
- Arrange control with the seed quality
- Formulate and recommend policies, rules and regulations.
- Facilitate capacity-building among farmers.

A Steering Committee (SC), including representatives from ISRA, FAO, SGAs and the district agricultural authorities will be formed to oversee and guide the project. The SC will focus on consultation, technical advice, and performance evaluation.

Implementation strategy

From the outset, ISRA, with the help of community, will survey the area to identify potential members of the SGAs. A SGA will be formed after thorough discussion of project objectives and importance, how it will be implemented, and how the credit system will work. After understanding and accepting these issues, SGA members will be carefully trained. After training they will work on their own but under supervision of and in close collaboration with ISRA who will provide the necessary inputs for project implementation during the first three years.

A SGA will either farm areas belonging to its members or rent productive lands. After harvesting and processing, the SGAs will sell their seed at a price which is 20% higher than seed prices in the local markets. Marketing will be supported by a campaign which will seek to create farmer awareness concerning the merits of improved seed.

This approach will be implemented for a period three years. After that SGAs are expected to have established the necessary experience and capacity to take overall responsibility for the operations and at the same time engage in repayment of funding support. It is envisaged that the repayment of funds could take place in four equally-sized payments over a 2-year period.

Preliminary key activities

From the outset a number of issues needs to be addressed:

- Selection of crops (wheat, maize and rice).
- Selection of locations including suitable sites for the main office and store (should be in Kabul Province).
- Getting Government permission.
- Attending to relevant legal procedures and regulations.
- Open joint enterprise accounts (TAT and SGA representatives) in a reliable bank in Afghanistan.
- Launching extensive awareness campaigns in local communities.
- Train all SGA and TAT members in the implementation strategy.
- Train seed growers in agronomic practices.
- Make the necessary inputs available (machines, equipment, seed, fertilizer etc.).
- Survey and verify the suitability of lands to be cultivated.

SGAs and the TAT should be satisfied that everybody understands how the credit system will work, and the various commitments should be established in written contracts signed by the Enterprise and ISRA, and witnessed by the Community Shura and the Manager of TAT.

Finally, links must be established with marketing outlets (local and international dealers).

Starting the operation

As the operations get underway the following activities will be attended to:

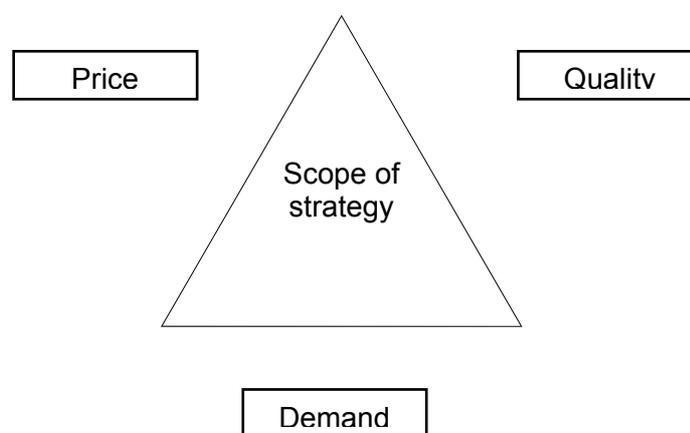
1. Applications for credit. SGAs are responsible for preparation of farmers' applications with details of inputs and expected yields. These applications will first be signed by the farmers, then by the SGA Chairperson, and thereafter submitted to ISRA.
2. Processing of credit applications. ISRA will process the loan/credit applications and arrange for immediate response. It is in this regard important that the applications are complete and meet all requirements so as not to be rejected.
3. Recording. Information about acceptance, rejection, and other relevant particulars will be carefully recorded in appropriate registers.
4. Approval and disbursement of credit. The dates of disbursement of loans/credits from the selected bank will be fixed and widely advertised.
5. Charges and repayment in cash or kind. ISRA and SGAs should make loan conditions and repayment schedules clear to the borrowers in advance.

6. Amount of credit. Will be based on the size of the land and unit costs. It will not exceed an amount corresponding to 5 tons seed per seed grower.
7. Defaulting. If a farmer fails to pay his dues, his land will be mortgaged to recover the supplied inputs. It is essential that each SGA makes this procedure clear to the farmers in advance.
8. Repayment period. Will be realistically fixed and based on relevant factors.
9. Pass book. A "Pass Book" is kept for each borrower for recording of all relevant details such as the date seed was sanctioned, the amount of seed sanctioned, service charges etc.
10. Training program. After settling all above mentioned points, the farmers will be subject to extensive training in all relevant agronomic practices.
11. Land re-survey. Fields to be cultivated will be re-surveyed to determine if they remain suitable for seed production.
12. Inputs and equipment. The necessary inputs and equipment will be made available by the Enterprise.
13. Leasing of machinery. The Enterprise will lease equipment such as truck, tractors, threshers, sprayers, and seed cleaners to farmers at a rent which will secure sufficient income to facilitate maintenance and replacement.
14. Verification of the status of inputs and seed. Should be done in the field jointly by the local SGA and ISRA.
15. Monitoring. FAO and ISRA will regularly (or as necessary) monitor Project activities and locations.
16. Follow up and recovery. SGAs and ISRA will ensure that the inputs are properly utilized (not misused) and follow Project implementation to see that planned/agreed schedules and procedures are adhered to.
17. Seed marketing. After production, processing and packaging, SGAs will sell the seed at a price that is 20% higher than seed prices in the local market, supported by an awareness campaign focussing on the merits of using improved seed.
18. Project repayment. The Project will repay loans as agreed, e.g. in four equal instalments over two years.
19. Supporting the farmers. As experience is building about farmers' performance, ISRA will accept production schedules prepared by the farmers themselves.

Potential bottlenecks include: Farmers' inability to repay loans, low demand for seed, low seed yields, bad roads, the Project not gaining popular support, seed free of charge being distributed in the Project area(s), seed supply becoming ineffective, natural disasters, and/or inflation.

On the other hand, the following factors will contribute to success: Low operational costs, easy access to activities, high quality of services, employment of effective, honest, and dedicated staff, effective utilization of resources, focus on popular varieties, extensive awareness campaigns, training of staff and farmers, and gradual increase of seed prices after farmers become satisfied with quality and income. The correlation between these factors are illustrated in Figure 2.

Figure 2. Major factors affecting the privatization strategy



High quality → Acceptable prices → Encouraged demand → Good scope

Budgeting privatization of the Kabul seed unit

The following Tables 2-8 provide indicative Figures for turning the ISRA-operated seed unit in Kabul into a private enterprise.

Table 2. Budget for privatizing the Kabul seed unit

Activity	Costs, US\$
Production of 500 tons improved seed	112,300
Procurement of 750 tons fertilizer for distribution with the seed	257,500
Various expenditures	66,680
Packaging and storage costs	5,984
TOTAL COSTS	442,464

Table 3. Seed production costs in the first year of operation

Activity	Unit	No. of units	Costs, US\$	
			Per unit	Total
<i>Renting of land for crop production:</i>				
Costs of renting land	jerib	320	140	44,800
Sub total				44,800
<i>Labour:</i>				
Permanent labour x 32	month	224	34	7,616
Casual labour x 40	days	2,698	1.40	3,777
Sub-total				11,393
<i>Crop Seed:</i>				
Wheat, 320 Jerib planted with 25 kg/jerib	kg	8,000	0.30	2,400
Maize, 266 Jerib planted with 12 kg/jerib	kg	3,192	0.25	798
Mungbean, 84 jerib planted with 7 kg/jerib	kg	588	0.60	353
Sub-total				3,551
<i>Fertilizer:</i>				
DAP	ton	16	500	8,000
Urea	ton	28	250	7,000
Fertilizer transportation, loading and unloading cost	ton	45	6	270
Sub-total				15,270
GRAND TOTAL				75,014

Table 4. Procurement of fertilizer

	Unit	No. of units	Costs, US\$	
			Per unit.	Total
DAP	ton	250	500	125,000
Urea	ton	500	250	125,000
Fertilizer transportation, loading and unloading	bag	15,000	0.50	7,500
TOTAL				257,500

Table 5. Income from sale of seed and fertilizers

Product	Unit	Quantity	Costs, US\$	
			Per unit	Total
<i>Seed with 20% margin higher than the local seed market:</i>				
Wheat	ton	225	300	67,500
Maize	ton	180	220	39,600
Mungbean	ton	49.32	548	27,027
Sub Total		454.32		134,127
<i>Fertilizer with 10 % margin higher:</i>				
DAP	ton	250	550	137,500
Urea	ton	500	275	137,500
Sub Total		750		275,000
GRAND TOTAL				409,127

Table 6. The costs of handling waste resulting from seed processing

Crop	Tons		Costs, US\$	
	Seed processed	Waste generated	Per ton waste	Total
Wheat	250	10.00	228	2,280
Maize	200	10.40	164	1,705
Mungbean	50	0.58	450	261
TOTALS	500	20.98		4,246

Table 7. Calculation of net income

Products	US\$		
	Procurement and other costs	Sales	Net revenue
Fertilizer	257,500	275,000	17,500
Seed	112,300	134,127	21,827
TOTAL			39,327

Table 8. Calculation of Expenses

	US\$
Various expenditures	66,680
Waste	4,246
Processing and packing	5,984
TOTAL	76,910

Table 9. Seed processing and enterprise operation costs

Item	US\$
<i>Processing and storage:</i>	
Fuel and electricity	3,000
Seed testing	2,984
Sub Total	5,984
<i>Administration, operation and overhead costs:</i>	
Staff salaries	25,080
Other staff costs incl. training	1,200
Fuel for vehicles	3,000
Repair and maintenance of vehicles	3,000
Rental costs, stores	5,000
Rental costs, office	14,400
Office materials	2,000
Various site and other maintenance costs	1,000
Contingency	4,000
Administration charges	8,000
Sub Total	66,680
GRAND TOTAL	72,664

SEED INDUSTRY PRIVATIZATION

Options for the Improved Seed Enterprise

By Justus O. Ogunniran³ and Abdul Hadi⁴

Historical overview

In the 1960s, seed production and multiplication, mainly of wheat, was carried out by provincial research stations and coordinated by the Department of Agricultural Research and Extension.

In 1972, the Ministry of Agriculture established the Department of Agro-Business to be responsible i.e. for the multiplication and distribution of improved wheat seed varieties. To deal with the lack of infrastructure the Afghan Seed Company (ASC) was established by the Government in February 1978 to produce, process, and disseminate seed. ASC could also determine labelling requirements and grant official permits to trade in seed.

In 1985, the name of ASC was changed to Improved Seed Enterprise (ISE) and the new enterprise was allocated 21 farms for production of wheat and vegetable seed, and seedlings. The farms were located in nine provinces and had a total land area of 11,768 hectares of which 5,657 hectares could be cultivated. ISE Headquarters was situated in Kabul with sub-offices in the provinces. Initial funding was a US\$ 14 million loan from the Asian Development Bank (of which only US\$ 9 million was disbursed) and US\$ 3.6 million from the Government. The funds were used to finance machinery, buildings, irrigation facilities, and land preparation in four provinces (Helmand, Kandahar, Ghazni and Baghlan), initially selected for seed production. The ADB loan was expected to facilitate production of 20,000 tons of wheat seed and 6,000 tons of cotton seed.

From 1982 to April 1992, Afghanistan in-country seed multiplication programmes were carried out by the Food and Agriculture Organization of the United Nations (FAO) in collaboration with the Ministry of Agriculture and ISE. A modest production of vegetable seed was also begun by ISE, supported by the FAO/UNDP Seed Production and Training Project (AFG/86/010) and the Department of Extension. This Project resulted in the establishment of seed testing laboratories, vegetable seed processing facilities, and seed production and training centres.

Seed multiplication farms were established in the four provinces as follows:

- Tarknak Farm in Kandahar Province (960 hectares for wheat, maize and watermelon seed production as well as grape production).
- Marja Farm in Helmand Province (1,500 hectares for wheat, maize and cotton seed production).
- Khojanoor Farm in Ghazni Province (2,000 hectares for seed production of wheat and horticultural crops).
- Larkhabi Farm in Baghlan Province (2,000 hectares where seed production was planned but not initiated due to problems within the Department).

³ FAO TCDC Consultant (Seed Industry Privatization).

⁴ ISE President, Kabul, Afghanistan.

Activities were later taken over by the FAO Seed Improvement Programme of Northern Afghanistan (AFG/93/001) which was fielded to promote production and multiplication of quality cereal seeds, seedlings of vegetables, and saplings of fruit trees.

By April 1992, the link between the ISE Kabul office and the provincial centres broke down because of conflicts in the country. Facilities in the various ISE farms were subsequently lost or damaged due to looting. FAO therefore moved the Project office to Pakistan and from there continued support to seed supply in Afghanistan in collaboration with NGOs and local communities (Shuras or village councils). Many donors like Japan, Netherlands, Canada and others also supported multiplication and supply of improved seed to Afghan farmers.

Between 1997 and 2002, FAO-UNDP collaboration included the Poverty Eradication and Community Empowerment (PEACE) Programme which focused on the restoration of peace in the country through poverty alleviation, good governance, and community empowerment in rural and urban areas. Seed was a major component and the PEACE Programme thus laid the foundation for the development of a modern seed industry in Afghanistan.

In January 2003, the FAO/EC seed project Strengthening National Seed Production Capacity in Afghanistan (GCP/AFG/018/EC) was started with objectives including development and provision of seed of appropriate varieties in adequate quantities, and stimulation of seed markets. Efforts have also since been made to strengthen policy formulation, and the development of legislation and regulations. The Project collaborates closely with the Agricultural Research Institute of Afghanistan (ARIA), ISE, NGOs, and seed growers⁵.

A case study of ISE activities

In the following Tables 1-5, various features of the seed production programme at the ISE Seed Processing Complex in Herat Province are analyzed. From the Herat Seed Centre ISE operates four seed farms viz. Falahat (1,415 hectares of which 16 hectares are cultivated), Rabatsadr (8 hectares), Rawzabagh (4 hectares) and Hazarjerib (4 hectares).

Figure 1 illustrates the organization of the Herat Seed Centre. The centre employs a total of 42 staff who are paid a total salary per month of 89,582 AFA (1,886 US\$ at an exchange rate of 47.50 AFA/US\$).

Table 1. Expenses and income at the Herat Seed centre, AFA

Year	Expenses*		Total	Income		Total
	Salaries and wages	Repairs and maintenance		Sale of seed	Rent of ISE machines	
2001	700,159	208,599	908,758	713,910	0	713,910
2002	303,455	48,480	351,935	1,876,450	48,480	1,924,930
2003	1,240,039	291,340	1,531,379	2,048,500	291,340	2,339,840

* Figures do not include production costs.

⁵ More details concerning development of the seed sector in Afghanistan are in the paper "Seed Industry Privatization: Options for the Improved Seed Enterprise (ISE) Afghanistan" which was prepared for the Workshop by Justus O. Ogunniran. The Paper is available from the FAO/EC Project (contact: Dr. Sam Kugbei, samuel.kugbei@af.fao.org).

Table 2. Gross profit/loss, AFA

Year	Expenses*	Income	Profit/Loss
2001	908,758	713,910	-194,848
2002	351,935	1,924,930	1,572,995
2003	1,531,379	2,339,840	808,461

* Figures do not include production costs.

Table 3. Quantities of seed produced in the 4 farms, tons

Crop	2001	2002	2003
Wheat	43.72	127.40	167.90
Onion	0.184	0.27	-
Chickpea	-	0.66	3.50
Barley	-	-	8.76

Table 4. List of equipment

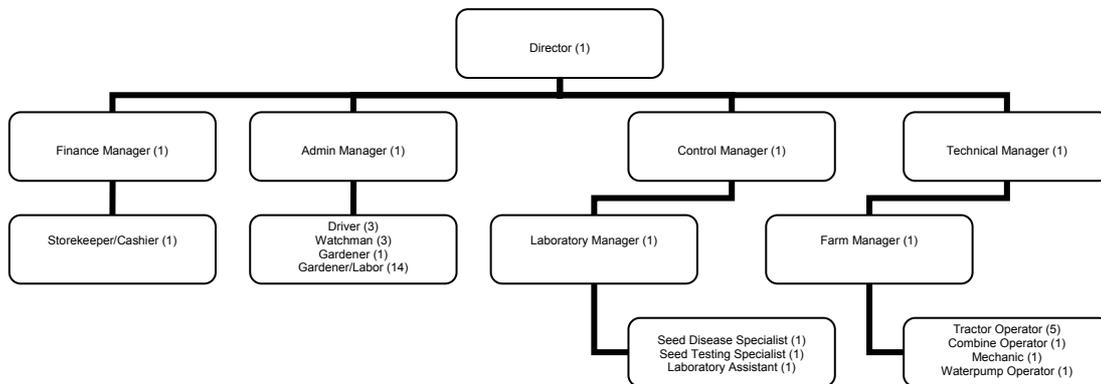
Item	Number
Truck (Mercedes Benz)	2
Toyota Surf	1
Toyota mini-bus	1
Tractor	14
Thresher	10
Combine harvester	1
Seed processing plant (Indian)	1
Mobile seed processing machine (Indian)	1
Mobile seed processing machine (Turkish)	1
American Clipper (diesel)	2
American Crippen (petrol)	2
Seed drill	12
Maize cleaner	1

Table 5. Buildings

Item	Number
Store for improved seed	6
Store for fuel	1
Residential building	3
Building for tube wells*	10
Office building	1
Laboratory building	1

*3 active, 5 under construction and 2 not usable.

Figure 1. Organizational chart



Options for privatizing ISE

The Government's privatization plans assume that state-owned enterprises need to be viable and it is therefore recommended that the ISE for the time being remains under the ownership of the Ministry of Agriculture and Animal Husbandry. Before the Company can be privatized the Government also needs to:

- Increase funding for agricultural research and training, focusing on production of improved seeds.
- As soon as possible develop appropriate seed laws and regulations together with an enabling seed policy.
- Strengthen extension services.

Key elements for improving efficiency are considered to be:

- Introduction of attractive management contracts for ISE farms to be funded from the revolving fund.
- Restructuring of costing, operations and pricing of services and products.
- Technical restructuring (operation and maintenance).
- Management restructuring (job descriptions and performance monitoring).
- Capacity building (to be carried out by the restructured management team).
- Setting targets for the management team.
- Review of the salary structure.

DEVELOPING PILOT SEED ENTERPRISES WITH FAO SUPPORT

By Mir S. Mirzad¹ and Ahmad Zia Aria²

Objectives and methods

The FAO support to development of pilot seed enterprises in Afghanistan is being provided to:

- Assess the potential of farming communities (FAO seed growers) to produce quality seed.
- Determine the appropriate forms of small-scale seed enterprises that could be established in specific locations.
- Rank potential enterprises on the basis of technical and economic efficiency so as to select pilot cases.

Performance criteria were worked into an interview questionnaire which was introduced in a number of communities with the view to obtain information about their capacity to establish and manage small-scale seed enterprises.

Community interviews and consultations

The interviews covered 18 locations (see Table 1) in the following provinces:

- Nangarhar
- Takhar
- Bamyan
- Balkh
- Herat
- Kunduz
- Baghlan

Following the interviews, various indicators were used to identify and rank potential seed enterprises. The result of this exercise is in Table 1. Subsequently, 8 pilot enterprises were selected³. They are located in 4 provinces as indicated on the map in Figure 1. Their details are in Tables 2 and 3 and the seed production plans for 2004/2005 in Table 3.

Bylaws and discussion topics

Key elements of the bylaws for each enterprise are: (i) Objectives; (ii) criteria for membership and registration fees; (iii) ownership of land and other assets provided as technical assistance; (iv) charter; (v) authority and responsibilities of the governing board; (vi) financial policy; and (vii) code of conduct and penalty for non-compliance.

The seed enterprises had their first General Meeting on Tuesday, 26 October 2004.

The discussions focused on:

- Introduction of the enterprises.
- Ownership of the enterprises.
- Review of the draft bylaws.
- Business plans and marketing issues.
- Seed production plans for 2004/2005.

¹ FAO Regional Coordinator, Mazar, Afghanistan

² FAO National Seed Officer, Kabul, Afghanistan

³ For various reasons the final selection of enterprises did not follow exactly the ranking indicated in Table 1.

Table 1. Ranking potential seed enterprises

Location	Occupation		Literacy	English	Enterprise preferred	Initial capital/ person, US\$	Land/ person, Ha	Diversification		Rank
	Farming	Other						No. crops	Top 2 crops	
Enjil (Herat)	100	38	89	31	SG	10,000	80	5	Wt & veg	1
Kushk (Herat)	100	50	90	10	SG	1,500	130	8	Wt & Pus	2
Behsood (Nangarhar)	100	50	100	62	SG	1,000	2	3	Wt & veg	3
Dehdadi (Balkh)	100	20	30	0	Any	1,000	2	4	Wt & Veg	4
Pulikhumri (Baghlan)	100	63	63	0	COOP	500	6	5	Wt & Mel	5
Karukh (Herat)	100	52	80	32	SG	500	2	5	Wt & Pus	6
Khanabad (Kunduz)	100	40	40	20	SG	400	5	6	Wt & Mel	7
Kunduz	100	30	50	30	SG	500	2	6	Wt & Rce	8
Chardara (Kunduz)	100	66	33	0	SG	500	2	6	Wt & Cot	9
Bamyan	100	47	47	5	SG	500	1	5	Wt & Pt	10
Surkhrode (Nangarhar)	100	36	91	45	COOP	400	1.6	3	Wt & veg	11
Gozarah (Herat)	100	37	75	25	SG	300	1	4	Wt & veg	12
Ali Abad (Kunduz)	100	33	91	0	SG	500	1.6	7	Wt & Mel	13
Chemtal (Balkh)	100	80	100	60	SG	250	3	5	Wt & Cot	14
Dooshi (Baghlan)	100	27	64	9	COOP	20	0.2	4	Wt & Rce	15
Yakawlang (Bamyan)	100	0	30	0	SG	0	0	4	Wt & Pt	16
Pacheer Agam (Nangarhar)	100	10	55	5	Any	0	0	3	Wt & veg	17
Sar-i-Sang (Takhar)	100	45	64	9	SG	500	1.5	6	Wt & rce	18

Notes: SG: seed grower; COOP: Cooperative; Wt: Wheat; Veg: Vegetables; Mel: Melon; Rce: Rice; Pt: Potato; Cot: Cotton; Pus: Pulses.

Table 2. Selection of enterprises

Enterprise	Location	Province
Baba-i-Dehqan	Chemtal	Balkh
Shir Abad	Dehdadi	Balkh
Sultan	Pulikhumri	Baghlan
Bastan	Bamyan	Bamyan
Dorokhshan	Kushk Rabat Sangi	Herat
Sheikh Maruf	Karukh	Herat
Hambastagi	Gozarah	Herat
Sar-i-Sang	Taloqan	Takhar

Table 3. Details of selected pilot seed enterprises

IN BALKH PROVINCE:		
1	Name:	Baba-i-Dehqan
	Location:	Chemtal
	Members, no. of persons:	10
	Initial capital, US\$:	2,500
	Land, hectares:	50
	Number of contract seed growers:	18
2	Name:	Shir Abad
	Location:	Dehdadi
	Members, no. of persons:	7
	Initial capital, US\$:	7,000
	Land, hectares:	30
	Number of contract seed growers:	20
IN BAGHLAN PROVINCE:		
3	Name:	Sultan Daud
	Location:	Pulikhumri
	Members, no. of persons:	12
	Initial capital, US\$:	6,000
	Land, hectares:	72
	Number of contract seed growers:	20
IN BAMYAN PROVINCE:		
4	Name:	Bastan
	Location:	Bamyan
	Members, no. of persons:	20
	Initial capital, US\$:	10,000
	Land, hectares:	20
	Number of contract seed growers:	50
IN HERAT PROVINCE:		
5	Name:	Dorokhshan
	Location:	Kuskh Rabat Sangi
	Members, no. of persons:	7
	Initial capital, US\$:	10,500
	Land, hectares:	210
	Number of contract seed growers:	10
6	Name:	Sheikh Maruf karukhi
	Location:	Karukh
	Members, no. of persons:	5
	Initial capital, US\$:	10,000
	Land, hectares:	30
	Number of contract seed growers:	50
7	Name:	Hambastagi
	Location:	Gozara
	Members, no. of persons:	17
	Initial capital, US\$:	10,000
	Land, hectares:	22
	Number of contract seed growers:	10
IN TAKHAR PROVINCE:		
8	Name:	Sar-i-Sang
	Location:	Taloqan
	Members, no. of persons:	12
	Initial capital, US\$:	6,000
	Land, hectares:	18
	Number of contract seed growers:	20

Table 4. Seed production Plan for 2004/2005, tons

Name of enterprise	Foundation Seed supply	DAP	Urea	Expected yield
Baba-i-Dehqan	4.5	4.5	4.5	125
Shir Abad	4.5	4.5	4.5	125
Sultan Daud	4.45	4.45	4.45	125
Bamayan Bastan	4.5	4.5	4.5	125
Dorokhshan	4.5	4.5	4.5	125
Sheikh Marouf Karukhi	4.5	4.5	4.5	125
Hambastagi	4.5	4.5	4.5	125
Sar-i-Sang	4.5	4.5	4.5	125
Total	35,95	35.95	35.95	1,000

Figure 1. Location of selected pilot seed enterprises



Conclusions

These enterprises are the first outcome of the FAO seed industry privatization programme in Afghanistan. Since the strategy of the Government is to promote commercialization of the seed sector, the success of these enterprises will be crucial for future supply of seed in Afghanistan.

The next steps will involve having all of the pilot enterprises legally registered as private entities, opening commercial bank accounts for their operations, developing comprehensive business plans, and conducting training in business management skills. The enterprises will also embark on intensive promotional and marketing efforts to ensure that all the 1,000 tons of seed (accounting for about 20% of the target of the FAO seed programme) are sold to agencies and farmers around the country.

GROUP WORK

ORGANIZATION

Following the Workshop presentations, three working groups were formed to discuss privatization strategies for partners collaborating in the Afghan seed sector. The groups were requested to consider and develop strategies for:

- Group 1: The public sector.
- Group 2: The NGO sector.
- Group 3: Promotion of seed enterprises.

GROUP DISCUSSIONS AND RECOMMENDATIONS

GROUP 1: Privatization strategies for the public sector *Chair: Greg Cullen; recorders: Khalil-ur-Rahman and Zia Aria*

Group 1 considered the different roles for the Government as the seed sector moves towards privatization. These roles could include:

- shareholding in joint ventures; and
- responsibility for the organization of research, extension, policies, and laws and regulations.

The Group was of the opinion that the Government should aim to regulate the seed sector by adopting a seed law rather than organizing the sector by decree. The Law should make provisions for introduction of regulations concerning variety release, seed quality control and certification, and seed import. An appropriate seed law and regulations are needed to facilitate a privatization process which can result in benefits for farmers.

Concerning the privatization of the Improved Seed Enterprise (ISE), the Group found that a decentralized structure could be considered with independent regional enterprises. Where possible, the enterprises might be in the form of joint ventures with 51% of the shares retained by the Government and 49% allocated to a foreign private company.

It was noted that the ISE organization includes several large farms and the Group considered that it would be possible for the Government to retain ownership of the land and let the new enterprises rent or lease the land. Such a model might allow for a different distribution of shares in the enterprises.

Each regional enterprise should have board of directors with the Government retaining a supervisory role vis-à-vis all the boards. New management structures would be needed in the companies with well-defined production and marketing functions. The Group stressed the need for proper staff salaries and incentives.

As the process of privatizing the ISE organization was taken forward, there would be a number of "private sector development issues" to consider. These included:

- Removal of bureaucracy presently hampering marketing.
- Reorganization of subsidized seed supply which would otherwise make it difficult for the new enterprises to compete.
- Development of seed distribution systems from scratch since ISE seed distribution so far had been done by NGOs and other development or relief agencies.

- Organization of credit systems.

On the restructuring of ISE the Group agreed that it would require patience due to the abnormal situation in the country and the lack of marketing skills in the Organization. In the preparation for provincial joint ventures, the organization of pilot companies should be considered.

In future, variety research and production of Breeder Seed will be an important basis for the seed industry. Presently, by producing Foundation Seed, ISE provides the link between the program for Breeder Seed production and other seed producers. However, the new enterprises will not be viable if they are restricted to Foundation Seed production but will need also to sell Certified Seed to be able to survive. This would have to be combined with effective extension work to allow the new provincial enterprises to penetrate the markets.

The Group found that FAO could facilitate the privatization process by supporting essential activities such as training in business and marketing, and development of policies, laws, and regulations.

In conclusion Group 1 made the following recommendations:

1. The present ISE units have large areas of land and could be turned into viable business units, which in turn could attract foreign investors. The opportunity to engage in this development should be open to as many foreign and local investors as possible. In preparing for this it should be taken into account that the present ISE units do not appear attractive because of low productivity of their lands and limited staff resources.
2. For the benefit of the farming community, a new national seed policy should clarify the role of the new ISE seed enterprises and in particular if or how they coexist with other private companies. Perhaps new, small-scale seed enterprises could be located away from the areas where the ISE seed enterprises would be operating.
3. A new seed policy should stipulate that the present ISE seed laboratories should be linked to the regulatory system and expanded to include field inspection. The policy should also determine which organizations should produce Breeder and Foundation Seed. Variety owners should also be responsible for production of Breeder Seed.
4. Presently, government agencies such as the Agricultural Research Institute of Afghanistan (ARIA) and ISE are responsible for production of Breeder and Foundation Seed respectively. However, as the situation changes and other entities become involved, the production of Breeder and Foundation Seed may be delegated to other units in the country.

*GROUP 2: Privatization strategies for the NGO sector
Chair: Ken Neils; recorder: Anton van Engelen*

Group 2 referred to the presentations during the workshop of current operations and plans for the future of various NGOs and suggested that the following models would be applicable:

- The community-based model proposed by ISRA could be used when NGO activities were privatized. The Group noted that this approach would require skilled and interested farmers in villages and communities.
- Associations or shareholding units as proposed by VARA was another possible approach. This would require unity and collaboration between the associate

members, NGOs, facilitators, and individuals. Efficient cohesion will be of particular importance since the VARA model foresees a linkage between the association of farmers and the shareholders.

- Contract production on leased land or the enterprise approach, as proposed by MC, is also a possibility.

The Group envisaged that development of NGO seed activities into commercial seed enterprises would be faced with various constraints. NGOs are currently not engaged in seed research and will therefore not have their own, superior varieties to propagate - and farmers will only be motivated to re-purchase seed if better varieties are available. There are no clear signals from the Government indicating that it will not engage in seed production in the future. Group 2 found, that if the Government seeks to produce and supply seed in the future, then there will be no room left for the private sector.

The lack of regulations has resulted in companies being able to freely import and export seed. This scenario will also cause difficulties for new seed enterprises. Finally, there is no market information system that can indicate how much seed is needed in different areas.

The Group noted that some of the constraints were created by the NGOs themselves such as: (i) Continued free distribution of seed to farmers even when they have their own seed has created a dependency and the expectation that there will be free seed each year; (ii) unrealistic pricing of seed and fertilizer; (iii) distribution of seed of unsuitable varieties and low germination which has undermined farmers' trust and confidence in NGO seed; and (iv) a tendency by NGOs to advise farmers without sufficient knowledge of the local conditions

In conclusion Group 2 made the following recommendations:

1. *For Government action:* (i) A nationwide variety testing system should be organized and managed by the Government and/or the Federation of Seed Companies; and (ii) the Government should hasten the process of seed policy and strategy formulation as well as introduction of seed legislation.
2. *Concerning financial assistance:* (i) Seed producers should invest their own money and not have free access to revolving funds; (ii) rural credit should be available for financing debt and/or equity; (iii) any activity undertaken in respect of crop diversification (e.g., vegetable seed or food grain production) should be profitable in itself - either through the market or through support; and (iv) to facilitate commercialization of NGO seed activities, support would be required during an initial phase of at least 5 years.
3. *Additional points:* (i) It is possible to make business in high value crops (e.g., vegetables) but at the moment there is no linkage to variety research; (ii) the promising options include shareholding (a constraint in this regard is absence of corporate law) and associations (these are product-based initiatives but not yet found in seeds); (iii) since there is no knowledge about demand for high value seeds, NGOs should not engage in these products now; (iv) village-level associations should be formed based on concentration of demand; (v) leaders in seed production should be identified, introduced to new varieties and used as the basis for building the seed enterprise concept.

GROUP 3: Enterprise Promotion Strategies
Chair: Jerry Turnbull; Recorder: Abdullai Hakimi

Group 3 considered the role of three groups of stakeholders:

- The public sector.
- The private sector.
- Development agencies and the Ministry of Agriculture and Animal Husbandry (MAAH).

About these stakeholders the Group made the following recommendations:

Various public sector agencies need to support the seed sector in the following areas: (i) Development of an enabling regulatory environment that stimulates private sector activity; (ii) seed quality control; (iii) training and extension; (iv) provision of early generation seed; (v) credit; (vi) disaster relief programs for farmers; and (vii) organization of an annual forum to coordinate research, production and extension, and to facilitate communication and information exchange between stakeholders.

The Group considered the private sector's role to include engagement in crop diversification (food crops, high value crops, and livestock). Assuming the establishment of an enabling environment, seed enterprises should also acquire training and pursue seed marketing at local, regional and international levels with the view to be sustainable/profitable after 5 years. They should also contribute to poppy eradication.

Group 3 considered the important roles of FAO and other development agencies and donors in collaboration with the MAAH to include introduction of appropriate laws and regulations, support to relevant training, support to research, and provision of market information.

CLOSING REMARKS

S. Kugbei

Ladies and gentlemen. It is a great pleasure on behalf of the organizers of this workshop, the Ministry of Agriculture, and FAO, to make some brief closing remarks at the end of this very stimulating workshop. Let me first thank everyone for coming, participating, and staying until the end despite security concerns that prevented us from meeting yesterday as originally scheduled. I apologize for the obvious inconvenience this may have caused.

I consider this workshop a great success in giving a lot of food for thought for all of us working to improve the seed industry in this country. For two days we have debated intensively various issues related to seed industry commercialization in Afghanistan, and I have no doubt you all agree with me that the achievements in terms of conclusions reached especially in our working groups have been very impressive.

Many thanks again for sharing your ideas and concerns about Afghanistan's seed sector and its development. This workshop has benefited immensely from your diverse experiences and expertise.

In conclusion, I would like to extend sincere thanks and appreciation to the European Commission for funding the FAO seed project and this workshop.

I would also like to mention the staff in the kitchen who have looked after us so well and our support staff who helped in organizing the meeting.

And to all of you, participants and resource persons, I extend my renewed appreciation and my best wishes for our shared responsibility for the implementation of the workshop's conclusions.

I assure you that proceedings of this workshop will be prepared and distributed to all stakeholders to be used as reference and guidance in our efforts to improve seed delivery in Afghanistan.

Thank you all very much.

Annex 1. Workshop programme

MONDAY 6 DECEMBER:

08:00–08:50 Arrival and registration

08:50–09:00 • Prayers

09:00–09:30 • Welcome address (H.E. Mostafa Jawad, MAAH)

Chair: H.E. Mostafa Jawad, Deputy Minister, MAAH

09:30–10:00 • Keynote Address: Importance of the seed industry in Afghanistan (S. Verniau, FAOR in Afghanistan)

10:00–10:30 Coffee Break

Introductory presentations

Chair: A. Cauchois, EC Food Security and Rural Development Advisor

10:30–11:00 • The Afghanistan seed sector: A historical review and status of quality seed production (S. Kugbei, FAO)

11:00–11:30 • Economic restructuring and privatization of private enterprises (R. Bernstrom, Ministry of Finance)

Chair: G. Cullen, EC Project Evaluation Team Leader

11:30–12:00 • Valuation and pricing techniques for state-owned enterprises (P. Witthaut, GTZ)

12:00–12:30 • Developing agricultural input dealers in Afghanistan: An opportunity for the seed industry (G. Turnbull, IFDC)

12:30–13:30 Lunch Break

Chair: H.E. Mohammad Sharif, Deputy Minister, MAAH

13:30–14:00 • Privatization and market failures: Challenges for a sustained seed market development (K. Amegbeto, ICARDA)

14:00–14:30 • Survey of the seed market in Afghanistan (S. Kugbei, FAO)

14:30–14:45 Coffee Break

Experiences and lessons from existing seed enterprises

Chair: G. Baram, Economist, ICARDA, Afghanistan

14:45–15:15 • Indo-American Hybrid Seeds (India) Pvt. Ltd. (M. Attavar, IAHS)

15:15–15:45 • Bejo Sheetal Seeds Pvt. Ltd. (B. Mazumdar, Bejo Sheetal Seeds)

Privatization strategies of seed industry partners in Afghanistan

Chair: K. Neils, Chief Economist, RAMP

15:45–16:15 • Privatizing seed production in Southwest Afghanistan (Michael Bowers, Mercy Corps)

16:15–16:45 • Privatizing the VARA seed program (H. Smolders, Siriconsult)

WEDNESDAY 8 DECEMBER:

Privatization strategies of seed industry partners in Afghanistan

Chair: A. van Engelen, Programme Advisor, CordAid

08:30–09:00 • The ISRA strategy for privatization (M. Haider Zai, ISRA)

09:00–09:30 • Seed industry privatization: Options for the Improved Seed Enterprise (J. Ogunniran, FAO)

09:30–10:00 • Developing private seed enterprises with FAO support (Mir S. Mirzad, FAO)

10:00–10:15 Coffee Break

Group work: Formulating privatization strategies

Chair: S. Kugbei, FAO Chief Technical Advisor

10:15–10:45 Organization of working groups (All)

10:45–13:00 Working group discussions (All)

13:00–14:00 Lunch Break

Working Group Presentations

Chair: A. Gafoor, Advisor, MAAH

14:00–14:30 • Group 1: Privatization strategies for the public sector

14:30–15:00 • Group 2: Privatization strategies for the NGO sector

15:00–15:30 • Group 3: Enterprise promotion strategies

15:30–16:00 Discussion

16:00–16:15 Coffee Break

Closing Session

16:15–16:45 Closing remarks (S. Kugbei, FAO)

Annex 2. List of Participants

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