



GCP/AFG/045/EC Field Document

EFFICIENCY OF WHEAT SEED PRODUCTION AND SCOPE FOR CROP DIVERSIFICATION IN THE AFGHANISTAN SEED INDUSTRY



Ministry of Agriculture, Irrigation and Livestock
&
Food and Agriculture Organization of the United Nations, Kabul, Afghanistan

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CROP DIVERSIFICATION IN THE AFGHANISTAN SEED INDUSTRY**

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List of acronyms

AISA	Afghanistan Investment Support Agency
ANSOR	Afghanistan National Seed Organization
ARIA	Agricultural Research Institute of Afghanistan
ASC	Afghan Seed Company
CIMMYT	International Maize and Wheat Improvement Center
CTA	Chief Technical Adviser
DAP	Di-ammonium Phosphate
EC	European Commission
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
GCP	Government Cooperative Programme, FAO
ICARDA	International Center for Agricultural Research in the Dry Areas
ISE	Improved Seed Enterprise
MAIL	Ministry of Agriculture, Irrigation and Livestock
NGO	Non-Governmental Organization
NSC	National Seed Committee
QDS	Quality Declared Seed
RAMP	Rebuilding Agricultural Markets Program
UK	United Kingdom
UN	United Nations
UNDP	United Nations Development Programme
USA	United States of America
USAID	United States Agency for International Development

SUMMARY

A study on efficiency of wheat seed production in Afghanistan was undertaken by the EU funded seed project during 2007 – 2008 with the objectives of determining the productivity of improved and local varieties in irrigated and rainfed areas with and without chemical fertilizer. The study also aimed to better understand farmers' perceptions, knowledge, behaviour and constraints regarding their decision to use improved seed. The results of this study are expected to provide valuable input into the assessment of market demand for seed and the commercial viability of the private seed sector.

Different questionnaire types were used to interview 29 small-scale private seed enterprises in 11 provinces and a total of 4,598 farmers in 16 provinces, 82 districts and 978 villages in Afghanistan during May/June 2007. Production figures in 2008 showed that the private seed enterprises produced and sold about 12,000 tonnes of certified wheat seed, which accounted for 95% of the total certified seed produced in the country. At an average retail price of US\$1,200 per tonne of certified wheat seed, the enterprises were able to earn an average margin of 20%.

There were 21 improved wheat varieties officially released and grown by farmers in the country during 2008. Most of these were facultative bread wheat types suitable for cultivation in irrigated areas, few were adapted to cold winter conditions in high elevation areas and one variety was a durum or hard wheat variety. Besides the improved varieties, there were many traditional or local varieties which were grown widely throughout the country. For some of these, it was not clear whether they were truly traditional varieties or were once improved varieties that have been cultivated over a long period of time and were now regarded as local materials. Up to 21 of such varieties were encountered in the study.

The study found out that particular wheat varieties were grown in different regions of the country depending largely on agro-ecological conditions. When the farmers were asked to rank the attributes of varieties they used, it became evident that high yield potential was by far the most important characteristic the farmers looked for in the improved varieties they chose to cultivate. Besides yield, the next important attributes were earliness (number of days to maturity), resistance to rust disease, grain colour and bread making quality of the wheat flour. These were the key factors even amongst those farmers who did not know the specific names of the improved varieties they used. Similarly for the local varieties, high yield and good bread-making attributes were outstanding reasons why farmers used the local varieties they had. The local varieties were ranked relatively low in terms of rust resistance and quality of straw.

The estimates obtained for on-farm productivity showed that use of improved wheat varieties alone could contribute up to 33% incremental yield in irrigated conditions when the mean yield of improved varieties was compared with that of local varieties. This significant increase could further explain why the farmers ranked high yield as by far the most important attribute they looked for in using improved varieties. In addition to this factor, the use of quality seed was shown to enhance yield further by 28%. These estimates were obtained under normal rates of fertilizer use, in the absence of which yield levels would have declined substantially.

Apart from wheat, other major crops the farmers grew varied by regions but in broad terms included rice, vegetables, maize, potato, cotton, barley, water melon and alfalfa. Of these, vegetables emerged as priority for crop diversification, given the widespread cultivation of different vegetable types in the country and the importation of large quantities of vegetable seed.

BACKGROUND AND INTRODUCTION

This study on efficiency of wheat seed production and scope for crop diversification in the Afghanistan seed industry was carried out during 2007 and 2008 by the GCP/AFG/045/EC (Afghanistan Variety and Seed Industry Development) project and is a follow up to “*Analysis of the Seed Market in Afghanistan*” study in 2004 by the GCP/AFG/018/EC (Phase 1: Strengthening Seed Production Capacity in Afghanistan), which has already been published by FAO (Kugbei and Shahab, 2007). Until 2004, the seed sector was dominated by the public sector and NGOs, with no participation of the private sector. Small-scale private seed enterprises first began selling quality seed in 2005 and are now the leading suppliers of certified seed (over 95% in 2008) in the country.

While the earlier (2004) study looked at the demand side by examining the seed buying behaviour of farming households for major crops with a focus on wheat, the follow-up study in 2007 focused on the supply side or sustainability of seed delivery particularly in terms of analysis of margins in the production – marketing chain (value chain) involving the major seed producers, contract growers and other farmers.

From the historical 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. However, not much was achieved before a nationwide conflict broke out in 1979. The ASC later became known as the Improved Seed Enterprise (ISE) in 1985 and established its Headquarters in Kabul and sub-offices in various provinces.

From the early 1980s until 1992, FAO and United Nations Development Programme (UNDP) undertook joint seed projects in Afghanistan in collaboration with the Ministry of Agriculture and ISE. Another widespread conflict in 1992 resulted in large scale looting of project facilities and a complete breakdown in the national command structure. As a consequence from 1992 until 2002, FAO implemented its seed multiplication projects from Pakistan, through NGOs or directly with local communities in Afghanistan.

Implementation of Phase I of the European Union (EU) funded seed project, Strengthening National Seed Production Capacity in Afghanistan (GCP/AFG/018/EC), began in January 2003 and ended in December 2006 with a total funding of euro 6 million. Prior to this project, the seed production strategy adopted in Afghanistan was based on facilitating the production of quality wheat seed aimed at partially meeting the immediate food security needs of the country’s population. Hence, efforts were made to increase the quantity of good quality seed through the adoption of a “modified seed certification” system called Quality Declared Seed (QDS)¹ developed by FAO. Through this system, a total of about 5,000 tonnes of wheat were produced each year. Efforts during this period were enhanced by emergency (seed relief) projects; and

¹ QDS is a system of quality control patterned after seed certification. The procedure adopts seed certification principle except that only 10% of the field and the seed lot are inspected and the onus of the inspection is put on the producer of the seed. The sample or seed lot is only spot checked by the certification agency to approve the seed lot as QDS.

most of the work was done in collaboration with ISE branches across the country and a number of NGOs. An abridged version of limited generation system of seed multiplication² was also used; starting with breeder seed obtained from the Agricultural Research Institute of Afghanistan (ARIA), which was multiplied further into foundation seed by ISE and then QDS by ISE and the NGOs.

Phase I of the project made efforts to augment the facilities for seed production, conditioning and testing, which resulted in a rise in the percentage of seed that was cleaned and tested in equipped laboratories. The overall effect of these efforts led to a gradual increase in the volume of QDS from 6,000 tonnes in 2003 to over 10,000 tonnes in 2006, equivalent to only 3% of the total national seed requirement per year. The focus of Phase I had therefore been on building the infrastructure and capacity in the technical aspects of seed production, which are fairly developed in the public sector but far less so in the private sector.

The Afghanistan National Seeds Policy was officially adopted in September 2005. In addition, a final draft of the Seed Law was prepared in August 2006, which was approved by the Ministry of Justice and the Cabinet in May 2008 and made ready for ratification by the Afghan parliament. Besides efforts by FAO and its implementing partners, other seed system development initiatives in the country include those of International Agricultural Research Centres notably the International Center for Agricultural Research in the Dry Areas (ICARDA) in partnership with the United States Agency for International Development (USAID), the International Maize and Wheat Improvement Center (CIMMYT), and other bilateral donors including the French Cooperation. On the whole, private sector activity in the seed industry is limited and yet at very early stages.

In collaboration with other stakeholders, Phase I succeeded in setting up a mechanism for seed production, assisted in training and identifying potential seed producers as well as future leaders for seed industry development, and initiated a process for the establishment of small seed enterprises to cover strategic locations in Afghanistan. By the end of Phase 1, the capacity existed for the production of quality seed in good quantities but the constraint of marketing and convincing farmers to buy at realistic commercial prices remained.

The current Phase II, Variety and Seed Industry Development (GCP/AFG/045/EC) project, which began on 1 January 2007, is designed to cover actions required to transform the quality declared seed system into a certified seed programme whereby farmers will have access to timely supply of certified classes of tested and well labelled seed with the private seed sector playing a leading role and the government remaining responsible for policy, regulatory and facilitation functions. In this context, it is estimated that the capacity of ARIA would have been enhanced to independently produce and market up to 100 tonnes breeder seed each year by the end of Phase II of the project. Similarly, ISE would be able to produce 1,000 tonnes foundation seed, while ISE and the private sector would produce 10,000 tonnes certified I seed and 15,000 tonnes certified II seed each year by the end of phase II in 2011. It is also envisaged that the seed production process in Phase II will be self-driven according to market forces without direct

² Breeder. (Pre-Basic)-----Foundation (Basic)-----Registered (certified I)-----Certified (Certified II)----
-Commercial seed

intervention of FAO. Both FAO and the Ministry of Agriculture, Irrigation and Livestock (MAIL) will during this phase focus on regulatory aspects including adherence to policy and legislation, institutional reform, ensuring quality assurance and facilitating market exploration. To do so, it is planned to put much efforts into promotion and marketing to ensure that farmers buy high quality seed at realistic commercial prices that will render the seed businesses sustainable. The private sector is expected to become the key player in this process including privatized ISE companies, privatized NGO seed undertakings, and new indigenous private seed companies (village-based enterprises and pilot community-based enterprises) and seed associations.

The first six months of Phase II was designed as an inception phase during which the project's risks would be assessed and certain aspects of the project design improved as found necessary. This market study was initiated during the inception period in order to better understand farmers' perceptions, knowledge, behaviour and constraints regarding their decision to use improved seed and relate these findings to the project design. The results of this study are expected to provide valuable input into the assessment of market demand for seed, the commercial viability of the private seed sector and the determination of how the project could be implemented so as to have a more positive impact on this process.

OBJECTIVES OF THE STUDY

The objectives of the study were to:

- (i) Assess the efficiency of wheat seed production as the basis of the Afghanistan seed industry
- (ii) Determine how quality seed production in Afghanistan could become commercially viable and self-driven according to market forces.
- (iii) Assess the capacity of the Afghanistan market to effectively absorb seed quantities and types to be delivered by the project and how the market could be enhanced to do so.
- (iv) Scope of crop diversification and how this could be enhanced

SCOPE AND METHODOLOGY OF THE STUDY

The scope of issues addressed by this study included a critical examination of the current market environment for wheat with the view of determining sustainability of seed delivery particularly in terms of analysis of margins in the production – marketing chain (value chain) involving the major seed producers, contract growers and other farmers. This was then compared with the situation for other main crops as part of a crop diversification strategy.

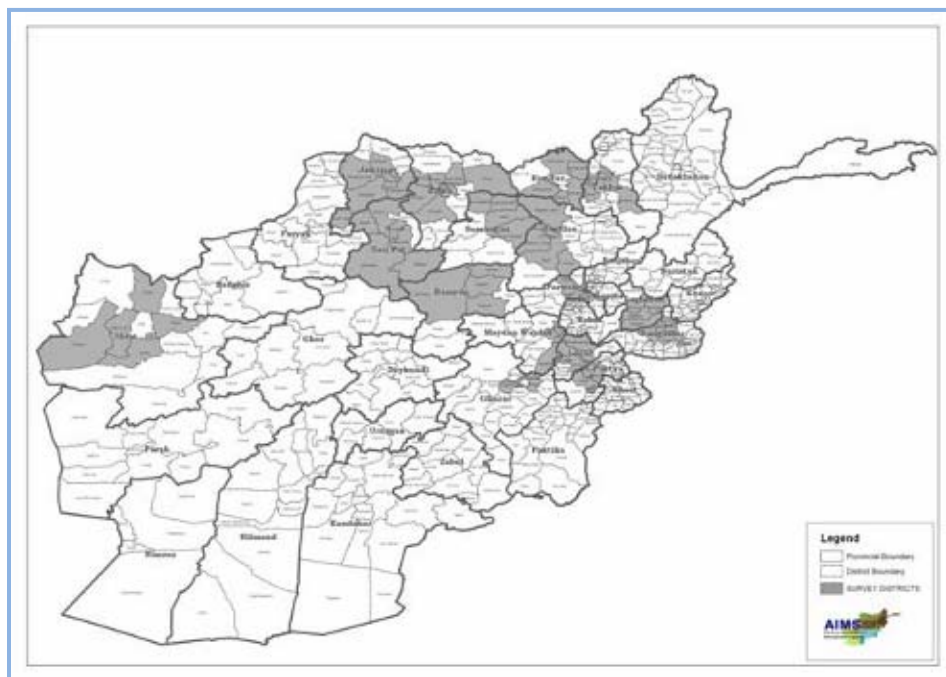
To collect relevant data, the study used structured interviews and observation with the aid of eleven types of questionnaires that took account of different categories of farmers in varying agro-ecological zones in the country (contract growers or other farmers in irrigated or rainfed areas, using improved or local wheat varieties, and using or not using chemical fertilizers) as outlined in Table 1. The data obtained would enable an analysis of the effect of improved varieties, quality seed and fertilizer on yield of wheat.

Prior to the field interviews, the questionnaires were translated into the Dari language alongside the English text, pre-tested in the field, modified as necessary, and finalized (Appendix 1). Enumerators and Survey Supervisors of the Afghan Survey Unit were then trained for a week in sampling and interview techniques in order to ensure a standardized and efficient delivery of the questionnaires.

Table 1: Questionnaire type and details

Type	Questionnaire details
1	Seed producing enterprises
2A	Contract farmers in irrigated areas using improved wheat varieties and fertilizer
2B	Contract farmers in rain fed areas using improved wheat varieties and fertilizer
3A	Other farmers in irrigated areas using improved wheat varieties and fertilizer
3B	Other farmers in irrigated areas using improved wheat varieties without fertilizer
3C	Other farmers in irrigated areas using local wheat varieties and fertilizer
3D	Other farmers in irrigated areas using local wheat varieties without fertilizer
4A	Other farmers in rain fed areas using improved wheat varieties and fertilizer
4B	Other farmers in rain fed areas using improved wheat varieties without fertilizer
4C	Other farmers in rain fed areas using local wheat varieties with fertilizer
4D	Other farmers in rain fed areas using local wheat varieties without fertilizer

Using the different questionnaire types, a total of 4,598 farmers were interviewed in 16 provinces, 82 districts (Map 1) and 978 villages as shown in Tables 2 and 3. All the 29 private seed producing enterprises were interviewed (Questionnaire 1). Most of the contract farmers were located in the irrigated areas (2A) with far fewer in the rainfed areas (2B). About 4 times more farmers were encountered in the irrigated areas (Questionnaire 3) than those in the rainfed areas (Questionnaire 4). A small number of farmers in the rainfed areas were found to use fertilizer (4A and 4C), while a vast majority of rainfed farmers did not use fertilizer at all regardless of whether they grew improved or local varieties.



Map 1: Surveyed districts

Table 2: Number of interviews made using different questionnaire types

No	Province	Number of farmers interviewed using this questionnaire type										Total interviewed	
		1	2A	2B	3A	3B	3C	3D	4A	4B	4C		4D
1	Nangarhar	6	39	0	187	0	45	11	0	0	0	0	282
2	Laghman	0	0	0	195	0	59	16	0	0	0	0	270
3	Logar	0	52	0	174	1	51	2	0	0	0	0	280
4	Ghazni	0	0	0	141	0	71	22	0	0	0	52	286
5	Paktya	0	0	0	198	0	46	10	0	0	0	0	254
6	Parwan	1	30	0	170	0	90	0	0	0	0	0	290
7	Bamyan	1	40	0	70	45	25	20	0	10	0	65	275
8	Baghlan	2	116	0	72	1	64	7	0	40	10	30	340
9	Kunduz	6	100	14	30	0	97	20	0	9	20	82	372
10	Takhar	2	75	19	76	0	81	5	7	0	10	67	340
11	Samangan	0	0	0	80	10	40	20	0	46	0	63	259
12	Balkh	3	77	0	63	0	57	22	0	6	1	44	270
13	Jawzjan	0	0	0	68	26	38	58	0	22	0	16	228
14	Sarepul	0	0	0	80	17	25	42	0	33	1	24	222
15	heart	4	228	21	62	2	14	6	6	15	2	46	402
16	Wardak	0	0	0	200	10	14	1	0	0	0	3	228
	Total	29	757	54	1866	112	817	262	13	181	44	492	4,598

Table 3: Provinces, districts and number of villages covered

No	Province	District	Total districts	Total villages
1	Nangarhar	Kama, Rodat, Chparhar, Ghani Khel, Bati Kot, Surkhrod, Behsood, Khewa	8	87
2	Laghman	Qarghaee, Mehtarlam, Alingar, Alishang	4	77
3	Logar	Puli Alam, Mohammad Agha, Khoshi, Baraki Barak	4	80
4	Ghazni	Ghazni Center, Jaghatoo, Khwaja Omari	3	45
5	Paktya	Gardez, Sayed Karam, Mirzaka, Ahmadabad	4	60
6	Parwan	Bagram, Charikar, Jabal Seraj, Sayed Khel, Shinwari	5	77
7	Bamyan	Bamyan Center, Kahmard, Yakawlang, Saighan	4	36
8	Baghlan	Baghlan Jadeed, Doshi, Khenjan, Poli Khumri, Dahana-e-Ghoori	5	48
9	Kunduz	Aliabad, Khanabad, Imam Saheb, Archi, Chardara	5	43
10	Takhar	Bangi, Farkhar, Baharak, Taloqan, Hazar Sumuch	5	77
11	Samangan	Khoram Sarbagh, Hazrat Sultan, Aibak, Feroz Nakhcheer	4	56
12	Balkh	Chamtal, Shulgara, Nahreshahi, Dehdadi, Balkh, Khulm, Charbulak, Dawlatabad	8	54
13	Jawzjan	Khwaja Dukoh, Aqcha, Shabarghan, Faizabad, Mangajak, Qustepa, Khanaqa	7	60
14	Sarepul	Sayad, Sozma Qala, Sayedabad, Saripul Center, Kohistanat, Sancharak	6	70
15	heart	Injeel, Guzara, Karokh, Kushk, Ghoryan, Zendajan, Gulran	7	42
16	Wardak	Maidan, Narkh, Sayedabad	3	66
	Total		82	978

PROFILE AND PERFORMANCE OF SEED PRODUCING ENTERPRISES

By the end of 2008, there were a total of 29 privately owned enterprises (Annex 1), which were registered by the National Seed Committee (NSC) for the production of certified seed. NSC registration means that only these enterprises had access to foundation seed produced by the project and were authorized to produce and sell certified seed each year. About half of these enterprises were established in 2004, of which eight (enterprises 2 – 9 in Annex1) were pilot enterprises engendered by the FAO seed project and five of them (enterprises 10 – 14 in Annex 1) were village-based seed enterprises of the USAID/ICARDA Rebuilding Agricultural Markets Program (RAMP). The enterprises that have emerged after 2004 are largely private ones, which have been motivated and established in response to the commercial successes of the earlier pilot enterprises. All 29 enterprises are now operating within the framework of the FAO seed project in terms of technical assistance especially technical advice/guidance and training.

A typical small-scale seed enterprise in Afghanistan comprises a small group of prominent farmers (up to 12) in the community that come together to contribute an initial capital for establishing the enterprise. This initial capital is used for buying foundation seed and other inputs including fertilizer, erecting storage/office facility and buying a seed cleaning machine. To operate legally, the seed enterprises are required to register with the Afghanistan Investment Support Agency (AISA) and NSC. For day-to-day operation and management, the key functions of the enterprise including supervision of crop agronomy and quality control, financial management, raw seed procurement, seed cleaning and marketing are shared among the members of the enterprise on a rotational basis.

Each year, all private enterprises enter into contractual arrangements with selected hardworking and efficient farmers who are selected as growers in their communities for the production of certified seed. As part of this contract agreement, the enterprises make necessary inputs including foundation seed and fertilizer available to their growers, as well as provide technical advice and supervise their crop management operations throughout the growing season from planting until the sale of harvested raw seed. To maximize yield and ensure high quality standards, particular attention is given to weeding, disease and pest control, roguing (removal of off-type plants) and field inspection. The contract growers take care of all labour requirements. For the eight FAO pilot seed enterprises, there has been a gradual increase each year in the number of contract growers that become involved in the production of certified seed (Table 4). This is an indication of the increased spread of seed production benefits in the community. The contract grower system also serves a useful extension function, as the more growers there are the greater the chance of spreading awareness in farming communities about new varieties and quality seed.



Plate 1. Pilot enterprise in Herat (established in 2004)



Plate 2. Village-based enterprise in Kunduz (2004)



Plate 3. Private enterprise in Herat (established 2007)

Table 4: Number of contract growers in pilot seed enterprises during 2004 – 2008

	Pilot Seed Enterprise	Number of contract growers				
		2004	2005	2006	2007	2008
1	Shirabad Seed Enterprise	10	13	17	34	84
2	Baba-e-Deqan Seed Enterprise	12	18	18	56	120
3	Sultan Daud Seed Enterprise	12	12	54	108	115
4	Bamyan Bastan Seed Enterprise	10	12	58	-	-
5	Sheikh Muruf Karokhi Seed Enterprise	29	52	92	98	103
6	Dorokhshan Seed Enterprise	8	8	36	42	66
7	Hambastagi Seed Enterprise	24	28	55	75	81
8	Sara-e-Sang Seed Enterprise	20	25	15	59	63
	TOTAL	125	168	345	472	632

ANALYSIS OF MARGINS IN THE WHEAT SEED VALUE CHAIN

In agreement with the seed enterprises, the contract growers produce raw certified seed, which is in turn sold to the seed enterprises at a premium above the prevailing market price for ordinary wheat grain. The enterprises then clean, treat and package the seed, which is sold after quality certification by official seed testing laboratories. Figure 1 shows the margins (US\$ per tonne)

earned as the seed moved from the contract growers through the seed enterprises to the farmers for planting during 2007. Table 5 outlines similar margins during the years 2006, 2007 and 2008.

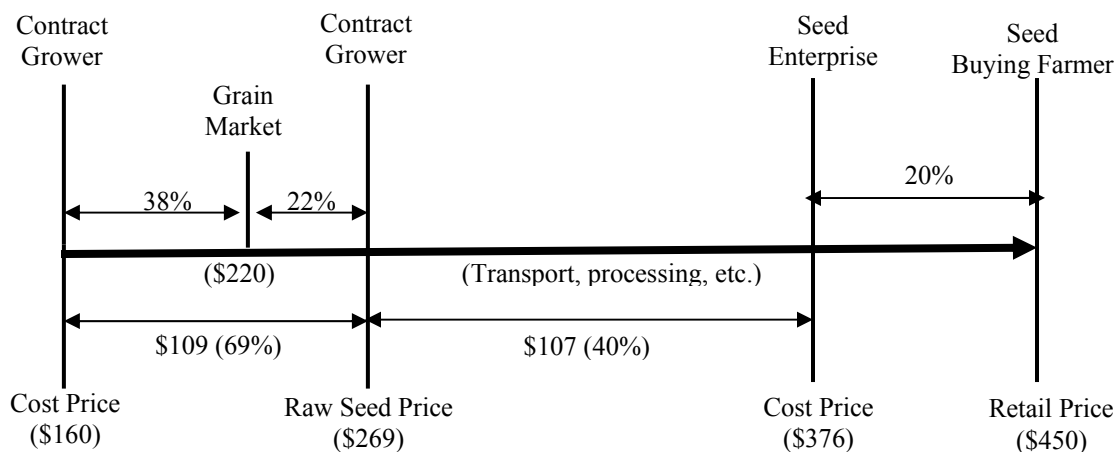


Figure 1: Margins earned in the wheat seed value chain during 2007

The 2007/08 season was a particularly difficult period for seed production as the average buying price of raw seed rose more than threefold from US\$269 in 2007 to US\$840 in 2008 because of widespread drought conditions in the country and global soaring prices of wheat grain. In 2008, there was an estimated total import requirement of cereals – including commercial import and food aid – of 2.26 million tonnes, which included 2.08 million tonnes of wheat and 183,000 tonnes of rice / maize (MAIL, 2008).

The soaring food prices and the more than three-fold increase in the procurement price of raw seed posed serious cash constraint for the infant private seed enterprises. Without adequate cash made available during the June – July harvest period, the enterprises faced the risk of not being able to buy enough raw seed for processing and cleaning because of the tendency of growers diverting their raw seed to the highly priced grain market. The FAO seed project appealed to donors for help against the background that an acute shortage of certified seed for the coming October – November 2008 planting season would have a direct negative impact on crop production in the following year, which would result in another cycle of food shortage. The USA and UK governments responded positively to this appeal with a donation of US\$3 million each, which was given out as loans to the enterprises in August 2008 to assist in the procurement of up to 6,000 tonnes of raw seed from the contract growers. By the end of the season, a total of 12,000 tonnes of seed was purchased by the enterprises, which accounted for up to 95% of the total certified wheat seed produced. This seed was processed and all distributed in the country. Nearly all the loans were repaid by the enterprises by the end of 2008 and deposited in a revolving fund account of the seed association, the Afghanistan National Seed Association (ANSOR).

Table 5: Margins (US\$ per tonne) in the certified seed value chain

Year	Cost of grain ¹	Grower's cost price of raw seed ²	Buying price of raw seed ³	Enterprise's cost price of seed ⁴	Selling price of certified seed ⁵
2006	224	173	280	378	449
2007	220	160	269	376	450
2008	700	210	840 ⁶	1050 ⁷	1260 ⁸
Mean	381	181	463	601	720

Notes:

¹This is the prevailing market price of wheat grain according to the MAIL Agricultural Commodity Price Bulletin

²This is what actually costs the grower to produce 1 tonne of certified seed on his farm and it includes all input costs (foundation seed used for sowing, fertilizer, herbicide, etc.), labour costs (weeding, roguing, harvesting, threshing, etc.), transport cost and post-harvest handling costs (drying, pre-cleaning, bagging, etc). This information is obtained each year by the project from a survey of contract growers.

³The buying price of raw seed is paid by the enterprise to the contract grower. This price includes an agreed premium above the prevailing grain price (1), taking into account the grower's actual cost price (2). This information is obtained each year from financial records of seed enterprises.

⁴This is the cost the enterprise incurs to convert the raw seed into cleaned and packaged certified seed for sale and includes the costs of the raw seed (3), transport, cleaning, chemical seed treatment, packaging, etc., but excludes a profit margin (enterprise break-even price). Similarly, this information is obtained each year from financial records of seed enterprises.

⁵The final selling price of certified seed is the enterprise break-even price plus a profit margin for the enterprise. This information is also obtained each year by the project from financial records of the seed enterprises.

^{6,7,8}Estimated values

WHEAT VARIETIES IN THE HANDS OF FARMERS IN COMPARISON WITH QUALITY SEED MADE AVAILABLE BY THE PROJECT

The salient characteristics of the most common improved wheat varieties cultivated by farmers in the various regions of Afghanistan are outlined in Annex 2. These varieties have been released after several years of multi-location testing of advanced breeding materials obtained mainly from international agricultural centers such as CIMMYT and ICARDA and from neighbouring countries of Pakistan and India.. The pedigrees, year of release and origin of the varieties are shown in Annex 3.

Many of the improved varieties are facultative bread wheat types suitable for cultivation in irrigated conditions, of which few are adapted to cold winter conditions in high elevation areas (Pamir-94, Gul-96 and Solh-02) and one is a durum or hard wheat variety (Parva-2). There are 5 medium duration bread wheat varieties that could be grown widely in rainfed conditions throughout the country and are therefore suitable for cultivation in the spring months. Other medium duration irrigated varieties such as Bakhtawar-92 (Kauz), Ghorl-96, Takhar-96, Roshan-96, Herat-99, Mazar-99 and PBW-154 could be grown also in the spring.

Besides improved varieties, there are many traditional or local wheat varieties that are grown widely throughout the country. For some of these, it is not clear whether they are truly traditional varieties or were once improved varieties that have been cultivated over a long period of time,

which have now been given location-specific local names. Annex 4 shows 21 local varieties that were mentioned by farmers during the study. Whilst the northern, southern, central and eastern region had many local wheat varieties, the least amount of such varieties were found in the west and west central regions. In terms of popularity or presence across many regions, Surkha seemed most popular followed by Zardana, Safedak, Maxsipak and Kalak Surkh Khusha, although farmers in many regions had local varieties they were not able to clearly define. Surkha is widespread in the rainfed areas and is believed to be drought tolerant while Zardana is cultivated largely in irrigated conditions.

According to the results of this study, a large proportion of farmers in every region indicated that they grew one improved and/or one local variety. Similar results were obtained by an earlier survey of farmers across the country (Kugbei and Shahab, 2007). Although few local varieties were reported in some regions, it is evident from the results that these varieties must have been popular amongst the farmers such as Surkha and Zardana in the northeast region, or Kalak and Kalak Surkh Khusha in the western region, and Kalak Surkh Khusha in the west-central region. It seemed that it is not only the case that there are many local varieties in the northern region but that these are widely spread amongst the farmers such that a large proportion of them use at least one of the local varieties. The prevalence of rainfed wheat cultivation in this region may largely account for this.



Plate 4. Local Zardana variety in the field



Plate 5. Harvested grain of Zardana



Plate 6. Bagged grain of Zardana



Plate 7. Weighing and sale of Zardana grain

Table 6: Number of improved and local wheat varieties grown by farmers

	Region	Number of provinces	Farmers interviewed (excluding contract growers)	% of farmers who grew this number of improved wheat varieties			% of farmers who grew this number of local wheat varieties		
				1	2	3	1	2	3
1	North East	3	728	33	7	4	50	7	0
2	Northern	4	902	37	13	1	47	3	0
3	Western	1	153	31	17	10	42	3	0
4	Central	3	716	57	21	1	22	0	0
5	Eastern	2	513	65	9	2	24	2	0
6	West Central	1	235	43	11	1	43	4	0
7	Southern	2	540	55	6	2	36	1	0
Total		16	3787	46	11	2	38	3	0

An important consideration for an efficient commercial seed system is to produce seed of those varieties that the farmers actually desire or are accustomed to. Knowing the most popular varieties in the hands of farmers and the spread of particular varieties within the farming community, and finding out what the farmers like or do not like about these varieties can help in guiding seed enterprises in making realistic production planning in terms of which varieties to focus on and how much seed to produce of specific varieties. Such feedback can also be useful in selecting new materials for variety testing/screening programmes with the purpose of releasing new varieties in the near future.

The market demand and choice of specific varieties by farmers in a given region of a country normally depend on several factors including agro-ecological conditions (e.g., altitude, rainfall pattern, seasonal temperature), food attributes (e.g., flour quality, taste, colour, aroma, texture), and others (e.g., pest and disease incidence, bird damage). Figures 2a – 2h show the percentage of farmers in the survey that used particular improved varieties in the different regions of Afghanistan. According to farmers' preference on overall countrywide basis (Figure 2h), the most popular varieties were Pamir-94, Ghori-96, Gul-96 and Amu-99. However, while Ghori-96 and Amu-99 were more popular in the Northern, North-East and Western regions, Pamir-94 was most popular amongst farmers in the Central, West-Central and Southern Regions. A large proportion of farmers in the Central Region also preferred Gul-96. These three varieties seem to fit well in the key agro-ecological conditions around the country with Ghori-96 used in the rainfed areas and Amu-99 in the main irrigated areas while Gul-96 is used in the high elevation cooler areas.

Another striking feature at the national level was the significant proportion of farmers (more than 15%) who did not know the precise names of the improved varieties they were using. Ignorance about varieties was more common amongst farmers in the Northern Region (about 35%), Eastern Region (more than 25%), and North-East Region (more than 10%), but least common in the Western and West-Central Regions (less than 5%).

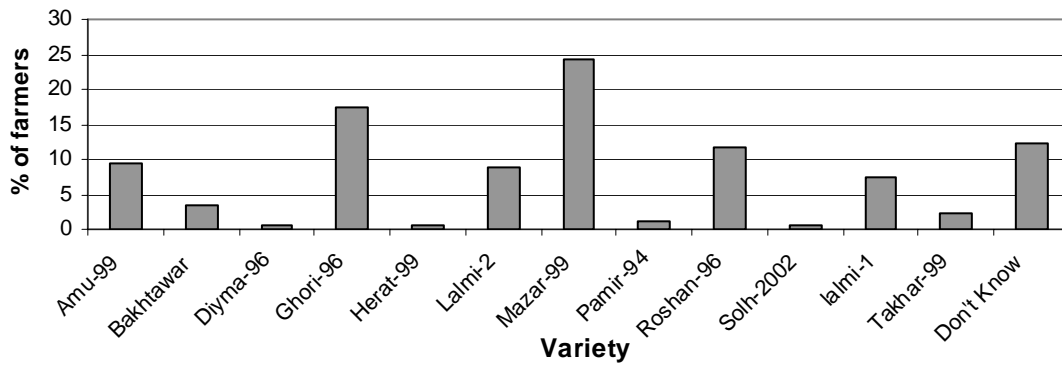


Figure 2a: NORTH-EAST REGION (Baghlan, Kunduz and Takhar) (n=178)

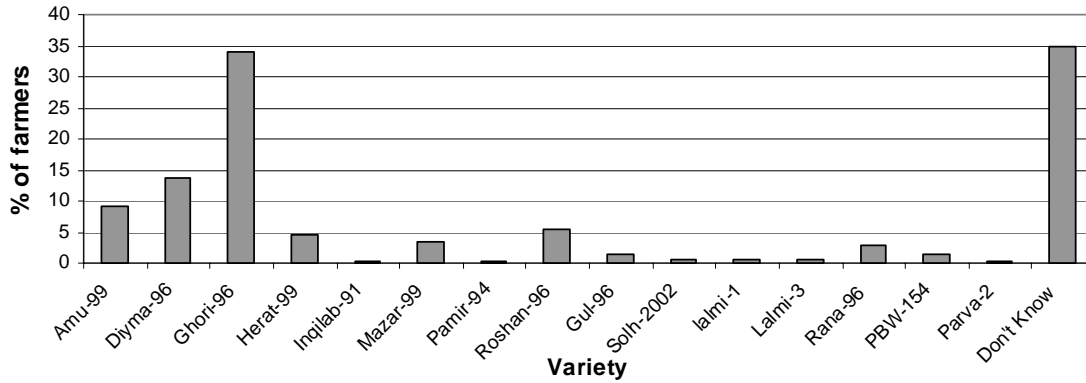


Figure 2b: NORTHERN REGION (Balkh, Jozjan, Samangan and Sari Pul) (n=292)

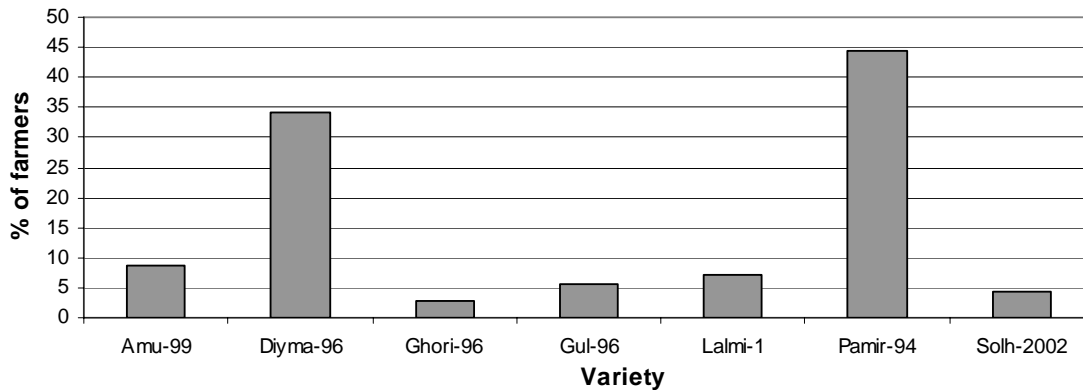


Figure 2c: WEST CENTRAL REGION (Bamyan) (n=70)

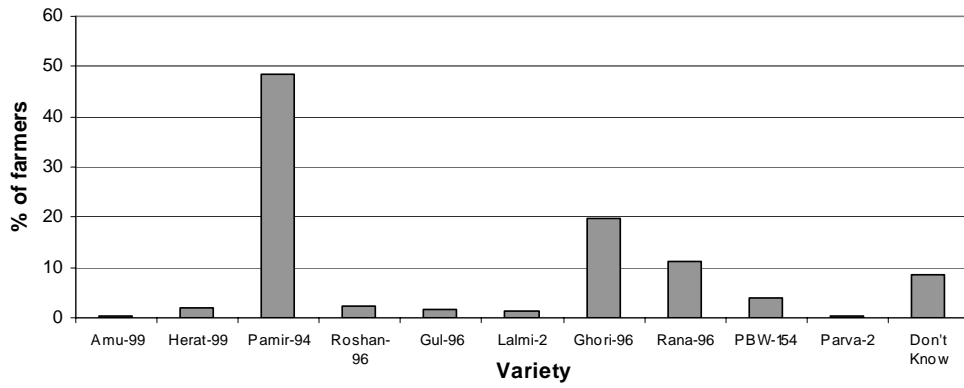


Figure 2d: SOUTHERN REGION (Ghazni and Paktya) (n=339)

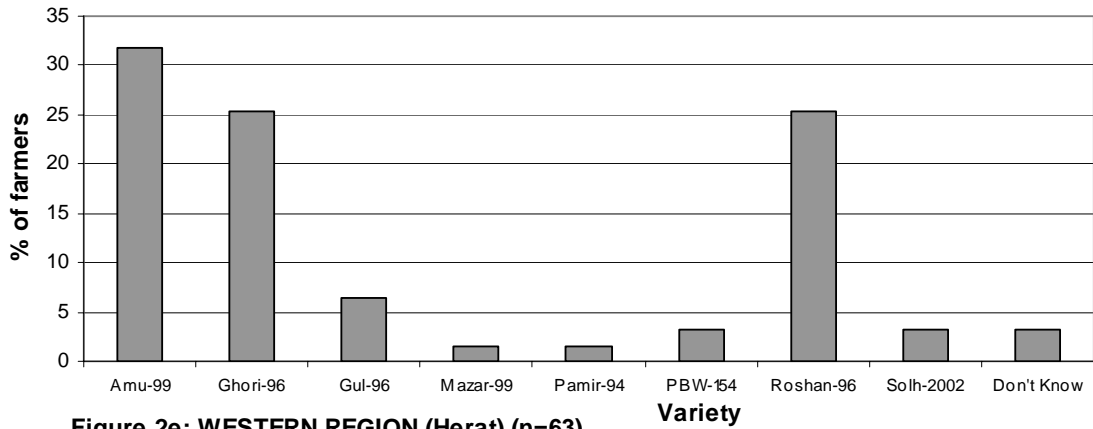


Figure 2e: WESTERN REGION (Herat) (n=63)

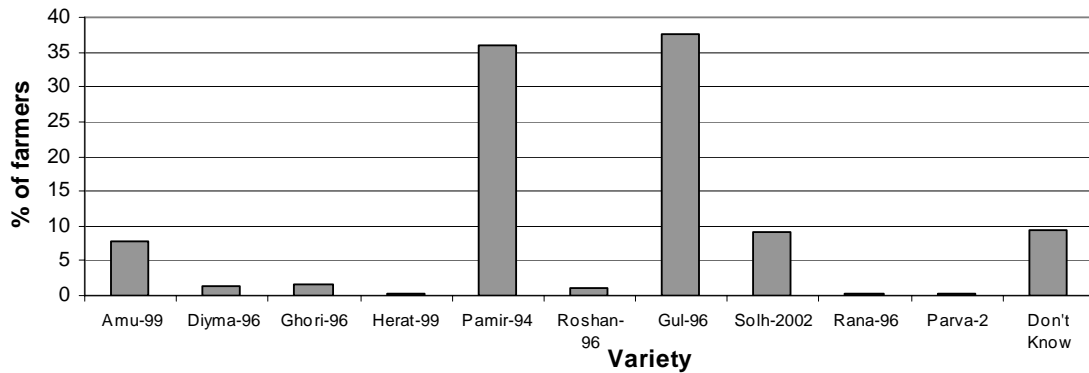


Figure 2f: CENTRAL REGION (Wardak, Parwan and Logar) (n=544)

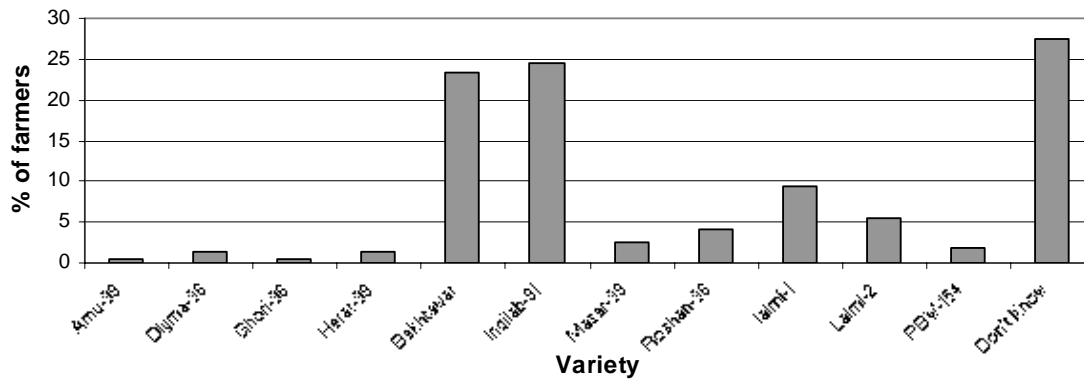


Figure 2g: EASTERN REGION (Nangrahar and Laghman) (n=382)

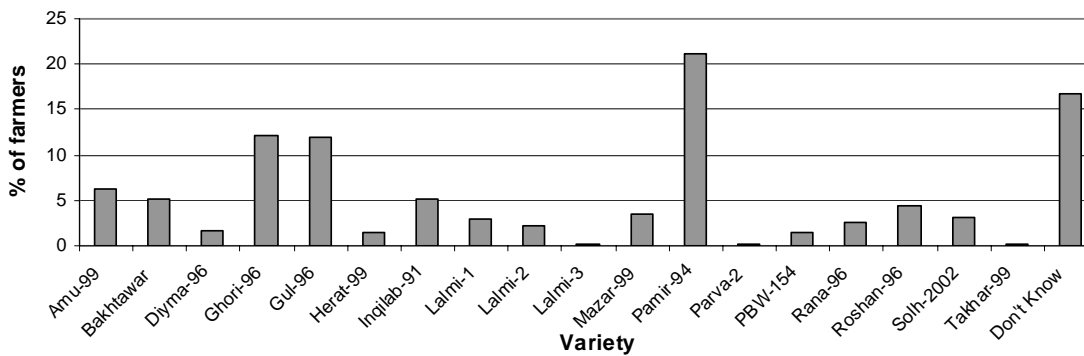


Figure 2h: ALL REGIONS (North-East, North, West-Central, South, West, Central and East) (n=1866)

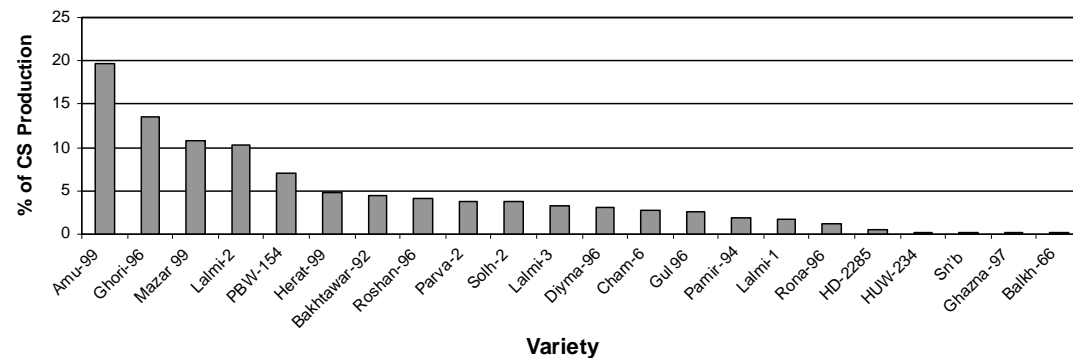


Figure 3: Project production

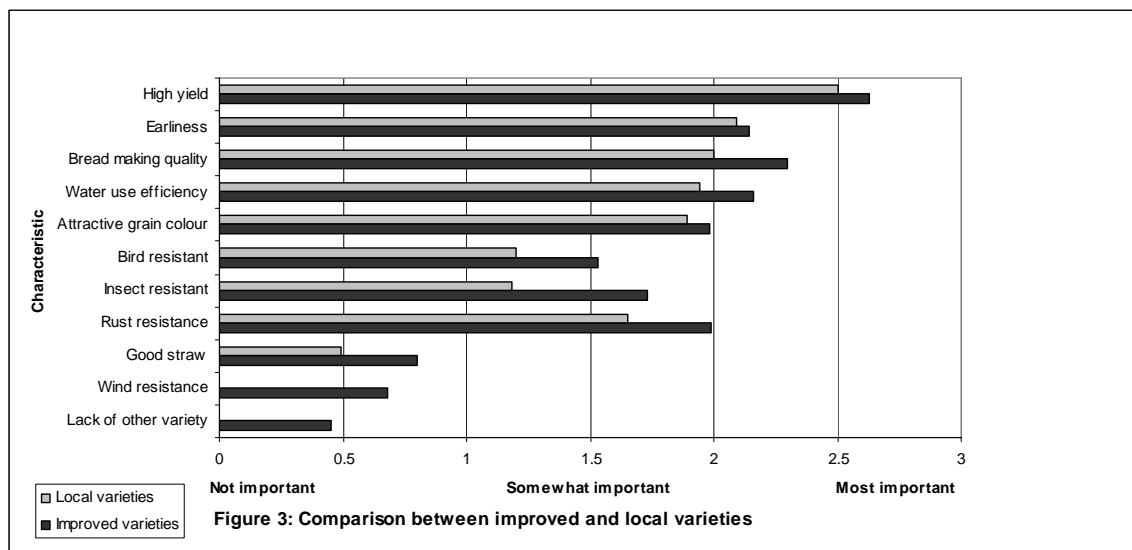
Comparing the varieties farmers had with those produced by the seed programme, Figure 3 revealed a mismatch in some cases such as low production of Gul-96 and Pamir-94 although a significant proportion of farmers seemed to cultivate these varieties. Similarly, whilst the project produced relatively large seed quantities of varieties such as Mazar-99, Herat-99, PBW-154 and Lalmi-2, only a small proportion of farmers seemed to actually use these varieties. It is hoped that these results will assist in guiding future production planning by the project so as to bring production more in line with demand for specific varieties.

For those improved wheat varieties the farmers cultivated, they were asked during the field survey to rank the following attributes in respect of each improved variety: high yield potential, earliness (days to maturity), bread making quality, water use efficiency, attractive grain colour, bird resistance, insect resistance, rust resistance, good straw potential, wind resistance and the lack of other varieties. The results of the ranking are illustrated in Annex 5 (a – k), which show that high yield potential was by far the most important characteristic the farmers looked for in the improved varieties they used. Besides yield, the next important attributes were earliness (number of days to maturity), resistance to yellow / stripe rust, grain colour and bread making quality of the wheat flour. These were the key factors even amongst those farmers who did not know the specific names of the improved varieties they used. Amber colour of the grain is liked in the market because wheat grain having this colour is believed to produce white flour, which is the preferred flour colour for bread making. Pamir-94 is an exception in having red grain colour but produces white flour.

Many farmers who used Pamir-94 and Gul-96 seemed to have done so because other improved varieties of this kind were not available. These two varieties are known to be adapted specifically to higher elevation and cooler areas. A more recent variety, Solh-02, is the only other variety that has been released for these high elevation and cooler conditions. It is likely that many farmers especially those in the Central and West Central regions who have been using Pamir-94 and Gul-96 for many years either did not yet have access to sufficient seed of Solh-02 or were not yet aware of it as an alternative variety for their conditions. Therefore, more vigorous extension/promotion of Solh-02 may be necessary.

As regards local varieties, the patterns illustrated in Annex 6 (a – i) reveal high yield and good bread making attribute as outstanding reasons why farmers used the local varieties they had. These local varieties were ranked quite low in terms of rust resistance and quality of straw.

Figure 4 illustrates the comparison between improved and local wheat varieties and shows the apparent superiority of improved over local varieties for all the various characteristics assessed in the survey. For both kinds of varieties, high yield potential was the most important quality attribute, followed by earliness and bread making quality. The farmers gave significantly higher scores to improved varieties for tolerance to insect pests and disease (stripe rust) than local varieties.



THE INFLUENCE OF IMPROVED VARIETY ON YIELD OF WHEAT

A study in 2003 has shown that improved wheat varieties cover more than half of the country's irrigated wheat area (Tunwar, 2004). According to findings of the survey in 2007, the farmers who grew improved wheat varieties did so normally in irrigated areas and used chemical fertilizer to boost yield levels (about 86% of the farmers interviewed in irrigated areas fell into this category). The survey has also revealed that up to 76% of the farmers using the so called local wheat varieties in irrigated areas also applied chemical fertilizer to enhance the performance of their crop. On the other hand, far less farmers in irrigated locations used either improved or local varieties without fertilizer probably due to lack of money to purchase the chemical fertilizer they needed. Given this situation, it was possible to estimate the influence of improved varieties on the yield of wheat (assuming all other factors affecting production remained constant) by comparing the mean yields of ordinary farmers who used improved varieties and fertilizer in irrigated and rainfed areas with the mean yields of those farmers who used local varieties and fertilizer also in irrigated and rainfed areas. The results obtained are presented in Table 7.

Table 7: Yields obtained by farmers using improved and local varieties in irrigated and rainfed areas with and without chemical fertilizer

Type of farmer	Questionnaire type	Sample size (n)	Mean yield (t/ha)
Irrigated + improved variety + fertilizer	3A	1,866	2.90
Irrigated + local variety + fertilizer	3C	817	2.18
<i>Incremental yield due to improved variety in irrigated condition</i>			<i>+0.72 (33%)</i>
Rainfed + improved variety + fertilizer	4A	13	0.66
Rainfed + local variety + fertilizer	4C	44	0.60

The relatively small sample sizes obtained for the rainfed questionnaires (4A and 4C) indicated that very few farmers were encountered who claimed to use fertilizer in rainfed areas whether with improved or local varieties. Therefore, mean yields calculated under such conditions were considered unreliable. This finding supports the general view that farmers in rainfed areas hardly use chemical fertilizers to grow their wheat crop.

The significantly larger sample sizes for the irrigated questionnaires (3A and 3C) relating respectively to improved and local varieties with fertilizer in irrigated areas enabled a more reliable estimation, which indicated 33% incremented yield resulting from the use of improved varieties when the mean yield of improved varieties (2.90 t/ha) was compared with that of local varieties (2.18 t/ha) in irrigated areas with fertilizer. This is a significant increase and could further explain why the farmers interviewed in this survey ranked high yield potential as by far the most important characteristic they looked for in using improved varieties.



Plate 8. A field of local irrigated wheat variety with Fertilizer in Parwan Province



Plate 9. A field of improved wheat variety with fertilizer in Baghlan

THE INFLUENCE OF QUALITY SEED ON YIELD

Certified seed was introduced for the first time in Afghanistan for during October – December 2007 sowing season. It was therefore not possible at the time of the field interviews of this study to assess the precise influence of certified seed on yield levels. The best alternative means of determining the likely influence of quality seed on wheat yield was to compare the average yield of seed growers (who used foundation seed and fertilizer to produce certified seed) in irrigated areas with the yield obtained by ordinary farmers who used their own seed of improved varieties with fertilizer also under irrigated conditions. The difference in yield between these two categories of farmers was an assumed indication of the effect of using certified or quality seed. The results showed a percentage increase in yield of 28% due to quality seed (Table 8).

Table 8: Yields obtained by farmers using own-saved and quality seed in irrigated and rainfed areas with fertilizer

Type of farmer	Questionnaire type	Sample size (n)	Mean yield (t/ha)
Irrigated + quality seed of improved variety + fertilizer (growers)	2A	757	3.70
Irrigated + own seed of improved variety + fertilizer (other farmers)	3A	1,866	2.90
<i>Incremental yield due to quality seed in irrigated condition</i>			+0.8 (28%)
Rainfed + improved variety + fertilizer (growers)	2B	54	0.82
Rainfed + improved variety + fertilizer (other farmers)	4A	13	0.66

The results show that although the use of improved varieties could increase wheat yield by up to 33%, the use of quality seed (certified seed) could enhance yields of improved varieties by 28% as reported by seed growers and ordinary farmers. These figures explain clearly the benefits farmers could get from using quality seed of improved varieties.



Plate 10. Grower's wheat field in Balkh



Plate 11. Grower's wheat field in Herat

THE INFLUENCE OF FERTILIZER ON YIELD

The results above, which show the effects on wheat yield of using improved varieties and quality seed have been estimated from responses by farmers under irrigated conditions with fertilizer where the fertilizer application rates were generally of the magnitude of 125 kg/ha of Diammonium phosphate or DAP (18% P₂O₅) and 200 kg/ha of Urea (46% N).

Regardless of whether the farmers used improved or local wheat varieties, the practice of fertilizer application in irrigated conditions was found to make a significant difference in yields obtained as shown in Table 9. The results show a dramatic drop in yield in irrigated areas when improved or local wheat varieties were cultivated without fertilizer with an even greater decrease in the case of local varieties. The high fertilizer response rates for the local varieties could raise doubts as to whether some of these are truly traditional varieties or were once improved varieties

that have been grown in these environments for many years and are now regarded as local materials.

Table 9: Differences in yield obtained by farmers using improved and local varieties in irrigated and rainfed areas with fertilizer in comparison with those not using fertilizer

Type of farmer	Questionnaire type	Sample size (n)	Mean yield (t/ha)
Irrigated + farmer's own seed of improved variety + fertilizer	3A	1,866	2.90
Irrigated + farmer's own seed of improved variety - fertilizer	3B	112	1.90
<i>Fall in yield of improved variety under irrigation without fertilizer</i>			-1 (-34%)
Irrigated + local variety + fertilizer	3C	817	2.18
Irrigated + local variety - fertilizer	3D	262	1.20
<i>Fall in yield of local variety under in irrigation without fertilizer</i>			-0.98 (-45%)
Rainfed + improved variety + fertilizer	4A	13	0.66
Rainfed + improved variety - fertilizer	4B	181	0.58
Rainfed + local variety + fertilizer	4C	44	0.60
Rainfed + local variety - fertilizer	4D	492	0.35

On the whole, these results have shown that whilst the use of improved varieties alone would contribute 33% yield increase, the use of quality (certified) seed could enhance the yield of improved varieties by 28%. Fertilizer has been used as an essential complementary input without which yields of both improved and local varieties would drop significantly in irrigated conditions. Fertilizer must be used to enhance the potential of quality seed of improved varieties.



Plate 12: A farmer broadcasting urea fertilizer onto his irrigated wheat crop in Menayaqat village, Bamyan district

For the farmers who grew wheat in rainfed areas, far more used local varieties (questionnaire 4D) than those who used improved varieties (questionnaire 4B) and without fertilizer in both cases. The average yields were very low, with a magnitude of 0.58 t/ha for improved varieties and 0.35 t/ha for local varieties. It is usually the case for the farmers to broadcast seed after ploughing and then abandon the land without further attention including weeding, fertilizer application, etc. The farmers return to the land only to harvest whatever crop there is in a good year or abandon the crop if it fails in a bad year. Under such conditions, the yields are generally very low although there may be cases of reasonable yields in years of good rainfall distribution.

OTHER CROPS GROWN IN ADDITION TO WHEAT

When asked about other important crops that farmers grew in addition to wheat, the pattern illustrated in Figures 5a – 5g emerged, which showed significant differences between regions. In broad terms, the key crops with ranking ≥ 2.5 were rice (North-Eastern, Northern and Eastern),

vegetables (Central, Western, West-Central, Southern and Eastern), maize (Southern), cotton (West-Central and Southern), barley (West-Central), water melon (Eastern) and alfalfa (Central). Vegetables were most important on a nationwide basis with potato being the most dominant vegetable crop in the West-Central region. Vegetables should receive priority in crop diversification given the widespread cultivation of different vegetable types in the country and the fact that large quantities of vegetable seed are imported although these are mostly of hybrid varieties. While aiming at developing hybrid vegetables in the future in Afghanistan, the focus of seed multiplication in the meantime should be on open-pollinated varieties which seem to have good markets in different provinces for specific type of vegetables.

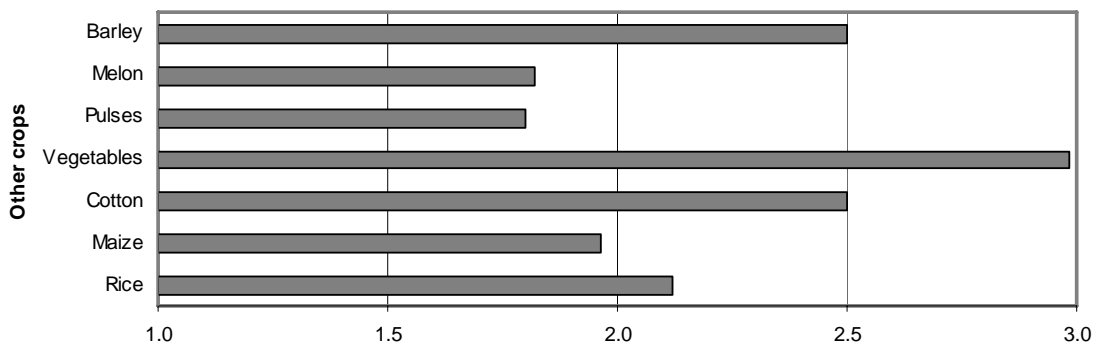


Figure 5a: West-Central region (Bamyan)

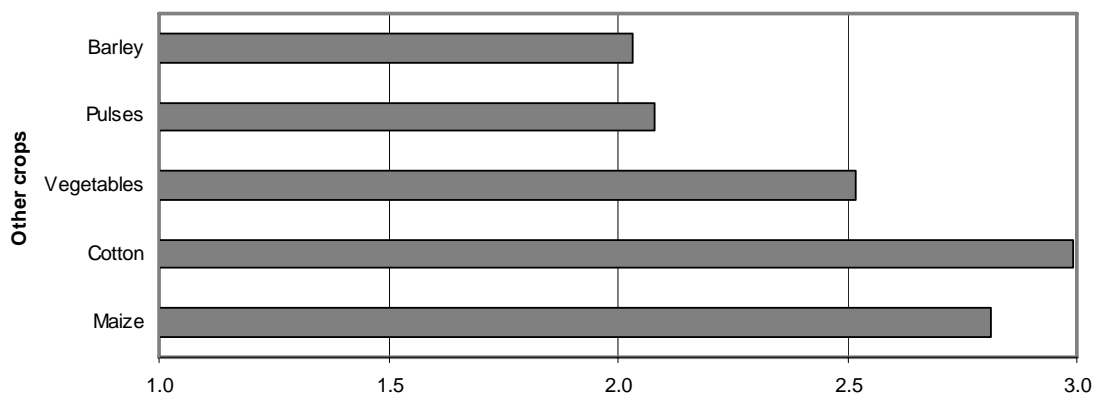


Figure 5b: Southern region (Ghazni, Paktia)

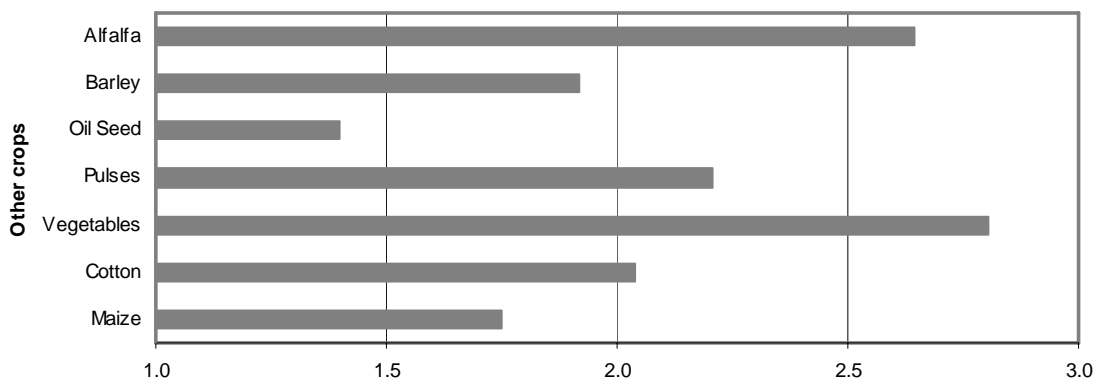


Figure 5c: Central region (Wardak, Parwan, Logar)

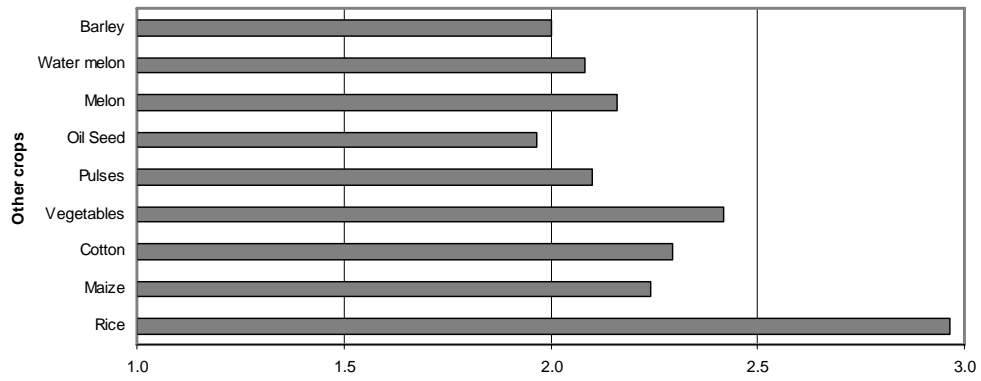


Figure 5d: North-Eastern region (Baghlan, Kunduz, Takhar)

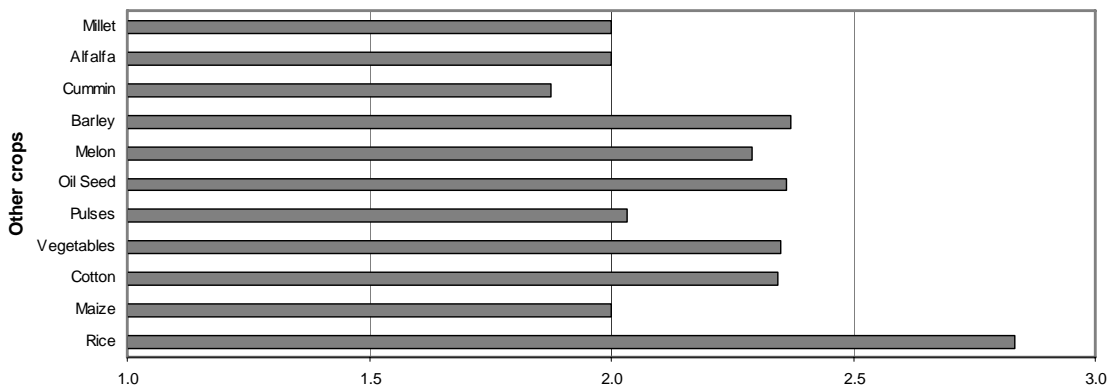


Figure 5e: Northern region (Balkh, Jozjan, Saripul, Samangan)

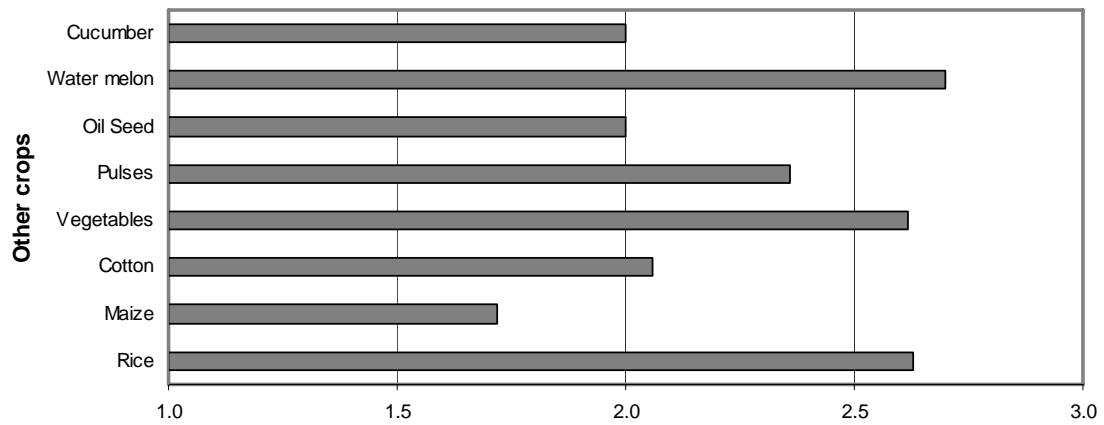


Figure 5f: Eastern region (Nangarhar, Laghman)

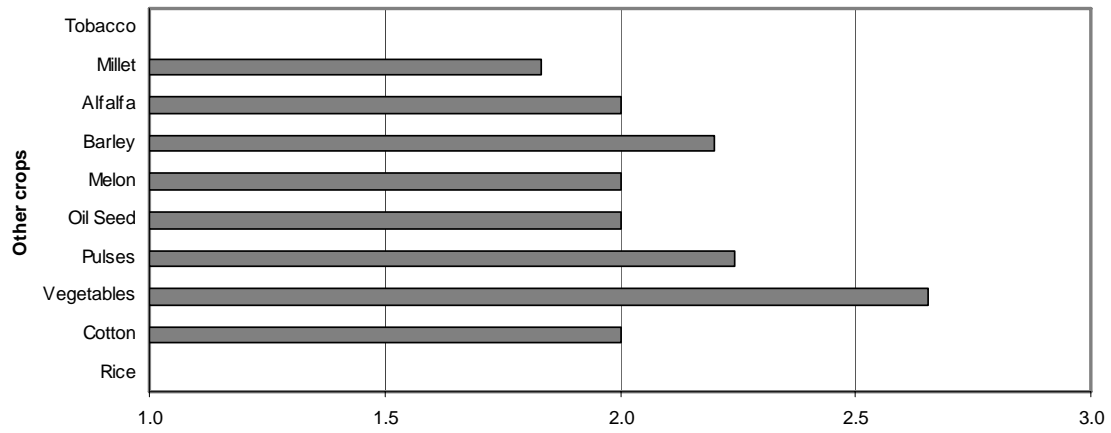


Figure 5g: Western region (Herat)



Plate 13. Onions at Sultan Daud Enterprise, Baghlan



Plate 14. Potato at Bastan Enterprise, Bamyan



Plate 15. Chickpea at Dorokhshan Enterprise, Herat



Plate 16. Cotton at Shirabad Enterprise, Balkh



Plate 17. Rice at Saraisang Enterprise, Takhar



Plate 18. Tomato at S. Marouf Enterprise, Herat

CONCLUSIONS

With the entry and increasing participation of private enterprises, wheat seed production is becoming better organized and enterprises are able to earn good margins although the wheat seed market seems distorted by large buyers that are supported with donor funds while very little seed is being purchased directly by farmers. The private enterprises would only succeed as long-term businesses if they could create real seed demand in farming communities and are able to sell seed directly to Afghan farmers.

The current productivity of wheat is low although this study has shown that there is a scope for increasing the yield of wheat if farmers especially those in irrigated areas become accustomed to using certified seed of improved varieties and use recommended rates of fertilizer. Although high yield appears to be the most important characteristic farmers look for in selecting improved varieties, much attention should also be given to other expressed needs of farmers when new varieties are being considered for release such as earliness or days to maturity, bread-making quality of wheat flour, tolerance to rust diseases and straw quality.

While wheat (the major food crop) may remain the basis of the seed industry, there are opportunities for diversification into other crops, which could help reduce the over dependence on wheat and also enhance the financial viability of seed enterprises. Depending on location-specific conditions, such alternative crops would include rice, vegetables, maize, potato, barley, water melon and alfalfa. Where appropriate, some of these could be grown in rotation with wheat thus increasing the cash flow potential of the enterprises and ensuring more effective utilization of resources.

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Tunwar, N. (2004). End of Assignment Report: GCP/AFG/018/EC and GCP/AFG/025/GER Food and Agriculture Organization of the United Nations, Kabul, Afghanistan.

Annex 1: Private seed enterprises in Afghanistan during 2008

	Seed Company	Year Found	Founding members	Location	Contact Person	Tel. No.	E-mail
1	Afghan Seed Project	2003	1	Mazar, Balkh	Pir Mohd Azizi	0700283878	pmazizi@yahoo.com
2	Shirabad	2004	9	Dedadi, Balkh	Shah Mohd.	0799 157854	Seeds_Shirabad@yahoo.com
3	Baba-e-Dehqan	2004	12	Chimtal, Balkh	Abdul Ghani	0700 531001	Baba.i.dehqan@gmail.com
4	Sultan Doud	2004	11	Puli Khumri, Baghlan	Sultan Doud	0799 073653	Sdaud_seedco@yahoo.com
5	Bamyan Bastan	2004	11	Bamyan, Bamyan	Mohd Hussan	0799 333875	
6	Shiekh Maruf Karokhi	2004	7	Karokh, Herat	Sayed A. Qadir	0798 150912	Ksc_herat@yahoo.com
7	Dorokhshan	2004	7	Kushak, Herat	Haji Mohd Arif	0799 358641	Dorokhshan@ymail.com
8	Hambastagi	2004	12	Gozara, Herat	Abdul Qadir	0700 425776	Hambastagi@ymail.com
9	Sara-e-Sang	2004	12	Taloqan, Takhar	Ghulam Sarwar	0700 701277	Ssang_seedco@yahoo.com
10	Khwaja Kafer Baba	2004	10	Char dara, Kunduz	Lal Jan	0799 206478	Kkbaba_seedco@yahoo.com
11	Puli Khushti	2004	9	Ali Abad, Kunduz	Mullah Bashir	077 7209341	Pkhishti_seedco@yahoo.com
12	Khalil Mohmand	2004	10	Archi, Kunduz	Abdul Ghafar	0799 897941	Kmomand_seedco@yahoo.com
13	Imam Sahib	2004	10	Imam Sahib, Kunduz	Ghulam Rasool	0799 108408	Isahib_seedco@yahoo.com
14	Abuza-i-Ghafari	2004	9	Khanabad, Kunduz	Mehman Dost	077 4405019	Azghafari_seedco@yahoo.com
15	Sharq	2006	8	Jalalabad, Nangrahar	Saida Jan Abdiani	0700 617596	Saidajan_abdiani@yahoo.com
16	Noor Brothers	2006	1	Nahi4, Kabul	Abdul Wahed	0799 305096	nooragco@yahoo.com
17	Khwaja Mohd Mousafer	2006	8	Injil, Herat	Faiz Ahamad	0799 208720	kmmssc@ymail.com
18	Nahri Sayed	2007	7	Taloqan, Takhar	M. Akram Kargar	0700 706783	Nsayed_seedco@yahoo.com
19	Nangarahar	2006	9	Behsood, Nangarhat	Ghulam Nabi	0799 963822	spwa_jalalabad@yahoo.com
20	Sabzi Motmian	2006	5	Taloqa, Takhar	Mohammad	0700 274409	Smotmain_seedco@yahoo.com
21	Ulfat	2006	7	Qarghai, Laghman	Abdul Hafiz	0799 671580	
22	Shikhul Islam Herawi	2007	8	Injial, Herat	Abdul Hamid	0799 567808	Heravi@ymail.com
23	Helmand Etehad	2008	5	Helmand	Haji Hatam	0799 533023	
24	Bahar	2007	7	Shulgar, Balkh	Assadullah	0797 693792	Bahar_seeds@yahoo.com
25	Teamor Sohrab	2007	7	Sari Pul	Azizullah	0799 606877	Timorsuhrab_seeds@yahoo.com
26	Kunar	2006	4	Center, Kunar	Shazada	077 4397276	
27	Miarwayes	2007	6	Mohd Agha, Logar	Miarwayes	077 4367481	
28	Parwan	2008	5	Bagram, Parwan	Abdul Qaher	0799 386117	
29	Noor-e-Harawi	2007	7	Kunduz, Center	Haji Akbar	0799 446096	

Annex 2: Characteristics of improved wheat varieties and sowing dates

No	Variety	Salient characteristics	Recommended agro-ecological zones	Optimum dates for sowing by zones				
				Central	Western	Eastern	Southern	Northern
1	IRRIGATED Pamir-94	Facultative bread wheat with height of 97 cm. Grain color: light red and white chaff color. Days to maturity: 279 days in cool areas and 199 days in mild winter areas.	All zones. Higher yield in cooler areas.	Oct	Nov	Oct - Nov	Oct - Nov	Nov
2	Gul-96	Facultative with winter hardiness. Prostrate growth habit. Grain color: amber; chaff color: white. Plant height: 98 cm. Days to maturity: 287.	Cold and mild winter locations	Oct - Nov	Nov	Oct - Nov	Oct - Nov	Nov - Dec
3	Solh-02	Bread wheat Grain color: amber, chaff color: white. Days to maturity: 280 days in cool areas and 200 days in mild areas.	Cold and mild winter locations	Oct	Nov	Oct - Nov	Oct - Nov	Nov
4	Rana-96	Facultative bread wheat with semi prostrate growth habit. Days to maturity: in cool areas: 286 days. Plant height: 95 cm; Grain and chaff color: white.	Cold and mild winter areas	Oct	Nov	Oct - Nov	Nov	Nov - Dec
5	Amu-99 (Bloyka)	Bread wheat. Days to maturity: 267 in cool areas, 204 in mild winter areas, and 185 in warm areas. Growth habit: erect; chaff color: white; and grain color: amber.	Wide adaptability	Oct	Nov	Oct - Nov	Oct - Nov	Nov - Dec
6	Bakhtawar-92 (Kauz)	Facultative early maturity, amber grain color, white chaff color, 86cm height, resistant to rusts.	Lower elevations	Mar - Apr	Nov - Feb	Nov - Dec	Nov - Mar	Nov - Feb
7	Takhar -96	Facultative early maturing variety. Grain color: dark amber; chaff color: white; plant height: 99 cm.	Low elevation and mild winter	Mar - Apr	Nov - Dec	Nov	Nov - Mar	Jan - Feb
8	Roshan-96	Facultative medium maturing. Grain color: amber; chaff color: white; growth habit: semi-erect; plant height: 94 cm.	Wide adaptability	Mar - Apr	Nov	Nov	Nov - Mar	Nov - Jan
9	Herat- 99	Bread wheat. Days to maturity: 228 days In cold areas, 205 days in mild winter areas and 182 days in warm areas. Growth habit: erect ; plant height: 96cm; grain color: amber; and chaff color: white.	Wide adaptability	Mar - Apr	Nov	Nov	Nov - Mar	Nov - Jan
10	Mazar-99 (Pastor)	Bread wheat. Days to maturity: 250 days in cold areas, 206 days in mild winter areas and 180 days in warm areas. Grain color: amber, chaff color: white. Height: 94 cm.	Wide adaptability	Mar - Apr	Nov	Nov	Nov - Mar	Nov - Jan
11	Parva-2	Durum wheat. Resistant to sunn pest and birds. Early maturity up to 160 days	Wide adaptability	Mar - Apr	Nov - Mar	Nov	Nov - Mar	Jan - Feb
12	PBW-154	Bread wheat with amber grain color and red chaff. Susceptible to frost.	Wide adaptation in irrigated areas	Mar - Apr	Dec - Mar	Nov	Dec - Mar	Nov - Mar
13	Ariana-07	Facultative Bread Wheat	Can be planted in two seasons	Nov-Mar	Nov-Mar	Nov.-Dec	Nov-Dec.	Nov-Dec.
14	Darulaman-07	Facultative Bread Wheat	Can be planted in two seasons	Oct-Mar	Nov-Feb	Nov.-Dec	Nov-Dec.	Nov-Dec.
15	Dorukhshan-08	Facultative Bread wheat. Days to maturity: 166 days. Grain colour amber; plant height: 93 cm.	Can be planted in two seasons	Oct-Mar-	Nov-Feb	Nov.-Dec.	Nov-Dec.	Nov-Dec.
16	Shesham Bagh-08	Facultative Bread wheat. Days to maturity: 167 days. Grain colour light amber; plant height: 95 cm.	Can be planted in two seasons)	Oct-Mar	Nov. Mar	Nov.-Dec.	Nov-Dec.	Nov-Dec.
17	RAINFED Lalmi-1 (Fow-1)	Bread wheat. Days to maturity: 156 days. Grain color: red, chaff color: white; plant	Rain-fed areas	Mar - Apr	Jan - Feb	-	-	Jan - Feb

		height: 80 cm.						
18	Lalmi-2 (Bobwhite)	Bread wheat. Days to maturity: 153 days. Grain color: amber, chaff color: white; plant height: 83 cm.	Rain-fed areas	Mar - Apr	Jan - Feb	-	-	Jan - Feb
19	Lalmi-3 (Florkwa-3)	Bread wheat. Days to maturity: 153 days. Grain color: amber; plant height: 78 cm.	Rain-fed areas	Mar - Apr	Jan - Feb	-	-	Jan - Feb
20	Ghori- 96	Bread wheat. Days to maturity in low elevation areas: 175 days; grain color: amber; chaff color: white.	Rain-fed areas	Mar - Apr	Jan - Feb	-	-	Jan - Feb
21	Daima-96	Bread wheat. Early maturing. Days to maturity: 175 days in Herat and 113 days in Baghlan & Takhar. Grain color: amber.	Rain-fed areas	Mar - Apr	Jan - Feb	-	-	Jan - Feb

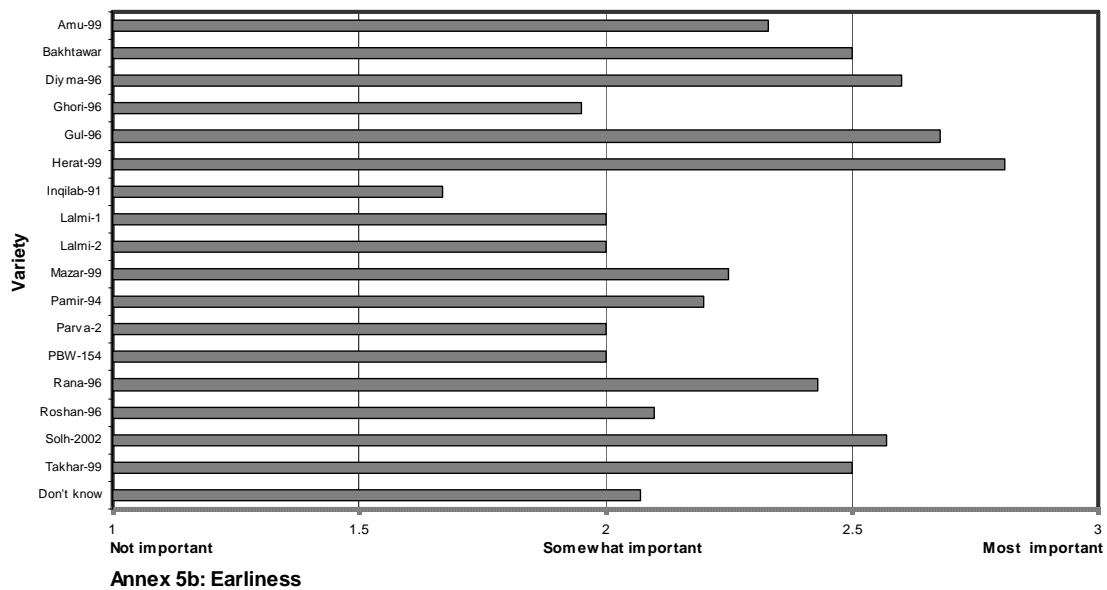
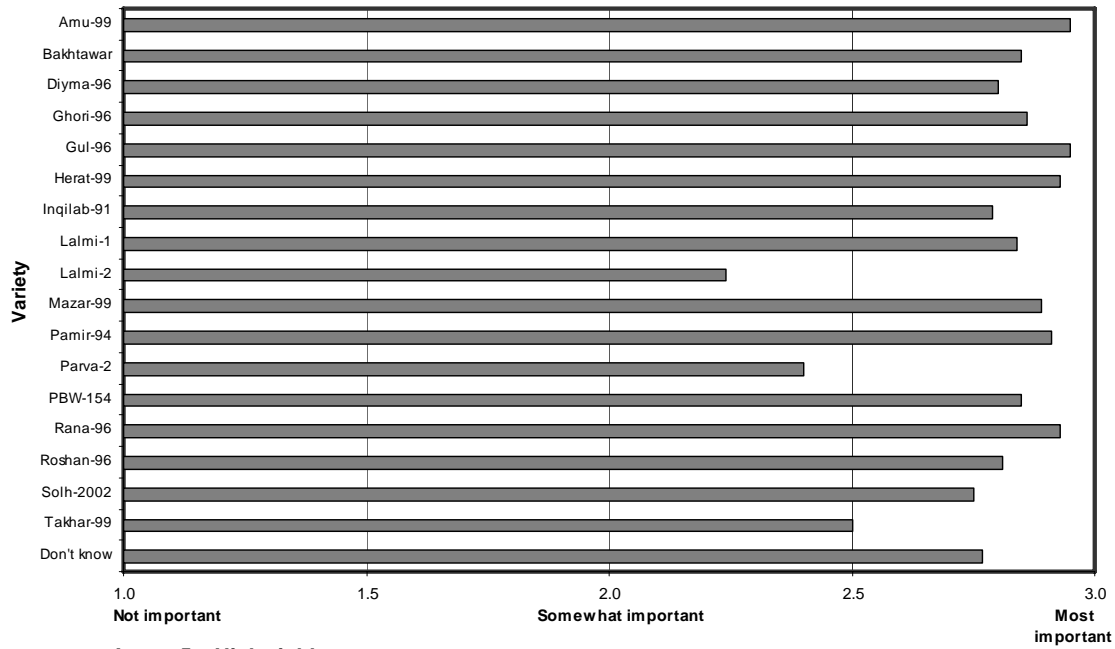
Annex 3: Pedigrees, year of release and origin of improved wheat varieties

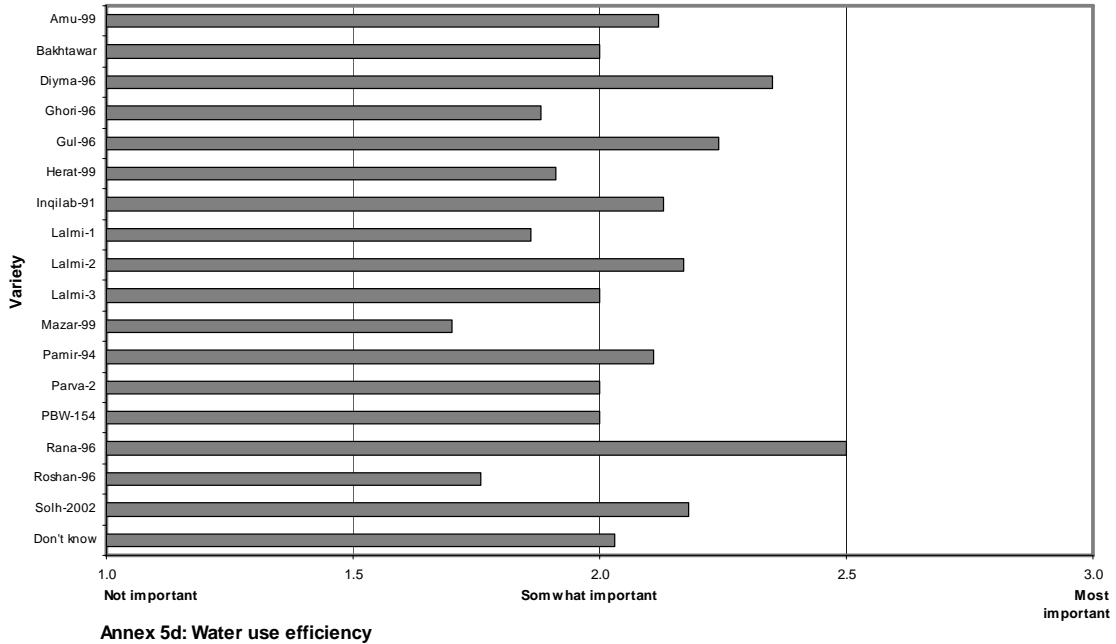
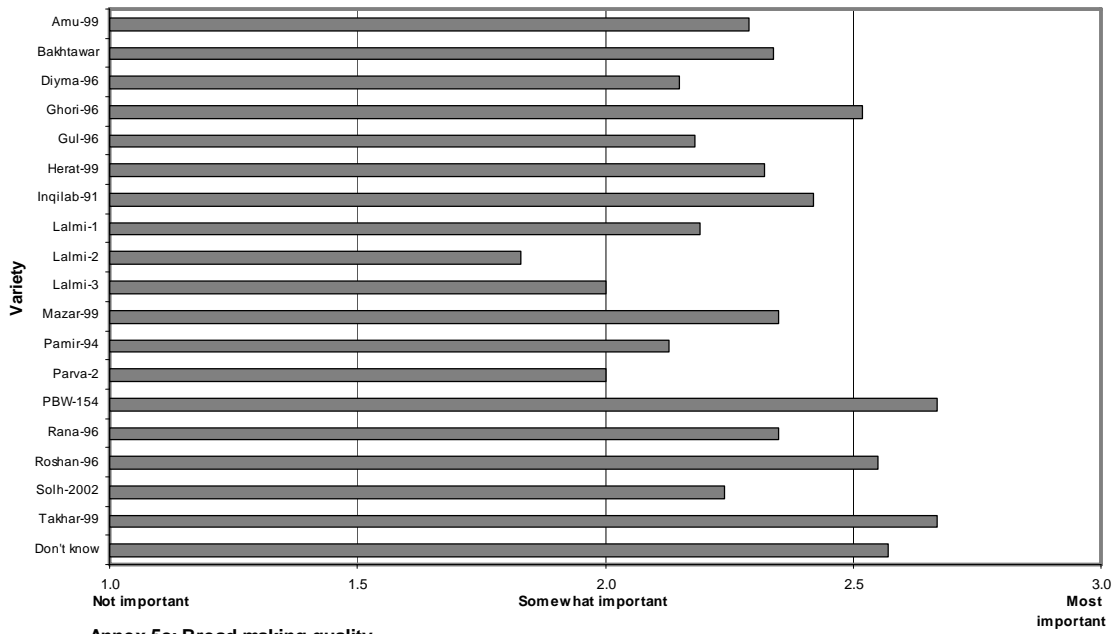
	Variety	Year of Release	Pedigree/ Cross Number	Origin of introduction
1	Pamir-94	1994	YMH/TOB/3/LIRA SWM12289-7M-0M-8M-OYE	CIMMYT/Turkey
2	Gul-96	1996	ID 8009994.W/VEE SWM15134-2WM-OWM-OSE-1YC-OYC	CIMMYT/Turkey
3	Solh-02	2002	OK82282//BOW//NKT/F4/...	CIMMYT
4	Rana-96	1996	CA8055/6/PATOR/CAL/3/76//BB/CNO15/CAL//CNO/ SN64/4/CNO//NAD/CH ICWH840431-2AP-2AP-2AP-1AP-OAP	CIMMYT/ICARDA
5	Amu-99	1999	BOLYKA ICW84-0008-013AP-300L-3AP-300L-OAP	CIMMYT/ICARDA
6	Bhaktawar-92	1995	JUP/BJY/URES CM7458-4Y-1M-3Y-1M-3Y-08-OSY	Pakistan
	Kauz	1996	JUP/BJY/URES CM7458-4Y-1M-3Y-1M-3Y-08-OSY	CIMMYT
7	Takhar -96	1996	VEE#7/OPATA	CIMMYT
8	Roshan-96	1996	BLOUNDAN/3/Bb/7C*2//Y50E/KAL*3	CIMMYT/ICARDA
9	Herat- 99	1999	MYNA/VUL/PRL CM97958-OM- 7Y-030M-030M-84-OM	CIMMYT
10	Mazar-99	1999	PASTURE CM85295-0101TOPY-2M-OY-OM-3Y-OM	CIMMYT
11	Parva-2	2003	CHTO/ARDEA/SRN 2 CD74825-C-5M-1Y-040M-2YRC-2M-0YRC	CIMMYT
12	PBW-154	1995	HD2177/HD2160	India
13	Lalmi-1	2000	FIW-1 SWM11147-1AP-2AP-1AP-1AP-OAP	CIMMYT/ICARDA
14	Lalmi-2	2000	BOBWHITE/MN ... ICW88-063-1AP-OL-1AP-2AP-OTS-OAP	CIMMYT/ICARDA
15	Lalmi-3	2000	FLOKWA ICW84-0074-02AP-3002-1AP-OL-OAP	CIMMYT/ICARDA
16	Ghori- 96	1996	PRL"/S"/PEW CM59377-3AP-1AP-3AP2AP-1AP-OAP	CIMMYT/ICARDA
17	Daima-96	1996	HD2206/HORK/BUC/BUL	CIMMYT
18	Ariana-07	2007	PASTOR/3/KAUZ*2/OPATA//KAUZ CID/SID: 133513/256	CIMMYT
19	Darulaman-07	2007	Weaver/4/Nac/Th.ac/3*PVN/3/mirio/bur CID/SID:133428/104	CIMMYT
20	Dorukhshan-08	2008	CNDO/143/ENTE/MEXI_2/3AE.GILOPS/SQUARROSA (TAUS) /4 WEAVER/5/2*KAUZ (MX101-02/M24ESWYT\19)	CIMMYT
21	Shesham Bagh-08	2008	SW89 5181/ KAUZ “ MX102-03\M25ESWYT\14”	CIMMYT

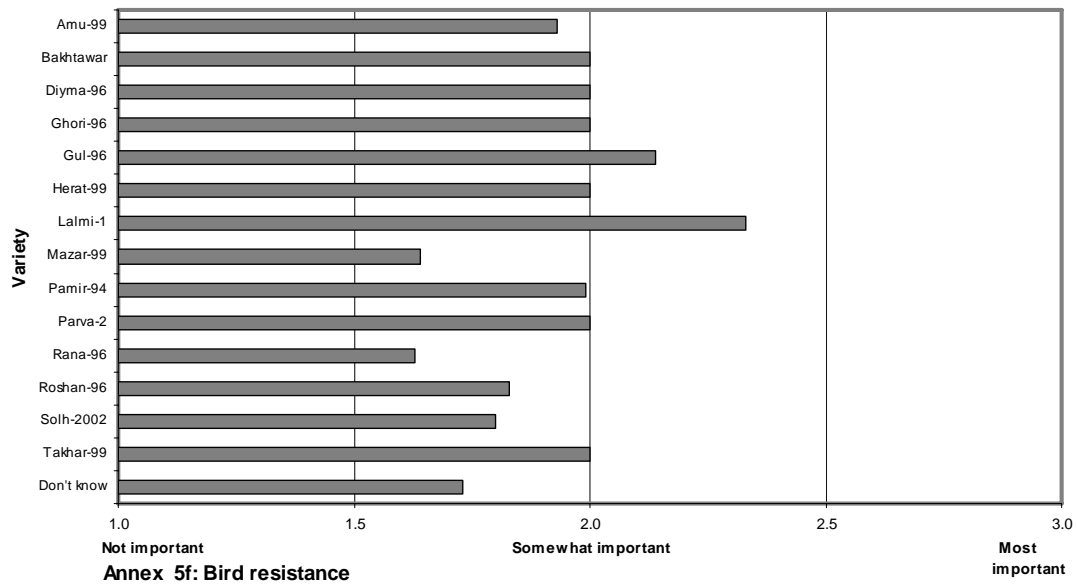
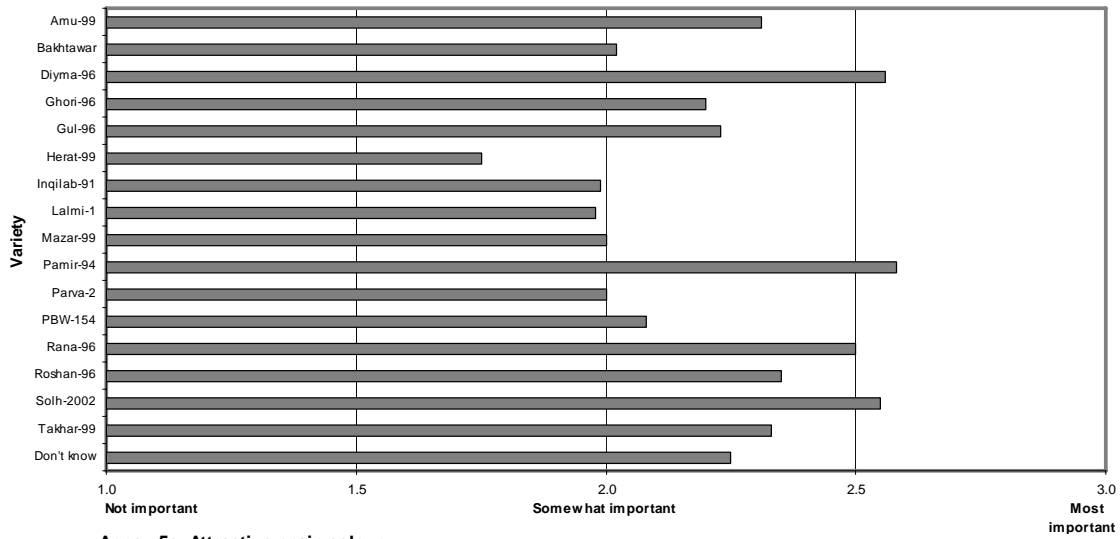
Annex 4: Local wheat varieties grown in different regions of Afghanistan

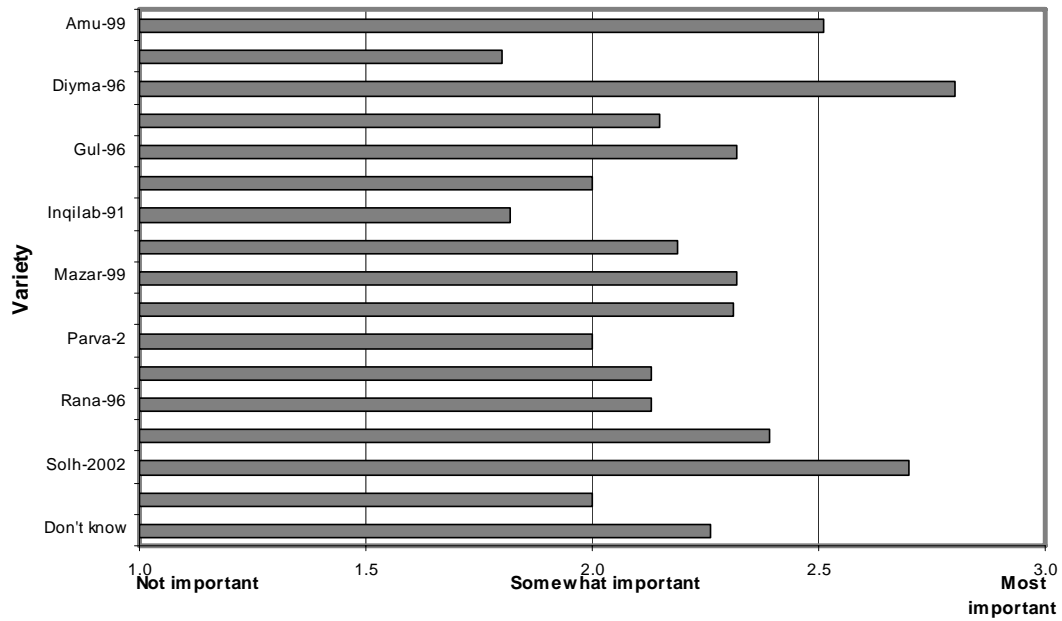
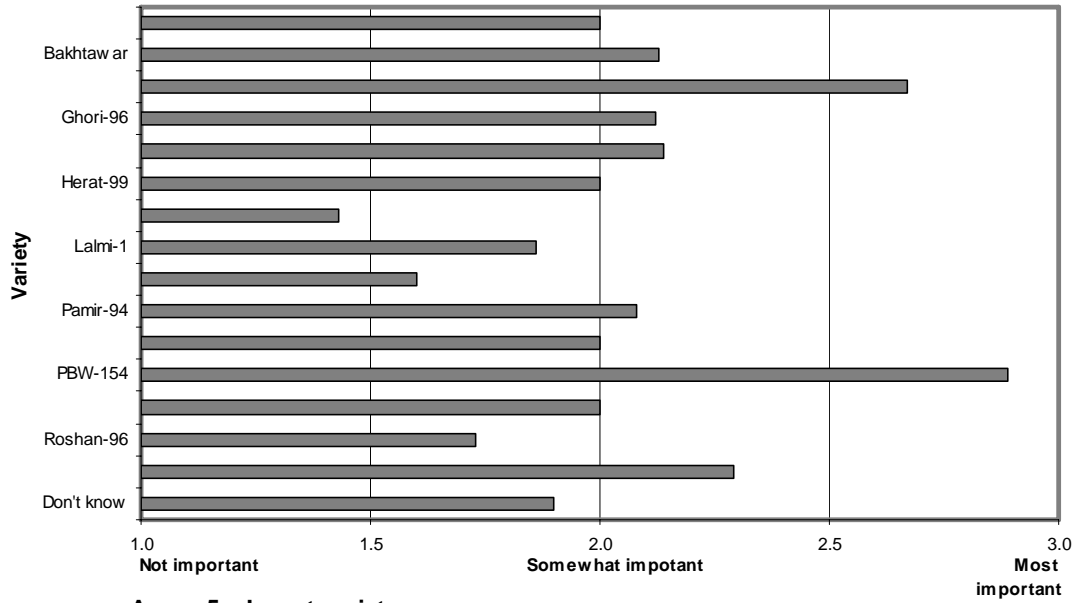
	Variety	Local variety present in this region						
		North-East	North	West-Central	South	West	Central	East
1	Ataya	-	-	-	-	-	Yes	-
2	Bakhtar	-	Yes	-	-	-	-	-
3	Garma	-	-	-	Yes	-	-	-
4	Kalak	-	-	-	Yes	Yes	-	-
5	Kalak Surkh Khusha	-	-	Yes	-	Yes	Yes	-
6	Kandahari	-	-	-	Yes	-	-	-
7	Khushhal	-	-	-	-	-	Yes	Yes
8	Kul Gandum	-	Yes	-	-	-	-	-
9	Kunduzi	-	Yes	-	-	-	-	-
10	Maxsipak	-	Yes	-	-	-	Yes	Yes
11	Monji	-	-	-	-	-	-	Yes
12	Morcha	-	-	-	-	-	-	Yes
13	Moray	-	Yes	-	-	-	-	-
14	Safedak	-	Yes	-	Yes	-	Yes	-
15	Sarda	-	-	-	Yes	-	-	-
16	Surkha	Yes	Yes	-	Yes	-	Yes	Yes
17	Watani	-	Yes	-	Yes	-	-	-
18	Yak Bar Hazar	-	Yes	-	-	-	-	-
19	Yak Bar Sad	-	Yes	-	-	-	-	-
20	Zardana	Yes	Yes	-	-	-	-	Yes
21	Don't know	Yes	Yes	Yes	-	-	Yes	Yes

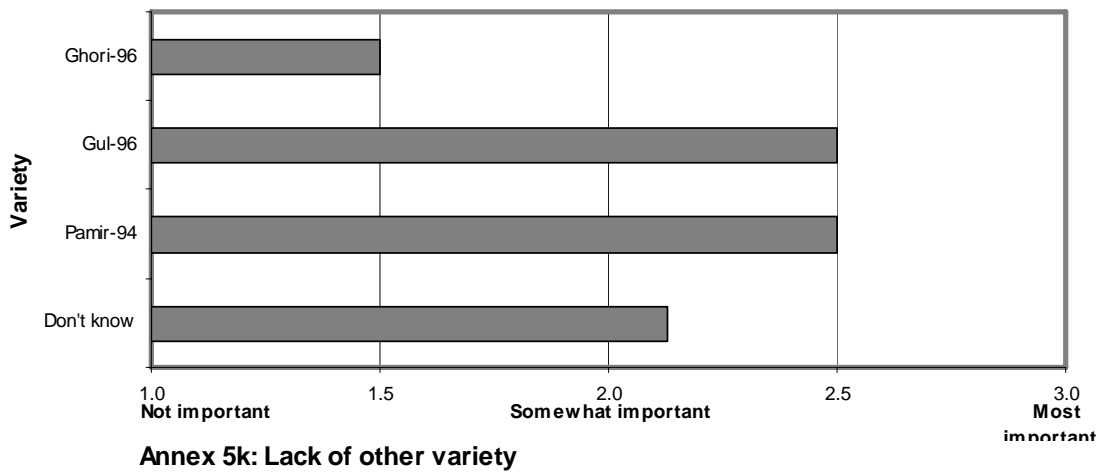
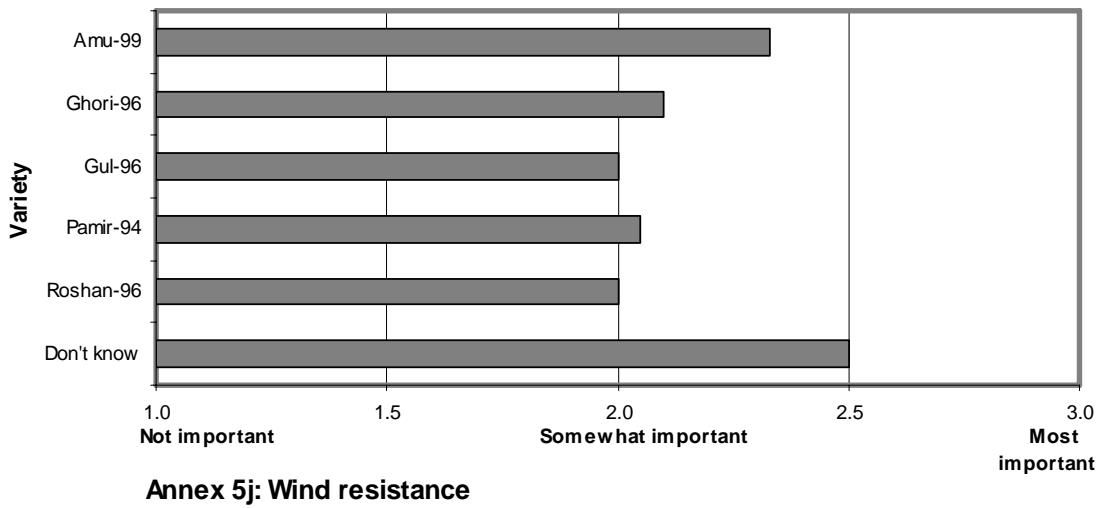
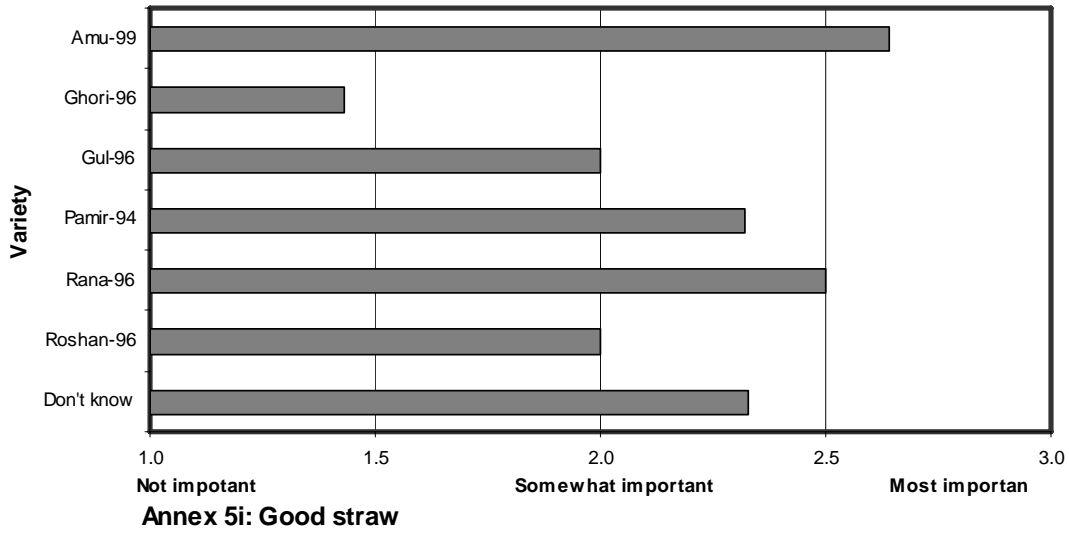
Annex 5. Farmers' ranking of improved variety attributes



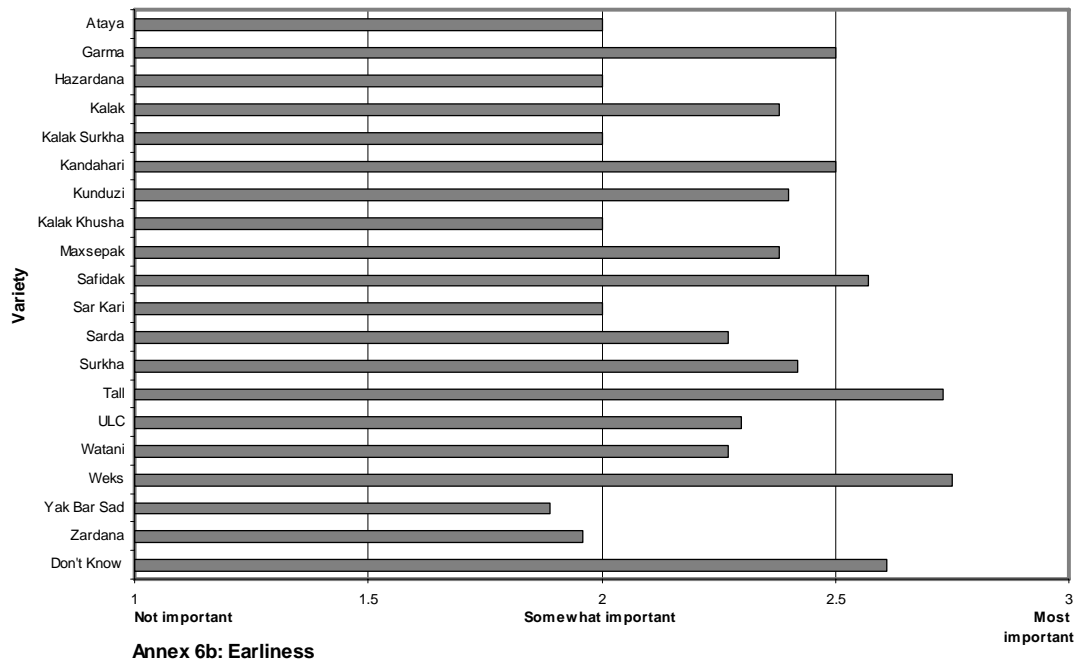
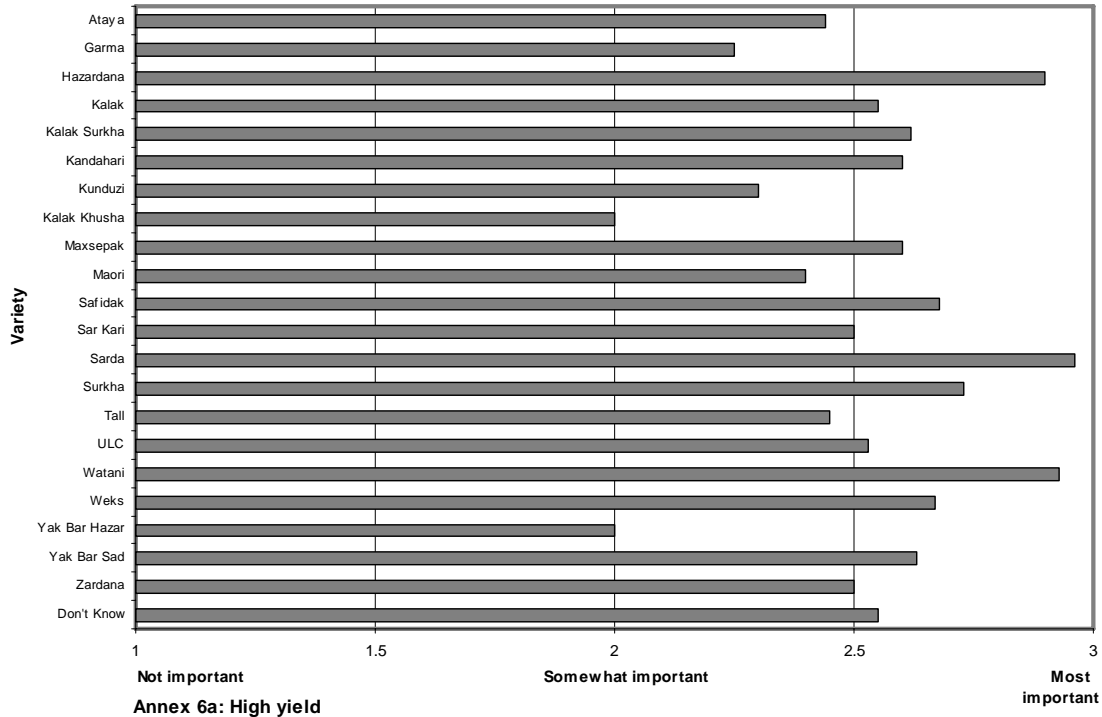


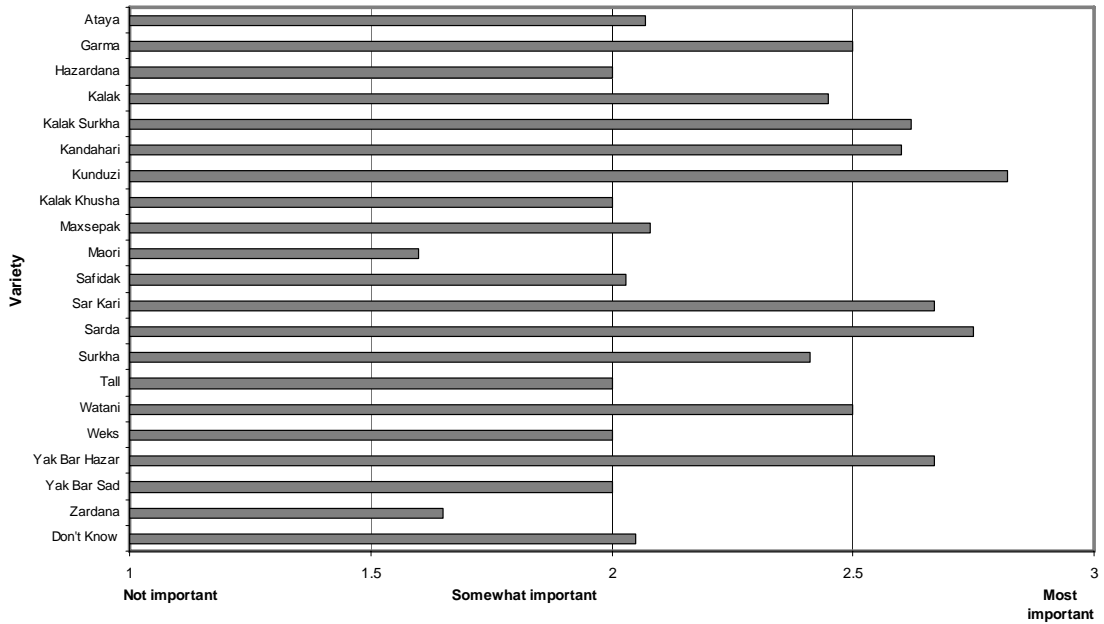
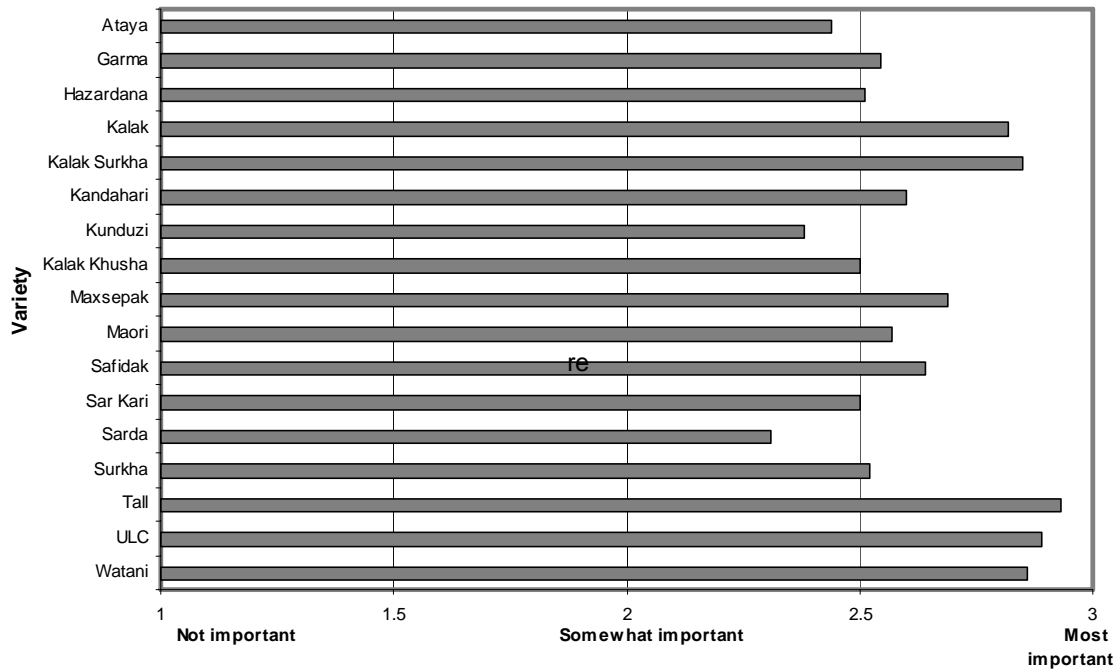


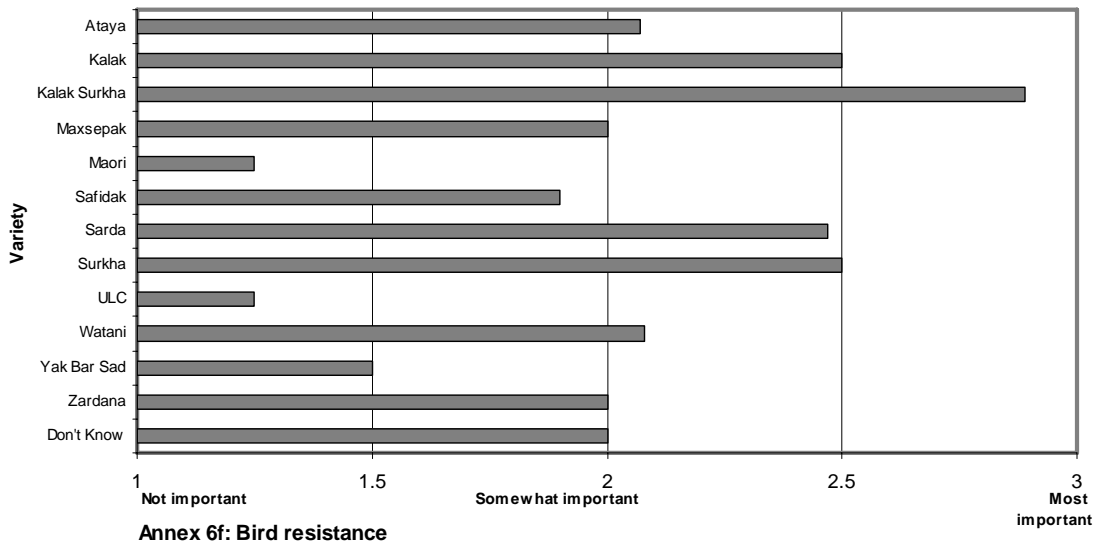
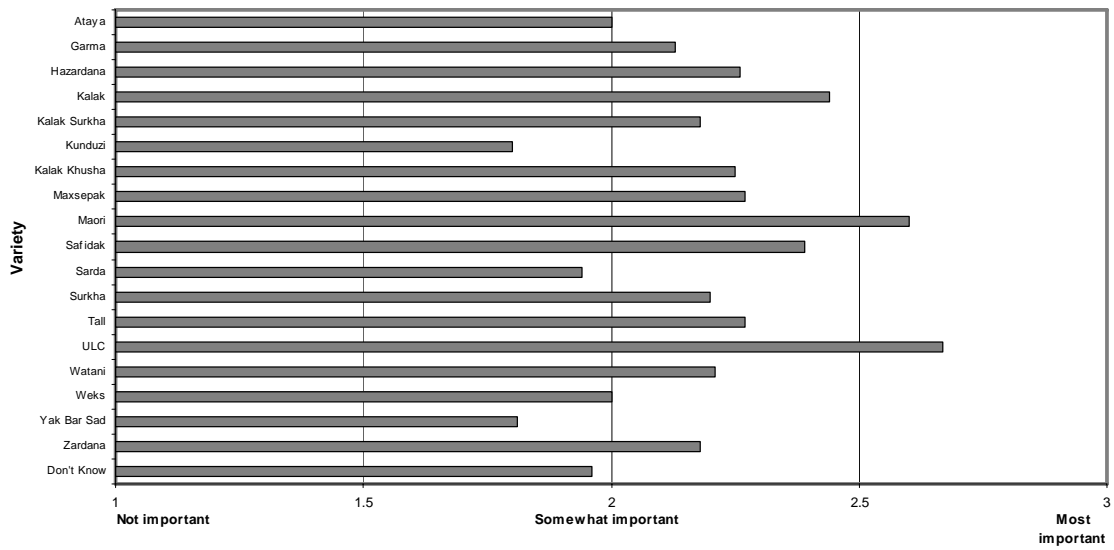


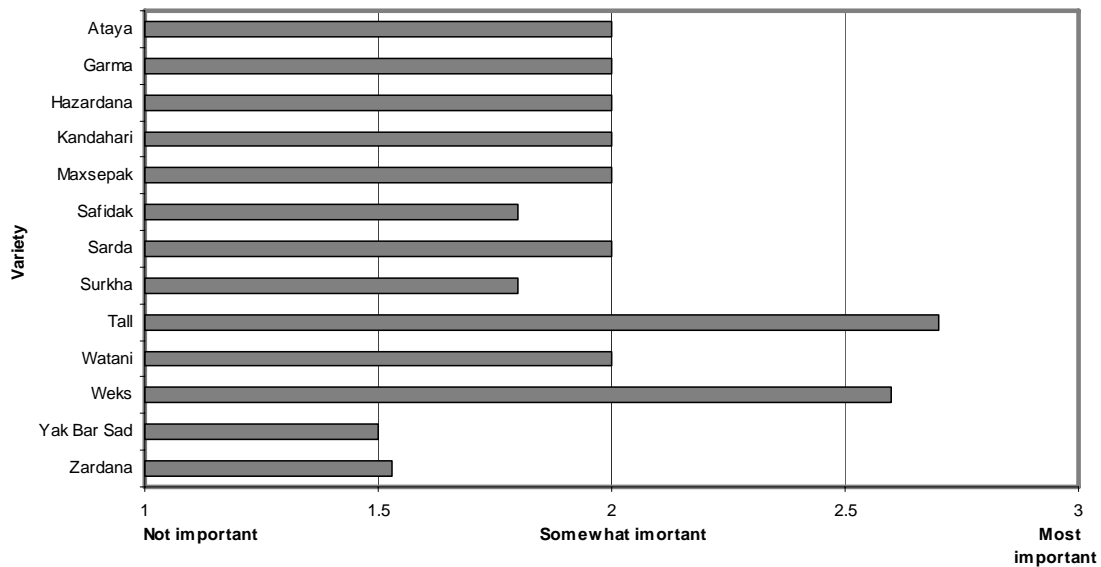


Annex 6. Farmers' ranking of local variety attributes

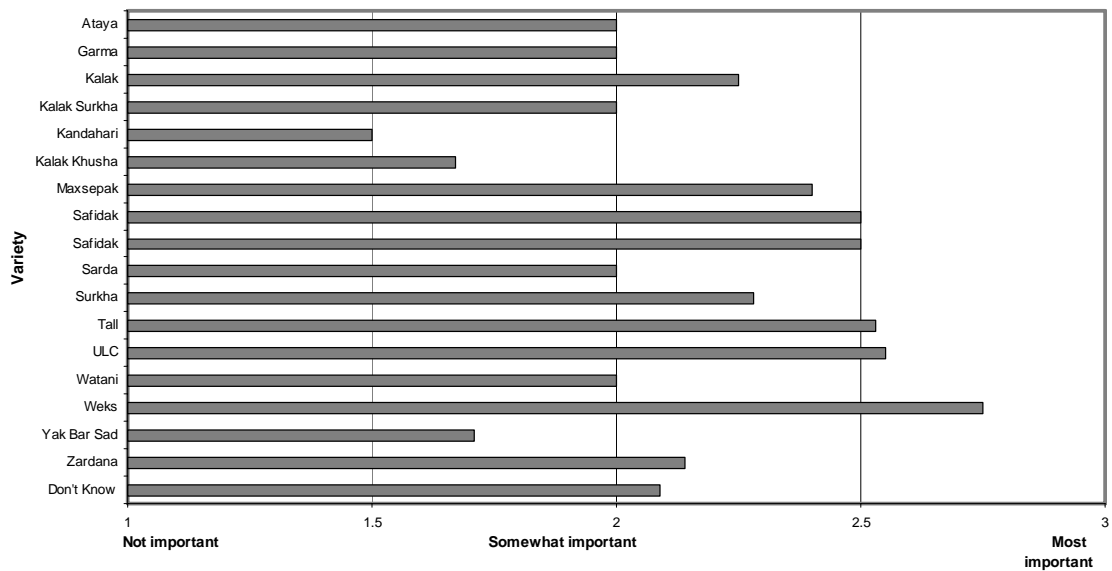




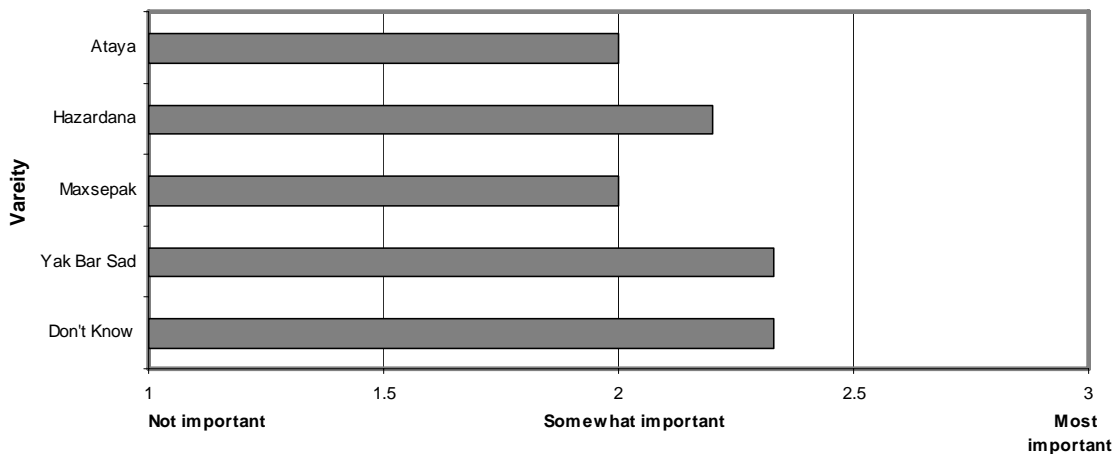




Annex 6g: Insect resistance



Annex 6h: Rust resistance



Annex 6i: Good straw

Annex 7: Questionnaires

QUESTIONNAIRE 1
(Seed Producing Enterprises)

سوالنامه برای تصدی تولید تخم

Province ولایت		Name of member interviewed اسم مصاحبه شونده	
District ولسوالی		Position of member interviewed موقف ان	
Village قریه		Name of Enumerator اسم سرویر	
Name of Enterprise اسم تصدی		Date of interview تاریخ مصاحبه	

01	What kind of Seed Enterprise do you own? Yes=1, No=0 نوعیت تصدی تخم شما چه قسم میباشد 1=بلی 0=نی	Private Enterprise? تصدی شخصی	
		Government Enterprise? تصدی حکومتی	
		Village Based Enterprise? تصدی به سطح قریه	
02	Who introduced the idea of private enterprise to you? توسط کی مفکوره تصدی شخصی برای شما معرفی شده اند Yes=1, No=0 1=بلی 0=نی	FAO project توسط اف ایی او	
		ICARDA project توسط ایکاردا	
		Ministry of Agriculture وزارت زراعت	
		No one هیچ کس	
		Other Enterprises دیگر تصدی	
		Other (specify) دیگر واضح شود	
03	When was your enterprise established? Yes or No تصدی شما چه وقت تاسیس شده اند 1=بلی 0=نی	Pre 2004 قبل از 2004	
		2004	
		2005	
		2006	
04	How many seed growers do you have? تعداد دهاقین قراردادی شما	Number تعداد	
05	What was your starting capital? سرمایه ابتدایی تان چند دالر بود	US\$ دالر	
06	Who provided this starting capital? Yes or No and %	Provider تهیه کننده	% فیصدی

	سرمایه ابتدایی توسط کی برای تان تهیه شده بود به فیصدی بنویسید	FAO project توسط اف ایی او																																								
		ICARDA project توسط ایکاردا																																								
		Members of enterprise اعضا تصدی																																								
		Own sources منابع شخصی																																								
		Family members اعضا فامیل																																								
		Other و غیره																																								
07	Which varieties did your contract growers grow and how many Jerib of each variety in total? دهاقین قرار دادی شما کدام وراثتی ها را کشت نموده اند؟ اندازه زمین هر وراثتی به جریب؟ حاصل متوقع آن به تن	<table border="1"> <thead> <tr> <th>Variety اسم وراثتی</th> <th>Jerib ساحه کشت به جریب</th> <th>Tons expected حاصل به تن</th> </tr> </thead> <tbody> <tr> <td>Amu-99 امو-99</td> <td></td> <td></td> </tr> <tr> <td>Heart-99 هرات-99</td> <td></td> <td></td> </tr> <tr> <td>PBW-154 پی بی دبلیو-154</td> <td></td> <td></td> </tr> <tr> <td>Lalmi-2 للمی-2</td> <td></td> <td></td> </tr> <tr> <td>Ghori-96 غوری-96</td> <td></td> <td></td> </tr> <tr> <td>Daima-96 دایمه-96</td> <td></td> <td></td> </tr> <tr> <td>Parva-22 پروا-22</td> <td></td> <td></td> </tr> <tr> <td>Pamir-94 پامیر-94</td> <td></td> <td></td> </tr> <tr> <td>Solh-2002 صلح-2002</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Variety اسم وراثتی	Jerib ساحه کشت به جریب	Tons expected حاصل به تن	Amu-99 امو-99			Heart-99 هرات-99			PBW-154 پی بی دبلیو-154			Lalmi-2 للمی-2			Ghori-96 غوری-96			Daima-96 دایمه-96			Parva-22 پروا-22			Pamir-94 پامیر-94			Solh-2002 صلح-2002												
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Solh-2002 صلح-2002																																										
08	What total quantity of raw seed did you buy from your contract growers in 2006? در سال 2006 چه مقدار تخم نا خالص را از دهاقین قراردادی به دست آورده بودید	Ton تن																																								
09	What total quantity of cleaned seed did you get after processing your raw seed in 2006? بعد از پاک کاری تخم نا خالص در سال 2006 چه مقدار تخم پاک را به دست آورده بودید	Ton تن																																								
10	How many members does your enterprise have?	Number of persons																																								

	اعضا تصدی شما چند نفر است	تعداد افراد	
11	How much did each member contribute on average to start the enterprise? اوسط سهم گیری اعضا در شروع تصدی چند دالر بود	Average in US \$ اوسط به دالر	
12	Which assets do you have? Yes=1, No=0 کدام وسایل را دارا میباشید 1=بلی 0=نی	Processing machine ماشین پاک کاری تخم	
		Seed store تخم گدام برای تخم	
		Tractor تراکتور	
		Vehicle موتر	
		Motorcycle موتر سیکل	
		Thrasher تریشر	
		Generators جنریتور و غیره Other	
13	Where is your enterprise registered? Yes=1, No=0 تصدی شما در کجا راجستر میباشد 1=بلی 0=نی	Ministry of Agriculture وزارت زراعت	
		Ministry of Commerce وزارت تجارت	
		No where هیچ جای	
14	What price did you pay for raw seed you bought from your contract growers? قیمت یک کیلو تخم نا خالص که از دهقان قراردادی خریدید چند افغانی بود	قیمت یک کیلو به افغانی	
15	What total quantity of cleaned seed did you sell to your customers in 2006? مقدار تخم پاک فروخته شده بالای مشتریان در سال 2006 چند تن بود	تن	
16	What price did you charge for the cleaned seed you sold? قیمت یک کیلو تخم پاک چند افغانی بود	قیمت یک کیلو گرام به افغانی	
17	What quantity of cleaned seed do you still have in store that has not been sold? مقدار تخم موجود در گدام که فروخته نه شده است	تن	

18	Why was your cleaned seed that is still in store not sold? تخم که در گدام موجود است چرا فروخته نه شده اند 1=بلی 0=نی	No customer مشتری موجود نبود	
		Seed rejected by laboratory توسط لابراتوار مسترد شده	
		Seed kept for another season برای فصل دیگر نگهداری شده اند	
		Other: (specify) و غیره واضح شود	
19	Which type of customers bought your cleaned seed and what quantity did each buy in 2006?	Name اسم مشتری	tone bought

	در سال 2006 کدام نوع مشتری به چه مقدار تخم شما را خریداری کرده اند		مقدار به تن
		Aid agencies موسسه کمک دهنده	
		MAIL وزارت زراعت	
		Farmers دهقانان	
		Other و غیره	
20	How many field days have you organized? تعداد روز های نمایشی که توسط شما تنظیم گردیده اند؟	Number تعداد	
21	How many farmers attended the field days? تعداد دهاقین در روز های نمایشی	Number تعداد	
22	Which other seed crops would you like to produce in addition to wheat? Rank in order of importance 1-3 (1= less important 2=Somewhat important, 3=Most important) بر علاوه گندم شما علاقمند کدام نبات هستید که تخم انرا تولید کنید به ترتیب اهمیت از 1-3 در چه بدهید 1= کم مهم 2=نسبتا مهم 3= بسیار مهم	Rice برنج	
		Cotton پخته	
		Vegetables سبزیجات	
		Pulses حبوبات	
		Oil seed نباتات تیلی	
		Melon خربوزه	
	Other و غیره		

23	<p>Which customers do you think will buy seed of the other crops you would like to produce? Rank in order of importance 1-3 (1= less important 2=Somewhat important, 3=Most important) چه فکر میکنید که کدام نوع مشتری تخم این نباتات را خریداری خواهند نمود به ترتیب اهمیت از 1-3 درجه بدهید 1=کم مهم 2=نسبتاً مهم 3=بسیار مهم</p>	Aid agencies موسسه کمک دهنده	
		MAIL وزارت زراعت	
		Farmers دهقانان	
		Other و غیره	
24	<p>Apart of the seed business, which other seed related business opportunities would you like to undertake to make your enterprise more commercially viable? Rank in order of importance 1-3 (1= less important 2=Somewhat important, 3=Most important) در پهلوی تولید تخم علاقمند کدام کار و بار دیگر میباشید که با تخم رابطه داشته باشد تا تصدی شمارا بیشتر تجارتي سازند به ترتیب اهمیت از 1-3 درجه بدهید 1=کم مهم 2=نسبتاً مهم 3=بسیار مهم</p>	Rice Milling میل برنج	
		Oil Pressing کارخانه روغن	
		Cold storage and sale of fresh vegetables سردخانه برای سبزیجات	
		Tomato paste making جور کردن روب بادنجان رومی	
		Flour milling میل ارد	
		Other (specify) و غیره واضح شود	

QUESTIONNAIRE 2A

(Contract Farmers in Irrigated Areas, using Improved Varieties with Fertilizer)

دهقان قراردادی که در زمین ابی تخم اصلاح شده و کود کیمیاوی استعمال میکند

Province ولایت		Name of Enumerator اسم سرویر	
District ولسوالی		Name of Contract Farmer اسم دهقان قراردادی	
Village قریه		Date of Interview تاریخ مصاحبه	

01	How many jeribs of land did you cultivate by wheat? چند جریب زمین گندم کشت کرده اید	Jerib جریب	
02	How much wheat seed did you sow your land? چند کیلو تخم گندم کشت نموده بودید	Kg کیلو گرام	
03	What wheat variety did you use? کدام وراثتی را کشت کرده اید	Variety name اسم وراثتی	
04	How much did you pay to hire tractor/oxen for ploughing your land? برای قلبه نمودن زمین توسط تراکتور و یا قلبه گاو چند افغانی پرداخته اید	Afs افغانی	
05	How much more did you pay for labour to plough your land? چند افغانی دیگر برای مزدور قلبه پرداخته اید	Afs افغانی	
06	How much did you pay to hire tractor for harrowing your land? برای میده کردن کلوخ زمین توسط تراکتور چند افغانی تادیه کرده اید	Afs افغانی	
07	How much more did you pay for labour to harrow your land? برای مزدور میده کردن کلوخ زمین چند افغانی پرداخته اید	Afs افغانی	
08	What was the price of the wheat seed you planted? قیمت یک کیلو تخم گندم که شما کشت کرده اید چند افغانی بود	قیمت یک کیلو به افغانی	
9	How much DAP fertilizer did you use on your land? چند کیلو گرام کود سیاه (دی ای پی) را در زمین خود استعمال نموده اید	Kg کیلو گرام	
10	What price did you pay for the DAP fertilizer you used? قیمت یک کیلو گرام کود سیاه (دی ای پی) چند افغانی بود	Afs/Kg قیمت یک کیلو به افغانی	
11	How much other fertilizers did you used on your land?	کیلو گرام	

	چند کیلو گرام کود سیاه دیگر را در زمین خود استعمال نموده بودید		
12	What price did you pay for the other fertilizer you used? قیمت یک کیلو گرام کود سیاه دیگر چند افغانی بود	Afs/Kg قیمت یک کیلو به افغانی	
13	How much Urea fertilizer did you use on your land? چند کیلو گرام کود سفید در زمین خود استعمال نموده اید	Kg کیلو گرام	
14	What price did you pay for the Urea fertilizer you used? قیمت یک کیلو گرام کود سفید چند افغانی بود	Afs/Kg قیمت یک کیلو به افغانی	
15	How much did you pay for application of fertilizer, bird control, security, labour, etc? برای استعمال کود، کنترول گنجشک، حفاظت، مزدور و غیره چند افغانی پرداخته اید	Afs افغانی	
16	How much did you pay for irrigating your wheat crop? چند افغانی برای آبیاری گندم پرداخته اید	Afs افغانی	
17	How much did you pay for weeding your wheat crop using herbicide and or labour? برای خیشاوه و استعمال ادویه گیاه هرزه چند افغانی پرداخته اید	Afs افغانی	
18	How much did you pay for roguing your wheat crop? چند افغانی برای پاک کاری گندم ارجل (روگنیگ) تادیه نموده اید	Afs افغانی	
19	How much did you pay for harvesting your wheat crop including cost of fuel, lubricants, casual labour, etc? چند افغانی برای درو گندم مصرف کرده اید (شامل تیل ماشین آلات، مزدور و غیره میباشد)	Afs افغانی	
20	How much did you pay for threshing your wheat crop including cost of fuel, lubricants, casual labour, etc? چند افغانی برای تریشر کردن گندم پرداخته اید (شامل تیل ماشین آلات، مزدور و غیره میباشد)	Afs افغانی	
21	How much did you pay for transporting all your wheat crop including cost of fuel, lubricants, casual labour, etc? چند افغانی برای انتقالات گندم مصرف کرده اید (شامل تیل ماشین آلات، مزدور و غیره میباشد)	Afs افغانی	
22	How much did you pay for pre-cleaning your wheat crop including cost of fuel, lubricants, casual labour, etc? برای پاک کاری گندم بعد از تریشر چند افغانی مصرف کرده اید (شامل تیل ماشین آلات، مزدور و غیره میباشد)	Afs افغانی	
23	How many bags did you use for your total wheat harvest? چند بوجی برای نگهداری گندم استعمال نموده اید	No. of bags تعداد بوجی	
24	How much did you pay for each bag? قیمت یک بوجی خالی چند افغانی میباشد	Afs/bag قیمت یک بوجی به افغانی	

25	Which other additional miscellaneous costs did you pay in total? اگر مصارف متفرقه دیگر موجود باشد چند افغانی مصرف کرده اید	Afs افغانی	
26	What was the total harvest from your wheat crop? اندازه حاصل مجموعی گندم شما چند تن میباشد	Tonne تن	
27	What price did you ask for when selling your wheat harvest to the seed company? به کدام قیمت گندم خود را بالای کمپنی تخم فروخته اید	Afs/kg قیمت یک کیلو گرام	
28	Which other crops did you grow in addition to wheat? Rank in order of importance 1-3 (1= less important 2=Somewhat important, 3=Most important) علاوه از گندم کدام نباتات دیگر را کشت نموده اید به ترتیب اهمیت ان از 1-3 درجه بدهید 1= کم مهم 2= نسبتا مهم 3= بسیار مهم	Rice برنج	
		Cotton پخته	
		Vegetables سبزیجات	
		Pulses حبوبات	
		Oil seed نباتات تیلی	
		Melon خربوزه	
		Other و غیره	
29	Did you produce enough seed of the other crops you grew apart from wheat? Yes=1, No=0 ایا شما به اندازه کافی تخم این نباتات را تولید میکنید 1= بلی 0=نی	Rice برنج	
		Cotton پخته	
		Vegetables سبزیجات	
		Pulses حبوبات	
		Oil seed نباتات تیلی	
		Melon خربوزه	
		Other و غیره	
30	For those crops that you did not have enough seed, would you buy quality seed of these crops if it were available? Yes=1, No=0 به انعهه نباتات که شما تخم کافی انرا ندارید اگر تخم خوب ان پیدا شود شما انرا خواهید خرید	Rice برنج	
		Cotton پخته	
		Pulses حبوبات	

	1=بله 0=نه	Oil seed نباتات تیلی	
		Melon خربوزه	
		Other و غیره	
31	From what source would you prefer to buy quality of such crops? Yes=1, No=0 به کدام منبع ترجیح می‌دهید که از آن تخم خوب به دست آورید	Private Enterprise تصدی شخصی	
	1=بله 0=نه	Govt. Enterprise تصدی حکومتی	
		NGOs موسسه غیر دولتی	
		Local Market بازار محلی	
		Other farmers دیگر دهقانان	
32	For the sources you prefer, why would you buy seed from them? Rank in order of importance 1-3 (1= less important 2=Somewhat important, 3=Most important) به منبع که شما ترجیح می‌دهید چرا از آن تخم خریداری می‌کنید به ترتیب اهمیت از 1-3 درجه بدهید	Cheap price نرخ ارزان	
		Good quality کیفیت خوب	
		Trustworthy قابل اعتماد	
		Reliable مطمین	
	1=کم مه 2=نسبتاً مهم 3=بسیار مهم	Honest صادق	
		Source of credit منبع قرض	
		Well known شهرت خوب دارد	
		Other (specify) و غیره واضح شود	

QUESTIONNAIRE 2B

(Contract Farmers in Rainfed Areas, using Improved Varieties with Fertilizer)

دهقان قراردادی للمی کار که کود کیمیاوی و تخم اصلاح شده را استعمال میکند

Province ولایت		Name of Enumerator اسم سرویر	
District ولسوالی		Name of Contract Farmer اسم دهقان قراردادی	
Village قریه		Date of Interview تاریخ مصاحبه	

01	How many jeribs of land did you cultivate by wheat? چند جریب زمین گندم کشت کرده اید	Jerib جریب	
02	How much wheat seed did you sow in your land? چند کیلو تخم گندم کشت نموده بودید	کیلو گرام	
03	What wheat variety did you use? کدام وراثتی گندم را کشت کرده اید	Variety name اسم وراثتی	
04	How much did you pay to hire tractor/oxen for ploughing your land? برای قلبه نمودن زمین توسط تراکتور و یا قلبه گاو چند افغانی پرداخته اید	Afs افغانی	
05	How much more did you pay for labour to plough your land? چند افغانی دیگر برای مزدور قلبه پرداخته اید	Afs افغانی	
06	How much did you pay to hire tractor for harrowing your land? برای میده کردن کلوخ زمین به کرایه تراکتور چند افغانی تادیه کرده اید	Afs افغانی	
07	How much more did you pay for labour to harrow your land? برای مزدور میده کردن کلوخ زمین چند افغانی پرداخته اید	Afs افغانی	
08	What was the price of the wheat seed you planted? قیمت یک کیلو تخم گندم که شما کشت نموده بودید چند افغانی بود	Afs/Kg قیمت یک کیلو به افغانی	
09	How much DAP fertilizer did you use on your land? چند کیلو گرام کود سیاه (دی ای پی) را در زمین خود استعمال نموده اید	کیلو گرام Kg	
10	What price did you pay for the DAP fertilizer you used? قیمت یک کیلو گرام کود سیاه (دی ای پی) چند افغانی بود	Afs/Kg قیمت یک کیلو به افغانی	

11	How much other fertilizers did you used on your land? چند کیلو گرام کود سیاه دیگر را در زمین خود استعمال نموده بودید	کیلو گرام	
12	What price did you pay for the other fertilizer you used? قیمت یک کیلو گرام کود سیاه دیگر چند افغانی بود	Afs/Kg قیمت یک کیلو به افغانی	
13	How much Urea fertilizer did you use on your land? چند کیلو گرام کود سفید در زمین خود استعمال نموده اید	کیلو گرام Kg	
14	What price did you pay for the Urea fertilizer you used? قیمت یک کیلو گرام کود سفید چند افغانی بود	Afs/Kg قیمت یک کیلو به افغانی	
15	How much did you pay for application of fertilizer, bird control, security, labour, etc? برای استعمال کود، کنترل گنجشک، حفاظت، مزدور و غیره چند افغانی پرداخته اید	Afs افغانی	
16	How much did you pay for weeding your wheat crop using herbicide and or labour? برای خیشاوه کردن گندم توسط استعمال ادویه گیاه هرزه و یا مزدور چند افغانی پرداخته اید	Afs افغانی	
17	How much did you pay for roguing your wheat crop? چند افغانی برای پاک کاری گندم ارجل (روگینگ) تادیه نموده اید	Afs افغانی	
18	How much did you pay for harvesting your wheat crop including cost of fuel, lubricants, casual labour, etc? چند افغانی برای درو گندم مصرف کرده اید (شامل مصارف تیل، ماشین الات، مزدور و غیره میباشد)	Afs افغانی	
19	How much did you pay for threshing your wheat crop including cost of fuel, lubricants, casual labour, etc? چند افغانی برای تریشر کردن گندم پرداخته اید (مصارف تیل، ماشین الات، مزدور و غیره میباشد)	Afs افغانی	
20	How much did you pay for transporting all your wheat crop including cost of fuel, lubricants, casual labour, etc? چند افغانی برای انتقالات گندم مصرف کرده اید (مصارف تیل، ماشین الات، مزدور و غیره میباشد)	Afs افغانی	
21	How much did you pay for pre-cleaning your wheat crop including cost of fuel, lubricants, casual labour, etc? برای پاک کاری گندم چند افغانی مصرف کرده اید (مصارف تیل، ماشین الات، مزدور و غیره میباشد)	Afs افغانی	
22	How many bags did you use for your total wheat harvest? چند بوجی برای نگهداری گندم استعمال نموده اید	No. of bags تعداد بوجی	
23	How much did you pay for each bag? قیمت یک بوجی خالی چند افغانی میباشد	Afs/bag قیمت یک بوجی به افغانی	
24	Which other additional miscellaneous costs did you pay in total? اگر مصارف اضافی دیگر موجود باشد چند افغانی مصرف کرده اید	Afs افغانی	

25	What was the total harvest from your wheat crop? اندازه حاصل مجموعی گندم شما چند تن میباشد	Tonne تن	
26	What price did you ask for when selling your wheat harvest to the seed company? به کدام قیمت گندم خود را بالای کمپنی تخم فروخته اید	Afs/Kg قیمت یک کیلو به افغانی	
27	Which other crops did you grow in addition to wheat? Rank in order of importance 1-3 (1= less important 2=Somewhat important, 3=Most important) علاوه از گندم کدام نباتات دیگر را کشت نموده اید به ترتیب اهمیت ان از 3-1 درجه بدهید 1= کم مهم 2= نسبتا مهم 3= بسیار مهم	Rice برنج	
		Cotton پخته	
		Vegetables سبزیجات	
		Pulses حبوبات	
		Oil seed نباتات تیلی	
		Melon خربوزه	
		Other و غیره	
28	Did you produce enough seed of the other crops you grew apart from wheat? Yes=1, No=0 ایا شما به اندازه کافی تخم این نباتات را تولید میکنید 1= بلی 0=نی	Rice برنج	
		Cotton پخته	
		Vegetables سبزیجات	
		Pulses حبوبات	
		Oil seed نباتات تیلی	
		Melon خربوزه	
		Other و غیره	
29	For those crops that you did not have enough seed, would you buy quality seed of these crops if it were available? Yes=1, No=0 به انعهه نباتات که شما تخم کافی انرا ندارید اگر تخم خوب ان پیدا شود شما انرا خواهید خرید؟ 1=بلی 0=نی	Rice برنج	
		Cotton پخته	
		Vegetables سبزیجات	
		Pulses حبوبات	

		Oil seed نباتات تیلی	
		Melon خربوزه	
		Other و غیره	
30	From what source would you prefer to buy quality of such crops? Yes=1, No=0 به کدام منبع ترجیح می‌دهید که از آن تخم خوب به دست آورید 1=بله 0=نی	Private Enterprise تصدی شخصی	
		Govt. Enterprise تصدی حکومتی	
		NGOs موسسه غیر دولتی	
		Local Market بازار محلی	
		Other farmers دیگر دهقانان	
31	For the sources you prefer, why would you buy seed from them? Rank in order of importance 1-3 (1= less important 2=Somewhat important, 3=Most important) به منبع که شما ترجیح می‌دهید چرا از آن تخم خریداری می‌کنید به ترتیب اهمیت از 1-3 درجه بدهید 1=کم مهم 2=نسبتاً مهم 3=بسیار مهم	Cheap price نرخ ارزان	
		Good quality کیفیت خوب	
		Trustworthy قابل اعتماد	
		Reliable مطمین	
		Honest صادق	
		Source of credit منبع قرض	
		Well known شهرت خوب دارد	
		Other (specify) و غیره واضح شود	

QUESTIONNAIRE 3A

(Other Farmers in Irrigated Areas, using Improved Varieties with Fertilizer)

دهقان که در زمین ابی تخم اصلاح شده را همراه با کود کیمیاوی استعمال میکنند

Province ولایت		Name of Enumerator اسم سرویر	
District ولسوالی		Name of Farmer اسم دهقان	
Village قریه		Date of Interview تاریخ مصاحبه	

01	How many jeribs of land did you cultivate by wheat? چند جریب زمین گندم کشت کرده بودید	Jerib جریب	
02	How much wheat seed did you sow in your land? چند کیلو تخم گندم کشت نموده بودید	Kg کیلو گرام	
03	What wheat variety did you use? کدام وراثتی گندم را کشت کرده بودید	Variety name اسم وراثتی	Jerib جریب
		Amu-99 امو-99	
		Heart-99 هرات-99	
		PBW-154 پی بی دبلیو-154	
		Lalmi-2 للمی-2	
		Ghori-96 غوری-96	
		Daima-96 دایمه-96	
		Parva-2 پروا-2	
		Pamir-94 پامیر-94	
		Solh-2002 صلح-2002	
Don't know نمیدانیم			
04	Why did you prefer the varieties you used? Rank answer as 3= most important 2= some what important 1= not important	High Yield حاصل بلند دارد	
		Earliness زود رس است	
		Good for bread نان آن خوب است	

	<p>ورایتی که شما استعمال میکنید چرا با آن ترجیح میدهید؟ از 1-3 درجه بدهید 1= کم مهم 2= نسبتا مهم 3= بسیار مهم</p>	<p>Uses less water اب کم ضرورت دارد</p> <p>Good grain color رنگ دانه آن خوب است</p> <p>Bird resistant در مقابل گنجشک مقاوم است</p> <p>Insect resistant در مقابل حشرات مقاوم است</p> <p>Less rust damage ضایعات در مقابل سرخی کم است</p>	
05	<p>How much did you pay to hire tractor/oxen for ploughing your land? برای قلبه نمودن زمین توسط تراکتور و یا قلبه گاو چند افغانی پرداخته اید</p>	Afs افغانی	
06	<p>How much more did you pay for labour to plough your land? چند افغانی دیگر برای مزدور قلبه پرداخته اید</p>	Afs افغانی	
07	<p>How much did you pay to hire tractor for harrowing your land? برای میده کردن کلوخ زمین توسط تراکتور چند افغانی تادیه کرده اید</p>	Afs افغانی	
08	<p>How much more did you pay for labour to harrow your land? برای مزدور میده کردن کلوخ زمین چند افغانی پرداخته اید</p>	Afs افغانی	
09	<p>What was the price of the wheat seed you planted? قیمت یک کیلو تخم گندم که شما کشت کرده بودید چند افغانی بود</p>	Afs/Kg قیمت یک کیلو به افغانی	
10	<p>How much DAP fertilizer did you use on your land? چند کیلو گرام کود سیاه(دی ای پی) را در زمین خود استعمال نموده اید</p>	Kg کیلو گرام	
11	<p>What price did you pay for the DAP fertilizer you used? قیمت یک کیلو گرام کود سیاه(دی ای پی) چند افغانی بود</p>	Afs/Kg قیمت یک کیلو به افغانی	
12	<p>How much other fertilizers did you used on your land? چند کیلو گرام کود سیاه دیگر را در زمین خود استعمال نموده بودید</p>	Kg کیلو گرام	
13	<p>What price did you pay for the other fertilizer you used? قیمت یک کیلو گرام کود سیاه دیگر چند افغانی بود</p>	Afs/Kg قیمت یک کیلو به افغانی	
14	<p>How much Urea fertilizer did you use on your land? چند کیلو گرام کود سفید در زمین خود استعمال نموده بودید</p>	Kg کیلو گرام	

15	What price did you pay for the Urea fertilizer you used? قیمت یک کیلو گرام کود سفید چند افغانی بود	Afs/Kg قیمت یک کیلو به افغانی	
16	How much did you pay for application of fertilizer? (Hired or family labour) چند افغانی برای استعمال کود تادیه نموده اید (مزدور استخدام نموده اید ویا اعضا فامیل)	Afs افغانی	
17	How much did you pay for bird control? (Hired or family labour)? چند افغانی برای کنترول گنجشک تادیه نموده اید (مزدور استخدام نموده اید ویا اعضا فامیل)	Afs افغانی	
18	How much did you pay for security, etc? (Hired or family labour)? چند افغانی برای جفاظت گندم تادیه نموده اید (مزدور استخدام نموده اید ویا اعضا فامیل)	Afs افغانی	
19	How much did you pay for irrigating your wheat crop? چند افغانی برای ابیاری گندم پرداخته بودید	Afs افغانی	
20	How much did you pay for weeding your wheat crop using herbicide and or labour? چند افغانی در خیشاوه گندم مصرف نموده اید مزدور که استخدام شده و یا ادویه ضد گیاه هرزه استعمال نموده بودید	Afs افغانی	
21	How much did you pay for roguing your wheat crop? برای پاک کاری گندم ارجل(روگینگ) چند افغانی مصرف کرده اید	Afs افغانی	
22	How much did you pay for harvesting your wheat crop including cost of fuel, lubricants, casual labour, etc? به درو گندم چند افغانی به شمول مصارف تیل ، ماشین الات و مزدور مصرف کرده بودید	Afs افغانی	
23	How much did you pay for threshing your wheat crop including cost of fuel, lubricants, casual labour, etc? به میده کردن(تریشر)گندم چند افغانی به شمول مصارف تیل ، ماشین الات و مزدور مصرف نموده اید	Afs افغانی	
24	How much did you pay for transporting all your wheat crop including cost of fuel, lubricants, casual labour, etc? به انتقالات گندم چند افغانی مصرف کرده به شمول مصارف تیل ، ماشین الات و مزدور	Afs افغانی	
25	How much did you pay for pre-cleaning your wheat crop including cost of fuel, lubricants, casual labour, etc? جهت پاک کاری گندم چند افغانی به شمول مصارف تیل ، ماشین الات و مزدور مصرف نموده اید	Afs افغانی	
26	How many bags did you use for your total wheat harvest? تعداد بوجی که برای نگهداری گندم استعمال نموده اید	No. of bags تعداد بوجی	

27	How much did you pay for each bag? قیمت یک بوجی خالی به افغانی	Afs/bag قیمت یک بوجی به افغانی	
28	Which other additional miscellaneous costs did you pay in total? مصارف متفرقه دیگر چند افغانی بود?	Afs افغانی	
29	What was the total harvest from your wheat crop? مقدار حاصل مجموعی گندم شما چند تن بود	Tonne تن	

30	What price did you ask for when selling your wheat grain? قیمت یک کیلو گندم وقتیکه انرا فروختید چند افغانی بود	Afs/Kg قیمت یک کیلو به افغانی	
31	Which other crops did you grow in addition to wheat? Rank in order of importance 1-3 (1= less important 2=Somewhat important, 3=Most important) علاوه از گندم کدام نباتات دیگر را کشت نموده اید به ترتیب اهمیت ان از 1-3 درجه بدهید 1= کم مهم 2= نسبتا مهم 3= بسیار مهم	Rice برنج	
		Maize جواری	
		Cotton پخته	
		Vegetables سبزیجات	
		Pulses حبوبات	
		Oil seed نباتات تیلی	
		Melon خربوزه	
		Other و غیره	
32	Did you produce enough seed of the other crops you grew apart from wheat? Yes=1, No=0 ایا شما به اندازه کافی تخم این نباتات را تولید کرده اید؟ 1= بلی 0= نی	Rice برنج	
		Maize جواری	
		Cotton پخته	
		Vegetables سبزیجات	
		Pulses حبوبات	
		Oil seed نباتات تیلی	
		Melon خربوزه	
		Other و غیره	

33	<p>For those crops that you did not have enough seed, would you buy quality seed of these crops if it were available? Yes=1, No=0</p> <p>به انعهه نباتات كه شما تخم كافي انرا نداريد اگر تخم خوب ان پيدا شود شما انرا خواهيد خريد؟</p> <p>1=بلي 0=ني</p>	Rice برنج	
		Maize جواري	
		Cotton پخته	
		Vegetables سبزيجات	
		Pulses حبوبات	
		Oil seed نباتات تيلي	
		Melon خرپوزه	
		Other و غيره	
34	<p>From what source would you prefer to buy quality of such crops? Yes=1, No=0</p> <p>به كدام منبع ترجيح ميدهيد كه از ان تخم خوب به دست اوريد</p> <p>1=بلي 0=ني</p>	Private Enterprise تصدي شخصي	
		Govt. Enterprise تصدي حكومتي	
		NGOs موسسه غير دولتي	
		Local Market بازار محلي	
		Other farmers ديگر دهقانان	
35	<p>For the sources you prefer, why would you buy seed from them?</p> <p>Rank in order of importance 1-3 (1= less important 2=Somewhat important, 3=Most important)</p> <p>منبع كه شما ترجيح ميدهيد چرا از ان تخم خريداري ميكنيد به ترتيب اهميت از 1-3 در جه بدهيد</p> <p>1=كم مهم 2=نسبتا مهم 3=بسيار مهم</p>	Cheap price نرخ ارزان	
		Good quality كيفيت خوب	
		Trustworthy قابل اعتماد	
		Reliable مطمين	
		Honest صادق	
		Source of credit منبع قرض	
		Well known شهريت خوب دارد	
		Other (specify) و غيره واضح شود	

QUESTIONNAIRE 3B

(Other Farmers in Irrigated Areas, using Improved Varieties without Fertilizer)

دهقان که در زمین ابی تخم اصلاح شده را بیدون کود کیمیاوی استعمال میکنند

Province ولایت		Name of Enumerator اسم سرویر	
District ولسوالی		Name of Farmer اسم دهقان	
Village قریه		Date of Interview تاریخ مصاحبه	

01	How many jeribs of land did you cultivate by wheat? چند جریب زمین گندم کشت کرده بودید	Jerib جریب	
02	How much wheat seed did you plant on your land? در زمین خود چند کیلو گرام تخم گندم کشت کرده بودید	Kilogram کیلو گرام	
03	What wheat variety did you use? کدام وراثتی گندم را کشت کرده بودید	Variety اسم وراثتی	Jerib ساحه کشت به جریب
		Amu-99 امو-99	
		Heart-99 هرات-99	
		PBW-154 پی بی دبلیو-154	
		Lalmi-2 للمی-2	
		Ghori-96 غوری-96	
		Daima-96 دایمه-96	
		Parva-2 پروا-2	
		Pamir-94 پامیر-94	
		Solh-2002 صلح-2002	
		Don't know نمیدانیم	

04	<p>Why did you prefer the varieties you used? Rank answer as 3= most important 2= some what important 1= not important</p> <p>چرا به ورایتی که شما انرا کشت میکنید ترجیح میدهید؟ از 1-3 درجه بدهید</p> <p>3= بسیار مهم 2= نسبتا مهم 1= مهم نیست</p>	High Yield حاصل بلند دارد	
		Earliness زود رس است	
		Good for bread نان ان خوب است	
		Uses less water اب کم ضرورت دارد	
		Good grain color رنگ دانه ان خوب است	
		Bird resistant در مقابل گنجشک مقاوم است	
		Insect resistant در مقابل حشرات مقاوم است	
		Less rust damage ضایعات ان در مقابل سرخی کم است	
05	<p>How much did you pay to hire tractor/oxen for ploughing your land? یا قلمه نمودن زمین توسط تراکتور و یا قلمه گاو چند افغانی پرداخته اید</p>	Afs افغانی	
06	<p>How much more did you pay for labour to plough your land? چند افغانی دیگر برای مزدور قلمه پرداخته اید</p>	Afs افغانی	
07	<p>How much did you pay to hire tractor for harrowing your land? برای میله کردن زمین توسط تراکتور چند افغانی تادیه کرده بودید</p>	Afs افغانی	
08	<p>How much more did you pay for labour to harrow your land? برای مزدور میله کردن زمین چند افغانی پرداخته بودید</p>	Afs افغانی	
09	<p>What was the price of the wheat seed you planted? قیمت یک کیلو تخم گندم که شما کشت کرده بودید چند افغانی بود</p>	Afs/kg قیمت یک کیلو به افغانی	

10	Why don't you use fertilizer for your wheat crop? Rank in order of importance 1-3 (1= less important 2=Somewhat important, 3=Most important) چرا در مزرعه گندم خود کود کیمیاوی را استعمال نه کرده بودید به ترتیب اهمیت از 1-3 درجه بدهید 1=کم مهم 2=نسبتا مهم 3=بسیار مهم	Not available پیدا نمیشود	
		Poor quality کیفیت آن خراب است	
		Not necessary ضرورت نیست	
		Expensive قیمت است	
		No money پول ندارم	
		Don't know نمیدانیم	
		Other (specify) و غیره واضح شود	
11	How much did you pay for bird control? (Hired or family labour) برای حفاظت از گنجشک چند افغانی پرداخته اید(مزدور استخدام کرده اید و یا از خانه بود)	Afsافغانی	
12	How much did you pay for security, etc? (Hired or family labour) برای حفاظت چند افغانی پرداخته اید(مزدور استخدام کرده اید و یا از خانه بود)	Afsافغانی	
13	How much did you pay for irrigating your wheat crop? برای آبیاری گندم چند افغانی پرداخته اید	Afsافغانی	
14	How much did you pay for weeding your wheat crop using herbicide and or labour? برای خیشاوه و استعمال دوا ضد گیاه هرزه چند افغانی پرداخته نموده بودید	Afsافغانی	
15	How much did you pay for rouging your wheat crop? چند افغانی برای پاک کاری گندم ارجل(روگنیگ) تادیه نموده اید	Afsافغانی	
16	How much did you pay for harvesting your wheat crop including cost of fuel, lubricants, casual labour, etc? چند افغانی برای درو گندم مصرف کرده اید(شامل تیل ماشین آلات،مزدور و غیره میباشد)	Afsافغانی	
17	How much did you pay for threshing your wheat crop including cost of fuel, lubricants, casual labour, etc? چند افغانی برای تریشر کردن گندم پرداخته اید (شامل تیل ماشین آلات،مزدور و غیره میباشد)	Afsافغانی	
18	How much did you pay for transporting all your wheat crop including cost of fuel, lubricants, casual labour, etc? چند افغانی برای انتقالات گندم مصرف کرده اید(شامل تیل ماشین آلات،مزدور و غیره میباشد)	Afsافغانی	

19	How much did you pay for pre-cleaning your wheat crop including cost of fuel, lubricants, casual labour, etc? برای پاک کاری گندم بعد از تریشر چند افغانی مصرف کرده بودید (شامل تیل ماشین آلات، مزدور و غیره میباشد)	Afs افغانی	
20	How many bags did you use for your total wheat harvest? چند بوجی برای نگهداری گندم استعمال نموده بودید	No. of bags تعداد بوجی	
21	How much did you pay for each bag? قیمت یک بوجی خالی چند افغانی بود	Afs/bag قیمت یک بوجی به افغانی	
21	Which other additional miscellaneous costs did you pay in total? اگر مصارف متفرقه اضافی موجود باشد چند افغانی مصرف کرده بودید	Afs افغانی	
23	What was the total harvest from your wheat crop? اندازه حاصل مجموعی گندم شما چند تن بود	Tonne تن	
24	What price did you ask for when selling your wheat Grain? به کدام قیمت گندم خود را فروخته بودید؟	Afs/Kg قیمت یک کیلو گرام به افغانی	
25	Which other crops did you grow in addition to wheat? Rank in order of importance 1-3 (1= less important 2=Somewhat important, 3=Most important) علاوه از گندم کدام نباتات دیگر را کشت نموده اید به ترتیب اهمیت ان از 1-3 درجه بدهید 1= کم مهم 2= نسبتا مهم 3= بسیار مهم	Rice برنج	
		Maize جواری	
		Cotton پخته	
		Vegetables سبزیجات	
		Pulses حبوبات	
		Oil seed نباتات تیلی	
		Melon خربوزه	
		Other و غیره	
26	Did you produce enough seed of the other crops you grew apart from wheat? Yes=1, No=0 ایا شما به اندازه کافی تخم این نباتات را تولید کرده اید؟ 1= بلی 0=نی	Rice برنج	
		Maize جواری	
		Cotton پخته	
		Vegetables سبزیجات	
		Pulses حبوبات	

		Oil seed نباتات تیلی	
		Melon خربوزه	
		Other و غیره	

27	For those crops that you did not have enough seed, would you buy quality seed of these crops if it were available? Yes=1, No=0 به انعهه نباتات که شما تخم کافی انرا ندارید اگر تخم خوب ان پیدا شود شما انرا خواهید خرید؟ بلی=1 نی=0	Rice برنج	
		Maize جواری	
		Cotton پخته	
		Vegetables سبزیجات	
		Pulses حبوبات	
		Oil seed نباتات تیلی	
		Melon خربوزه	
		Other و غیره	

28	From what source would you prefer to buy quality of such crops? Yes=1, No=0 به کدام منبع ترجیح میدهید که از ان تخم خوب به دست اورید بلی=1 نی=0	Private Enterprise تصدی شخصی	
		Govt. Enterprise تصدی حکومتی	
		NGOs موسسه غیر دولتی	
		Local Market بازار محلی	
		Other farmers دیگر دهقانان	

29	For the sources you prefer, why would you buy seed from them? Rank in order of importance 1-3 (1= less important 2=Somewhat important, 3=Most important) به منبع که شما ترجیح میدهید چرا از ان تخم خریداری میکنید به ترتیب اهمیت از 1-3 درجه بدهید 1=کم مهم 2=نسبتا مهم 3=بسیار مهم	Cheap price نرخ ارزان	
		Good quality کیفیت خوب	
		Trustworthy قابل اعتماد	
		Reliable اطمنان	
		Honest صداقت	
		Source of credit منبع قرض	
		Well known شهرت خوب دارد	
		Other (specify) و غیره واضح شود	

QUESTIONNAIRE 3C

(Other Farmers in Irrigated Areas, using Local Varieties with Fertilizer)

دهقان که وراثتی محلی را در زمین ابی همراه با کود کیمیاوی استعمال میکند

Province ولایت		Name of Enumerator اسم سرور	
District ولسوالی		Name of Farmer اسم دهقان	
Village قریه		Date of Interview تاریخ مصاحبه	

01	How many jeribs of land did you cultivate by wheat? چند جریب زمین گندم کشت کرده بودید	Jerib جریب	
02	How much wheat seed did you plant on your land? چه مقدار تخم گندم را در زمین خود کشت نموده بودید	Kilogram کیلو گرام	
03	What wheat varieties did you use? کدام وراثتی گندم را کشت نموده بودید	Variety name اسم وراثتی	ساحه کشت به جریب
04	Why did you prefer the varieties you used? Rank answer as 3= most important 2= some what important 1= not important وراثتی که شما کشت میکنید چرا به آن ترجیح میدهید از 1-3 درجه بدهید 3= بسیار مهم 2= نسبتاً مهم 1= مهم نیست	High yield حاصل بلند دارد	
		Earliness زود رس است	
		Good for bread نان آن خوب است	
		Uses less water اب کم ضرورت دارد	
		Good grain color رنگ دانه آن خوب است	

		Bird resistant در مقابل گنجشک مقاوم است	
		Insect resistant در مقابل حشرات مقاوم است	
		Less rust damage ضایعات آن در مقابل سرخی کم است	
		Other و غیره	

05	Why did you use this local variety and not an improved variety? Rank in order of importance 1-3 (1= less important 2=Somewhat important, 3=Most important) چرا وراثتی محلی را استعمال نموده بودید و اصلاح شده را نی؟ 1= کم مهم 2= نسبتا مهم 3= بسیار مهم	Better than improved نسبت به تخم اصلاح شده بهتر است	
		Improved not available تخم اصلاح شده پیدا نمیشود	
		Improved expensive تخم اصلاح شده قیمت است	
		No money پول نیست	
		Don't know نمیدانیم	
		Other (specify) و غیره واضح شود	
06	How much did you pay to hire tractor/oxen for ploughing your land? برای قلبه نمودن زمین توسط تراکتور و یا قلبه گاو چند افغانی پرداخته بودید	Afs افغانی	
07	How much more did you pay for labour to plough your land? چند افغانی دیگر برای مزدور قلبه پرداخته بودید	Afs افغانی	
08	How much did you pay to hire tractor for harrowing your land? برای میده کردن کلوخ زمین توسط تراکتور چند افغانی تادیه کرده بودید	Afs افغانی	
09	How much more did you pay for labour to harrow your land? برای مزدور میده کردن کلوخ زمین چند افغانی پرداخته بودید	Afs افغانی	
10	What was the price of the wheat seed you planted? قیمت یک کیلو تخم گندم که شما کشت کرده بودید چند افغانی بود	Afs/seer قیمت یک کیلو تخم به افغانی	
11	How much DAP fertilizer did you use on your land? چند کیلو گرام کود سیاه (دی ای پی) را در زمین خود استعمال نموده اید	Kg کیلو گرام	
12	What price did you pay for the DAP fertilizer you used? قیمت یک کیلو گرام کود سیاه (دی ای پی) چند افغانی بود	Afs/Kg قیمت یک کیلو به افغانی	
13	How much other fertilizers did you used on your land? چند کیلو گرام کود سیاه دیگر را در زمین خود استعمال نموده بودید	Kg کیلو گرام	
14	What price did you pay for the other fertilizer you used? قیمت یک کیلو گرام کود سیاه دیگر چند افغانی بود	Afs/Kg قیمت یک کیلو به افغانی	
15	How much Urea fertilizer did you use on your land? چند کیلو گرام کود سفید در زمین خود استعمال نموده بودید	Kg کیلو گرام	
16	What price did you pay for the Urea fertilizer you used? قیمت یک کیلو گرام کود سفید چند افغانی بود	Afs/Kg قیمت یک کیلو به افغانی	

17	How much did you pay for application of fertilizer? (Hired or family labour) برای استعمال کود چند افغانی پرداخته اید (مزدور استخدام نموده اید ویا اعضا فامیل)	Afsافغانی	
18	How much did you pay for bird control? (Hired or family labour) برای کنترول گنجشک چند افغانی پرداخته اید (مزدور استخدام نموده اید ویا اعضا فامیل)	Afsافغانی	
19	How much did you pay for security, etc? (Hired or family labour) برای حفاظت گندم چند افغانی پرداخته اید (مزدور استخدام نموده اید ویا اعضا فامیل)	Afsافغانی	
20	How much did you pay for irrigating your wheat crop? چند افغانی برای ابیاری گندم پرداخته بودید	Afsافغانی	
21	How much did you pay for weeding your wheat crop using herbicide and or labour? چند افغانی برای خیشاوه گندم به مزدور و یا ادویه ضد گیاه هرزه تادیه نموده بود	Afsافغانی	
22	How much did you pay for roguing your wheat crop? برای پاک کردن گندم ارچل(روگینگ) چند افغانی پرداخته بودید	Afsافغانی	
23	How much did you pay for harvesting your wheat crop including cost of fuel, lubricants, casual labour, etc? مصارف درو گندم به شمول مصارف تیل، ماشین الات و مزدور	Afsافغانی	
24	How much did you pay for threshing your wheat crop including cost of fuel, lubricants, casual labour, etc? مصارف میده کردن گندم (تریشر) به شمول مصارف تیل، ماشین الات و مزدور	Afsافغانی	
25	How much did you pay for transporting all your wheat crop including cost of fuel, lubricants, casual labour, etc? مصارف مجموعی انتقالات به شمول مصارف تیل، ماشین الات و مزدور چند افغانی میباشد	Afsافغانی	
26	How much did you pay for pre-cleaning your wheat crop including cost of fuel, lubricants, casual labour, etc? مصارف مجموعی پاک کاری گندم بعد از تریشر به شمول مصارف تیل، ماشین الات و مزدور چند افغانی میباشد	Afsافغانی	
27	How many bags did you use for your total wheat harvest? تعداد مجموعی بوجی ها یکه گندم را در ان نگهداری کرده اید	No. of bags تعداد بوجی	
28	How much did you pay for each bag? قیمت یک بوجی خالی چند افغانی میباشد	Afs/Bag قیمت یک بوجی به افغانی	
29	Which other additional miscellaneous costs did you pay in total? مصارف متفرقه دیگر اگر موجود باشد چند افغانی بود	Afsافغانی	
30	What was the total harvest from your wheat crop?	Tonne	

	حاصل مجموعی گندم شما چند تن بود	تن	
31	What price did you ask for when selling your wheat grain? گندم که شما انرا فروخته اید قیمت یک کیلو ان چند افغانی بود	Afs/Kg قیمت یک کیلو به افغانی	
32	Which other crops did you grow in addition to wheat? Rank in order of importance 1-3 (1= less important 2=Somewhat important, 3=Most important) علاوه از گندم کدام نباتات دیگر را کشت نموده اید به ترتیب اهمیت ان از 1-3 درجه بدهید 1= کم مهم 2= نسبتا مهم 3= بسیار مهم	Rice برنج	
		Maize جواری	
		Cotton پخته	
		Vegetables سبزیجات	
		Pulses حبوبات	
		Oil seed نباتات تیلی	
		Melon خربوزه	
		Other و غیره	
33	Did you produce enough seed of the other crops you grew apart from wheat? Yes=1, No=0 ایا شما به اندازه کافی تخم این نباتات را تولید کرده اید؟ 1= بلی 0= نی	Rice برنج	
		Maize جواری	
		Cotton پخته	
		Vegetables سبزیجات	
		Pulses حبوبات	
		Oil seed نباتات تیلی	
		Melon خربوزه	
		Other و غیره	
34	For those crops that you did not have enough seed, would you buy quality seed of these crops if it were available? Yes=1, No=0 به انعهه نباتات که شما تخم کافی انرا ندارید اگر تخم خوب ان پیدا شود شما انرا خواهید خرید؟ 1= بلی 0= نی	Rice برنج	
		Maize جواری	
		Cotton پخته	
		Vegetables سبزیجات	
		Pulses حبوبات	
		Oil seed	

		نباتات تیلی	
		Melon خرپوزه	
		Other و غیره	
		Other و غیره	

35	From what source would you prefer to buy quality of such crops? Yes=1, No=0 به کدام منبع ترجیح می‌دهید که از آن تخم خوب به دست آورید 1=بلی 0=نی	Private Enterprise تصدی شخصی	
		Govt. Enterprise تصدی حکومتی	
		NGOs موسسه غیر دولتی	
		Local Market بازار محلی	
		Other farmers دیگر دهقانان	
36	For the sources you prefer, why would you buy seed from them? Rank in order of importance 1-3 (1= less important 2=Somewhat important, 3=Most important) به منبع که شما ترجیح می‌دهید چرا از آن تخم خریداری می‌کنید به ترتیب اهمیت از 1-3 در چه بدهید 1=کم مهم 2=نسبتاً مهم 3=بسیار مهم	Cheap price نرخ ارزان	
		Good quality کیفیت خوب	
		Trustworthy قابل اعتماد	
		Reliable مطمئن	
		Honest صداقت	
		Source of credit منبع قرض	
		Well known شهرت خوب دارد	
		Other (specify) و غیره واضح شود	

QUESTIONNAIRE 3D

(Other Farmers in Irrigated Areas, using Local Varieties without Fertilizer)

دهقان که در زمین ابی و رایتی محلی را بیدون کود کیمیاوی استعمال میکنند

Province ولایت		Name of Enumerator اسم سرویر	
District ولسوالی		Name of Farmer اسم دهقان	
Village قریه		Date of Interview تاریخ مصاحبه	

01	How many jeribs of land did you cultivate by wheat? چند جریب زمین گندم کشت کرده بودید	جریب Jerib	
02	How much wheat seed did you plant on your land? چند کیلو تخم گندم کشت کرده بودید	کیلو گرام	
03	What wheat varieties did you use? کدام وراثتی گندم را کشت نموده بودید	Variety name اسم وراثتی	Jerib جریب
04	Why did you use this local variety and not an improved variety? Rank in order of importance 1-3 (1= less important 2=Somewhat important, 3=Most important) چرا این وراثتی محلی را کشت کرده بودید به ترتیب اهمیت از 1-3 در چه بدهید 1=کم مهم 2=نسبتا مهم 3=بسیار مهم	Better than improved از تخم اصلاح شده بهتر است	
		Improved not available اصلاح شده موجود نیست	
		Improved expensive اصلاح شده قیمت است	
		No money پول ندارم	
		Don't know نمیدانیم	
		Other (specify) و غیره واضح شود	
05	How much did you pay to hire tractor/oxen for ploughing your land? برای قلبه نمودن زمین توسط تراکتور و یا قلبه چند افغانی پرداخته بودید	افغانی Afs	
06	How much more did you pay for labour to plough your land? چند افغانی دیگر برای مزدور قلبه پرداخته بودید	افغانی Afs	
07	How much did you pay to hire tractor for harrowing your land? برای میده کردن کلوخ زمین توسط تراکتور چند افغانی تادیه کرده بودید	افغانی Afs	
08	How much more did you pay for labour to harrow your land? برای مزدور میده کردن کلوخ زمین چند افغانی پرداخته بودید	افغانی Afs	
09	What was the price of the wheat seed you planted? قیمت یک کیلو تخم گندم که شما کشت کرده بودید چند افغانی بود	قیمت یک کیلو به افغانی	
10	Why didn't you use fertilizer for your wheat crop? Rank in order of importance 1-3 (1= less important 2=Somewhat important, 3=Most important) چرا در گندم خود کود کیمیا وی را استعمال نه کرده بودید به ترتیب اهمیت از 1-3 درجه بدهید 1=کم مهم 2=نسبتا مهم	Not available پیدا نمیشود	
		Poor quality کیفیت آن خراب است	
		Not necessary ضرورت نیست	
		Expensive	

	3= بسیار مهم	قیمت است	
		No money پول نیست	
		Don't know نمیدانیم	
		Other (specify) و غیره واضح شود	
11	How much did you pay for bird control? (Hired or family labour) برای حفاظت از گنجشک چند افغانی پرداخته بودید(مزدور استخدام کرده اید و یا از خانه بود)	Afs افغانی	
12	How much did you pay for security, etc? (Hired or family labour) برای حفاظت چند افغانی پرداخته بودید(مزدور استخدام کرده اید و یا از خانه بود)	Afs افغانی	
13	How much did you pay for irrigating your wheat crop? برای آبیاری گندم چند افغانی پرداخته بودید	Afs افغانی	
14	How much did you pay for weeding your wheat crop using herbicide and or labour? برای خیشاوه، ادویه ضد گیاه هرزه و یا مزدور چند افغانی پرداخته بودید	Afs افغانی	
15	How much did you pay for roguing your wheat crop? چند افغانی برای پاک کاری مزرعه گندم از تخم ارجل(روگنیگ) تادیه نموده بودید	Afs افغانی	
16	How much did you pay for harvesting your wheat crop including cost of fuel, lubricants, casual labour, etc? چند افغانی برای درو گندم مصرف کرده اید(شامل تیل ماشین الات، مزدور و غیره میباشد)	Afs افغانی	
17	How much did you pay for threshing your wheat crop including cost of fuel, lubricants, casual labour, etc? چند افغانی برای تریشر کردن گندم پرداخته اید (شامل تیل ماشین الات، مزدور و غیره میباشد)	Afs افغانی	

18	How much did you pay for transporting all your wheat crop including cost of fuel, lubricants, casual labour, etc? چند افغانی برای انتقالات گندم مصرف کرده اید (شامل تیل ماشین الات، مزدور و غیره میباشد)	Afs افغانی	
19	How much did you pay for pre-cleaning your wheat crop including cost of fuel, lubricants, casual labour, etc? برای پاک کاری گندم بعد از تریشر چند افغانی مصرف کرده اید (شامل تیل ماشین الات، مزدور و غیره میباشد)	Afs افغانی	
20	How many bags did you use for your total wheat harvest? چند بوجی برای نگهداری گندم استعمال نموده اید	No. of bags تعداد بوجی	
21	How much did you pay for each bag? قیمت یک بوجی خالی چند افغانی میباشد	Afs/bag قیمت یک بوجی	
22	Which other additional miscellaneous costs did you pay in total? اگر مصارف متفرقه دیگر موجود باشد چند افغانی مصرف کرده بودید	Afs افغانی	
23	What was the total harvest from your wheat crop? اندازه حاصل مجموعی گندم شما چند تن میباشد	Tonne تن	
24	What price did you ask for when selling your wheat harvest ? به کدام قیمت گندم خود را فروخته بودید	Afs/Kg قیمت یک کیلو به افغانی	
25	Which other crops did you grow in addition to wheat? Rank in order of importance 1-3 (1= less important 2=Somewhat important, 3=Most important) علاوه از گندم کدام نباتات دیگر را کشت نموده بودید به ترتیب اهمیت ان از 1-3 درجه بدهید 1= کم مهم 2= نسبتا مهم 3= بسیار مهم	Rice برنج	
		Maize جواری	
		Cotton پخته	
		Vegetables سبزیجات	
		Pulses حبوبات	
		Oil seed نباتات تیلی	
		Melon خربوزه	
		Other و غیره	
26	Did you produce enough seed of the other crops you grew apart from wheat? Yes=1, No=0 ایا شما به اندازه کافی تخم این نباتات را تولید کرده اید؟ 1= بلی 0= نی	Rice برنج	
		Maize جواری	
		Cotton پخته	
		Vegetables	

		سبزیجات Pulses حبوبات Oil seed نباتات تیلی Melon خربوزه Other و غیره	
27	For those crops that you did not have enough seed, would you buy quality seed of these crops if it were available? Yes=1, No=0 به انچه نباتات که شما تخم کافی انرا ندارید اگر تخم خوب ان پیدا شود شما انرا خواهید خرید؟ 1=بلی 0=نی	Rice برنج Maize جواری Cotton پخته Vegetables سبزیجات Pulses حبوبات Oil seed نباتات تیلی Melon خربوزه Other و غیره	
28	From what source would you prefer to buy quality of such crops? Yes=1, No=0 به کدام منبع ترجیح میدهید که از ان تخم خوب به دست اورید 1=بلی 0=نی	Private Enterprise تصدی شخصی Govt. Enterprise تصدی حکومتی NGOs موسسه غیر دولتی Local Market بازار محلی Other farmers دیگر دهقانان	
29	For the sources you prefer, why would you buy seed from them? Rank in order of importance 1-3 (1= less important 2=Somewhat important, 3=Most important) به منبع که شما ترجیح میدهید چرا از ان تخم خریداری میکنید به ترتیب اهمیت از 1-3 درجه بدهید 1=کم مهم 2=نسبتا مهم 3=بسیار مهم	Cheap price نرخ ارزان Good quality کیفیت خوب Trustworthy قابل اعتماد Reliable مطمئن Honest صادق Source of credit منبع قرض Well known شهرت خوب دارد Other (specify) و غیره واضح شود	

QUESTIONNAIRE 4A

(Other Farmers in Rainfed Areas, using Improved Varieties with Fertilizer)

دهقان که در زمین للمی تخم اصلاح شده همرا با کود کیمیای استعمال میکنند

Province ولایت		Name of Enumerator اسم سرویر	
District ولسوالی		Name of Farmer اسم دهقان	
Village قریه		Date of Interview تاریخ مصاحبه	

01	How many jeribs of land did you cultivate by wheat? چند جریب زمین گندم کشت کرده بودید	Jerib جریب	
02	How much wheat seed did you plant on your land? چند کیلو تخم گندم را در زمین خود کشت نموده بودید	Kilogram کیلو گرام	
03	What wheat variety did you use? کدام وراثتی گندم کشت کرده بودید	Variety اسم وراثتی	Jerib ساحه کشت به جریب
		Amu-99 امو-99	
		Heart-99 هرات-99	
		PBW-154 پی بی دبلیو-154	
		Lalmi-2 للمی-2	
		Ghori-96 غوری-96	
		Daima-96 دایمه-96	
		Parva-2 پروا-2	
		Solh-2002 صلح	
		Don't know نمیدانیم	
04	Why did you prefer the varieties you used? Rank answer as 3= most important 2= some what important 1= not important	High Yield حاصل بلند دارد	
		Earliness زود رس است	
		Good for bread نان ان خوب است	

	چرا به وراثتی که کشت کرده بودید ترجیح میدهید؟ از 1-3 در چه بدهید 3= بسیار مهم 2= نسبتا مهم 1= مهم نیست	Uses less water اب کم ضرورت دارد	
		Good grain color رنگ دانه ان خوب است	
		Bird resistant در مقابل گنجشک مقاوم است	
		Insect resistant در مقابل حشرات مقاوم است	
		Less rust damage ضایعات ان در مقابل سرخی کم است	
05	How much did you pay to hire tractor/oxen for ploughing your land? برای قلبه نمودن زمین توسط تراکتور و یا قلبه چند افغانی پرداخته بودید?	Afs افغانی	
06	How much more did you pay for labour to plough your land? چند افغانی دیگر برای مزدور قلبه پرداخته بودید?	Afs افغانی	
07	How much did you pay to hire tractor for harrowing your land? برای میده کردن کلوخ زمین توسط تراکتور چند افغانی تادیه کرده بودید	Afs افغانی	
08	How much more did you pay for labour to harrow your land? برای مزدور میده کردن کلوخ زمین چند افغانی پرداخته بودید	Afs افغانی	
09	What was the price of the wheat seed you planted? قیمت یک کیلو تخم گندم که شما کشت کرده بودید چند افغانی بود	کیلو گرام/افغانی	
10	How much DAP fertilizer did you use on your land? چند کیلو گرام کود سیاه(دی ای پی) را در زمین خود استعمال نموده اید	کیلو گرام Kg	
11	What price did you pay for the DAP fertilizer you used? قیمت یک کیلو گرام کود سیاه(دی ای پی) چند افغانی بود	Afs/Kg قیمت یک کیلو به افغانی	
12	How much other fertilizers did you used on your land? چند کیلو گرام کود سیاه دیگر را در زمین خود استعمال نموده بودید	کیلو گرام	
13	What price did you pay for the other fertilizer you used? قیمت یک کیلو گرام کود سیاه دیگر چند افغانی بود	Afs/Kg قیمت یک کیلو به افغانی	
14	How much Urea fertilizer did you use on your land? چند کیلو گرام کود سفید در زمین خود استعمال نموده بودید	کیلو گرام Kg	

15	What price did you pay for the Urea fertilizer you used? قیمت یک کیلو گرام کود سفید چند افغانی بود	Afs/Kg قیمت یک کیلو به افغانی	
16	How much did you pay for application of fertilizer? (Hired or family labour) برای استعمال کود چند افغانی پرداخته اید (مزدور استخدام نموده اید و یا اعضا فامیل)	Afs افغانی	
17	How much did you pay for bird control? (Hired or family labour) برای کنترول گنجشک چند افغانی پرداخته اید (مزدور استخدام نموده اید و یا اعضا فامیل)	Afs افغانی	
18	How much did you pay for security, etc? (Hired or family labour) برای حفاظت گندم چند افغانی پرداخته اید (مزدور استخدام نموده اید و یا اعضا فامیل)	Afs افغانی	
19	How much did you pay for weeding your wheat crop using herbicide and or labour? برای خیشاوه گندم و استعمال ادویه ضد گیاه هرزه چند افغانی مصرف شده اند (مزدور استخدام شده و یا ادویه استعمال شده اند)	Afs افغانی	
20	How much did you pay for roguing your wheat crop? برای پاک کاری مزرعه گندم از تخم ارجل (روگینگ) چند افغانی مصرف شده اند	Afs افغانی	
21	How much did you pay for harvesting your wheat crop including cost of fuel, lubricants, casual labour, etc? مصارف درو گندم چند افغانی میباشد شامل مصارف تیل، ماشین الات و مزدور.	Afs افغانی	
22	How much did you pay for threshing your wheat crop including cost of fuel, lubricants, casual labour, etc? مصارف میده کردن گندم (تریشر) چند افغانی میباشد شامل مصارف تیل، ماشین الات و مزدور.	Afs افغانی	
23	How much did you pay for transporting all your wheat crop including cost of fuel, lubricants, casual labour, etc? مصارف انتقالات گندم چند افغانی بود شامل مصارف تیل، ماشین الات و مزدور.	Afs افغانی	
24	How much did you pay for pre-cleaning your wheat crop including cost of fuel, lubricants, casual labour, etc? مصارف پاک کاری تخم گندم بعد از تریشر چند افغانی میباشد شامل مصارف تیل، ماشین الات و مزدور.	Afs افغانی	
25	How many bags did you use for your total wheat harvest? تعداد بوجی که برای نگهداری گندم استعمال شده اند	No. of bags تعداد بوجی	
26	How much did you pay for each bag? قیمت یک بوجی خالی به افغانی	Afs/bag قیمت فی بوجی به افغانی	
27	Which other additional miscellaneous costs did you pay in total? اگر مصارف متفرقه دیگر موجود باشد چند افغانی مصرف کرده بودید	Afs افغانی	

28	What was the total harvest from your wheat crop? اندازه حاصل مجموعی گندم شما چند تن میباشد	Tonne تن	
29	What price did you ask for when selling your wheat Grain? به کدام قیمت گندم خود را فروخته بودید	قیمت یک کیلو گرام	
30	Which other crops did you grow in addition to wheat? Rank in order of importance 1-3 (1= less important 2=Somewhat important, 3=Most important) علاوه از گندم کدام نباتات دیگر را کشت نموده اید به ترتیب اهمیت ان از 1-3 درجه بدهید 1= کم مهم 2= نسبتا مهم 3= بسیار مهم	Rice برنج	
		Maize جواری	
		Cotton پخته	
		Vegetables سبزیجات	
		Pulses حبوبات	
		Oil seed نباتات تیلی	
		Melon خربوزه	
		Other و غیره	
31	Did you produce enough seed of the other crops you grew apart from wheat? Yes=1, No=0 ایا شما به اندازه کافی تخم این نباتات را تولید کرده بودید 1= بلی 0=نی	Rice برنج	
		Maize جواری	
		Cotton پخته	
		Vegetables سبزیجات	
		Pulses حبوبات	
		Oil seed نباتات تیلی	
		Melon خربوزه	
		Other و غیره	
		Other و غیره	
32	For those crops that you did not have enough seed, would you buy quality seed of these crops if it were available? Yes=1, No=0	Rice برنج	
		Maize جواری	

	<p>به انعهه نباتات كه شما تخم كافي انرا نداريد اگر تخم خوب ان پيدا شود شما انرا خواهيد خريدي؟ 1=بلي 0=ني</p>	<p>Cotton پخته</p>	
		<p>Vegetables سبزيجات</p>	
		<p>Pulses حبوبات</p>	
		<p>Oil seed نباتات تيلي</p>	
		<p>Melon خرپوزه</p>	
		<p>Other و غيره</p>	
33	<p>From what source would you prefer to buy quality of such crops? Yes=1, No=0 به كدام منبع ترجيح ميدهيد كه از ان تخم خوب به دست اوريد 1=بلي 0=ني</p>	<p>Private Enterprise تصدي شخصي</p>	
		<p>Govt. Enterprise تصدي حكومتي</p>	
		<p>NGOs موسسه غير دولتي</p>	
		<p>Local Market بازار محلي</p>	
		<p>Other farmers ديگر دهقانان</p>	
34	<p>For the sources you prefer, why would you buy seed from them? Rank in order of importance 1-3 (1= less important 2=Somewhat important, 3=Most important) به منبع كه شما ترجيح ميدهيد چرا از ان تخم خريداري ميكنيد به ترتيب اهميت از 1-3 در جه بدهيد 1= كم مهم 2= نسبتا مهم 3= بسيار مهم</p>	<p>Cheap price نرخ ارزان</p>	
		<p>Good quality كيفيت خوب</p>	
		<p>Trustworthy قابل اعتماد</p>	
		<p>Reliable مطمئن</p>	
		<p>Honest صادق</p>	
		<p>Source of credit منبع قرض</p>	
		<p>Well known شهريت خوب دارد</p>	
		<p>Other (specify) و غيره واضح شود</p>	

QUESTIONNAIRE 4B

(Other Farmers in Rain fed Areas, using Improved Varieties without Fertilizer)

دهقان که در زمین للمی تخم اصلاح شده را بیدون کود کیمیایوی استعمال میکند

Province ولایت		Name of Enumerator اسم سرویر	
District ولسوالی		Name of Farmer اسم دهقان	
Village قریه		Date of Interview تاریخ مصاحبه	

01	How many jeribs of land did you cultivate by wheat? چند جریب زمین گندم کشت کرده بودید	Jerib جریب	
02	How much wheat seed did you plant on your land? مقدار تخم گندم که کشت نموده بودید	Kg کیلو گرام	
03	What wheat variety did you use? کدام وراثتی گندم کشت کرده بودید	Variety name اسم وراثتی	ساحه کشت به جریب
		Amu-99-امو-99	
		Heart-99 هرات-99	
		PBW-154 پی بی دبلو-154	
		Lalmi-2 للمی-2	
		Ghori-96 غوری-96	
		Daima-96 دایمه-96	
		Parva-2 پروا-2	
		Pamir-94 پامیر-94	
		Solh-2002 صلح-2002	
		Don't know نمیدانیم	
04		Why did you prefer the varieties did you used? Rank answer as 3= most important 2= some what important 1= not important چرا با ان وراثتی که شما کشت کرده بودید ترجیح میدید؟ از 3-1 درجه بدهید	High Yield حاصل بلند دارد
	Earliness زود رس است		
	Good for bread نان ان خوب است		

	3=بسیار مهم 2=نسبتا مهم 1=مهم نیست	Uses less water اب کم ضرورت دارد	
		Good grain color رنگ دانه ان خوب است	
		Bird resistant در مقابل گنجشک مقاوم است	
		Insect resistant در مقابل حشرات مقاوم است	
		Less rust damage ضایعات ان در مقابل سرخی کم است	
05	How much did you pay to hire tractor/oxen for ploughing your land? یا قلمه نمودن زمین توسط تراکتور و یا قلمه گاو چند افغانی پرداخته اید	Afs افغانی	
06	How much more did you pay for labour to plough your land? چند افغانی دیگر برای مزدور قلمه پرداخته اید	Afs افغانی	
07	How much did you pay to hire tractor for harrowing your land? برای میده کردن کلوخ زمین توسط تراکتور چند افغانی تادیه کرده اید	Afs افغانی	
08	How much more did you pay for labour to harrow your land? برای میده کردن کلوخ زمین توسط مزدور چند افغانی پرداخته اید	Afs افغانی	

09	What was the price of the wheat seed you planted? قیمت یک کیلو تخم گندم که شما کشت کرده بودید چند افغانی بود	قیمت یک کیلو به افغانی	
10	Why don't you use fertilizer for your wheat crop? Rank in order of importance 1-3 (1= less important 2=Somewhat important, 3=Most important) چرا در مزرعه گندم خود کود استعمال نه نموده اید؟ به ترتیب اهمیت ان از 1-3 درجه بدهید 1=کم مهم 2=نسبتا مهم 3=بسیار مهم	Not available پیدا نمیشود	
		Poor quality کیفیت ان خراب بود	
		Not necessary ضرورت نه بود	
		Expensive قیمت است	
		No money پول نیود	
		Don't know نمیدانیم	
		Other (specify) و غیره واضح شود	

11	How much did you pay for weeding your wheat crop using herbicide and or labour? چند افغانی برای خیشاوه گندم و استعمال ادویه ضد گیاه هرزه پرداخته بودید	Afs افغانی	
12	How much did you pay for roguing your wheat crop? برای پاک نمودن مزرعه گندم از تخم ارجل(روگینگ) چند افغانی مصرف نموده اید	Afs افغانی	
13	How much did you pay for harvesting your wheat crop including cost of fuel, lubricants, casual labour, etc? چند افغانی برای درو گندم پرداخته بودید که شامل مصارف تیل، ماشین الات، مزدور و غیره میباشد	Afs افغانی	
14	How much did you pay for threshing your wheat crop including cost of fuel, lubricants, casual labour, etc? چند افغانی برای میده کردن گندم(تریشر) پرداخته بودید که شامل مصارف تیل، ماشین الات، مزدور و غیره میباشد	Afs افغانی	
15	How much did you pay for transporting all your wheat crop including cost of fuel, lubricants, casual labour, etc? چند افغانی برای انتقالات گندم پرداخته بودید که شامل مصارف تیل، ماشین الات، مزدور و غیره میباشد	Afs افغانی	
16	How much did you pay for bird control? (Hired labour or family labour) برای کنترل گنجشک چند افغانی پرداخته اید (مزدور استخدام شده و یا اعضا فامیل)	Afs افغانی	
17	How much did you pay for Security? (Hired labour or family labour) برای حفاظت گندم چند افغانی پرداخته اید (مزدور استخدام شده و یا اعضا فامیل)	Afs افغانی	
18	How much did you pay for pre-cleaning your wheat crop including cost of fuel, lubricants, casual labour, etc? چند افغانی برای پاک کاری گندم بعد از تریشر پرداخته بودید که شامل مصارف تیل، ماشین الات، مزدور و غیره میباشد	Afs افغانی	
19	How many bags did you use for your total wheat harvest? تعداد بوجی که در ان گندم نگهداری نموده اید	No. of bags تعداد بوجی	
20	How much did you pay for each bag? قیمت یک بوجی خالی چند افغانی بود	Afs/bag قیمت یک بوجی به افغانی	
21	Which other additional miscellaneous costs did you pay in total? مصارف متفرقه دیگر چند افغانی بود	Afs افغانی	
22	What was the total harvest from your wheat crop? حاصل مجموعی گندم شما چند تن بود	Tonne تن	
23	What price did you ask for when selling your wheat grain? یک کیلو ان به چند افغانی فروخته بودید	قیمت یک کیلو به افغانی	

24	<p>Which other crops did you grow in addition to wheat? Rank in order of importance 1-3 (1= less important 2=Somewhat important, 3=Most important) علاوه از گندم دیگر کدام نباتات را کشت نموده اید؟ به ترتیب اهمیت از 1-3 درجه بدهید</p> <p>1=کم مهم 2=نسبتا مهم 3=بسیار مهم</p>	Rice برنج	
		Maize جواری	
		Cotton پخته	
		Vegetables سبزیجات	
		Pulses حبوبات	
		Oil seed نباتات تیلی	
		Melon خربوزه	
		Other و غیره	
25	<p>Did you produce enough seed of the other crops you grew apart from wheat? Yes=1, No=0 ایا شما تخم کافی این نباتات را تولید کرده بودید 1=بلی 0=نی</p>	Rice برنج	
		Maize جواری	
		Cotton پخته	
		Vegetables سبزیجات	
		Pulses حبوبات	
		Oil seed نباتات تیلی	
		Melon خربوزه	
		Other و غیره	

26	<p>For those crops that you did not have enough seed, would you buy quality seed of these crops if it were available? Yes=1, No=0 برای انعهه نباتات که تخم کافی ان ندارید اگر تخم خوب ان پیداشود شما انرا خواهید خرید؟ 1=بلی 0=نی</p>	Rice برنج	
		Maize جواری	
		Cotton پخته	
		Vegetables سبزیجات	
		Pulses حبوبات	
		Oil seed نباتات تیلی	
		Melon خربوزه	
		Other و غیره	

27	From what source would you prefer to buy quality of such crops? Yes=1, No=0 به کدام منبع ترجیح می‌دهید که از آن تخم خوب این نباتات را خریداری نماید؟ 1=بلی 0=نی	Private Enterprise تصدی شخصی	
		Govt. Enterprise تصدی حکومتی	
		NGOs مؤسسات غیر دولتی	
		Local Market بازار محلی	
		Other farmers دیگر دهقانان	
28	For the sources you prefer, why would you buy seed from them? Rank in order of importance 1-3 (1= less important 2=Somewhat important, 3=Most important) به منبع که شما ترجیح می‌دهید، چرا از آن تخم خریداری می‌نمایید؟ به ترتیب اهمیت از 1-3 درجه بدهید 1=کم مهم 2=نسبتا مهم 3=بسیار مهم	Cheap price ارزان است	
		Good quality کیفیت خوب دارد	
		Trustworthy قابل اعتماد است	
		Reliable مطمئن است	
		Honest صداقت	
		Source of credit منبع قرض است	
		Well known شهرت خوب دارد	
		Other (specify) و غیره واضح شود	

QUESTIONNAIRE 4C

(Other Farmers in Rainfed Areas, using Local Varieties with Fertilizer)

دهقان که در زمین للمی وراثتی محلی را با کود کیمیایی استعمال میکنند

Province ولایت		Name of Enumerator اسم سرویر	
District ولسوالی		Name of Farmer اسم دهقان	
Village قریه		Date of Interview تاریخ مصاحبه	

01	How many jeribs of land did you cultivate by wheat? چند جریب زمین گندم کشت نموده بودید	Jerib جریب	
02	How much wheat seed did you plant on your land? مقدار تخم گندم که در زمین خود کشت نموده بودید	Kilogram کیلو گرام	
03	What wheat varieties did you use? کدام وراثتی گندم را کشت کرده بودید	Variety name اسم وراثتی	Jerib جریب

04	Why did you prefer the varieties you used? Rank answer as 3= most important 2= some what important 1= not important وراثتی را که کشت کرده بودید چرا با آن ترجیح میدهند؟ از 3-1 درجه بدهید 3= بسیار مهم 2= نسبتا مهم 1= مهم نیست	High yield حاصل بلند دارد	
		Earliness زود رس است	
		Good for bread نان آن خوب است	
		Uses less water اب کم ضرورت دارد	
		Good grain color رنگ دانه آن خوب است	
		Bird resistant در مقابل گنجشک مقاوم است	
		Insect resistant در مقابل حشرات مقاوم است	
		Less rust damage ضایعات آن در مقابل سرخی کم است	
		Other و غیره	

05	Why did you use this local variety and not an improved variety? Rank in order of importance 1-3 (1= less important 2=Somewhat important, 3=Most important) چرا این وراثتی محلی را استعمال میکنید؟ به ترتیب اهمیت از 1-3 درجه بدهید 1=کم مهم 2=نسبتا مهم 3=بسیار مهم	Better than improved نسبت وراثتی اصلاح شده خوب است	
		Improved not available اصلاح شده پیدا نمیشود	
		Improved expensive اصلاح شده قیمت است	
		No money پول نیست	
		Don't know نمیدانیم	
		Other (specify) و غیره واضح شود	
06	How much did you pay to hire tractor/oxen for ploughing your land? برای قلبه نمودن زمین خود توسط قلبه گاو و یا تراکتور چند افغانی پرداخته بودید	Afs افغانی	
07	How much more did you pay for labour to plough your land? چند افغانی دیگر برای مزدور قلبه کردن زمین پرداخته بودید	Afs افغانی	
08	How much did you pay to hire tractor for harrowing your land? برای میده کردن زمین توسط تراکتور چند افغانی پرداخته اید	Afs افغانی	
09	How much more did you pay for labour to harrow your land? برای مزدور میده کردن زمین چند افغانی پرداخته بودید	Afs افغانی	
10	What was the price of the wheat seed you planted? قیمت یک کیلو تخم گندم که شما انرا کشت نموده بودید چند افغانی بود	قیمت یک کیلو به افغانی	
11	How much DAP fertilizer did you use on your land? چند کیلو گرام کود سیاه(دی ای پی) را در زمین خود استعمال نموده بودید	کیلو گرام Kg	
12	What price did you pay for the DAP fertilizer you used? قیمت یک کیلو گرام کود سیاه(دی ای پی) چند افغانی بود	Afs/Kg قیمت یک کیلو به افغانی	
13	How much other fertilizers did you used on your land? چند کیلو گرام کود سیاه دیگر را در زمین خود استعمال نموده بودید	کیلو گرام	
14	What price did you pay for the other fertilizer you used? قیمت یک کیلو گرام کود سیاه دیگر چند افغانی بود	Afs/Kg قیمت یک کیلو به افغانی	
15	How much Urea fertilizer did you use on your land? چند کیلو گرام کود سفید در زمین خود استعمال نموده بودید	کیلو گرام Kg	
16	What price did you pay for the Urea fertilizer you used? قیمت یک کیلو گرام کود سفید چند افغانی بود	Afs/Kg قیمت یک کیلو به افغانی	
17	How much did you pay for application of fertilizer? (Hired or family labour) چند افغانی برای استعمال کود کیمیاوی پرداخته اید(مزدور استخدام شده و یا عضوه فامیل)	Afs افغانی	

18	How much did you pay for bird control? (Hired or family labour) چند افغانی برای کنترول گنجشک پرداخته اید(مزدور استخدام شده و یا عضوه فامیل (Afs افغانی	
19	How much did you pay for security, etc? (Hired or family labour) چند افغانی برای حفاظت گندم پرداخته اید(مزدور استخدام شده و یا عضوه فامیل (Afs افغانی	
20	How much did you pay for weeding your wheat crop using herbicide and or labour? چند افغانی برای خیشاوه نمودن گندم و یا استعمال ادویه ضد گیاه هرزه پرداخته اید	Afs افغانی	
21	How much did you pay for roguing your wheat crop? برای پاک کردن گندم (روگینگ) چند افغانی پرداخته اید	Afs افغانی	
22	How much did you pay for harvesting your wheat crop including cost of fuel, lubricants, casual labour, etc? برای درو گندم چند افغانی پرداخته اید که شامل مصارف تیل، ماشین الات، مزدور و غیره میباشد	Afs افغانی	
23	How much did you pay for threshing your wheat crop including cost of fuel, lubricants, casual labour, etc? برای میده کردن گندم(تریشر) چند افغانی پرداخته اید که شامل مصارف تیل، ماشین الات، مزدور و غیره میباشد	Afs افغانی	
24	How much did you pay for transporting all your wheat crop including cost of fuel, lubricants, casual labour, etc? برای انتقالات گندم چند افغانی پرداخته اید که شامل مصارف مصارف تیل، ماشین الات، مزدور و غیره میباشد	Afs افغانی	
25	How much did you pay for pre-cleaning your wheat crop including cost of fuel, lubricants, casual labour, etc? برای پاک کاری گندم چند افغانی پرداخته اید که شامل مصارف تیل، ماشین الات، مزدور و غیره میباشد	Afs افغانی	
26	How many bags did you use for your total wheat harvest? چند بوجی برای نگهداری گندم استعمال نموده اید	No. of bags تعداد بوجی	
27	How much did you pay for each bag? قیمت یک بوجی خالی چند افغانی میباشد	Afs/bag قیمت یک بوجی به افغانی	
28	Which other additional miscellaneous costs did you pay in total? مصارف دیگر متفرقه اگر موجود است چند افغانی میباشد	Afs افغانی	
29	What was the total harvest from your wheat crop? حاصل مجموعی گندم شما چند تن بود	Tonne تن	
30	What price did you ask for when selling your wheat grain? یک کیلو ان به چند افغانی فروخته بودید	Afs/kg قیمت یک کیلو به افغانی	
31	Which other crops did you grow in addition to wheat? Rank in order of importance 1-3 (1= less important	Rice برنج	

	2=Somewhat important, 3=Most important) علاوه از گندم دیگر کدام نباتات را کشت کرده بودید؟ به ترتیب اهمیت از 1-3 درجه بدهید 1= کم مهم 2= نسبتا مهم 3= بسیار مهم	Maize جواری	
		Cotton پخته	
		Vegetables سبزیجات	
		Pulses حبوبات	
		Oil seed نباتات تیلی	
		Melon خربوزه	
		Other و غیره	
32	Did you produce enough seed of the other crops you grew apart from wheat? Yes=1, No=0 ایا شما تخم کافی این نباتات را تولید کرده اید؟ 1= بلی 0= نی	Rice برنج	
		Maize جواری	
		Cotton پخته	
		Vegetables سبزیجات	
		Pulses حبوبات	
		Oil seed نباتات تیلی	
		Melon خربوزه	
		Other و غیره	
33	For those crops that you did not have enough seed, would you buy quality seed of these crops if it were available? Yes=1, No=0 به انعهه نباتات که شما تخم ان ندارید اگر تخم خوب ان پیدا شود شما انرا خواهید خرید؟ 1= بلی 0= نی	Rice برنج	
		Maize جواری	
		Cotton پخته	
		Vegetables سبزیجات	
		Pulses حبوبات	
		Oil seed نباتات تیلی	
		Melon خربوزه	
		Other و غیره	
34	From what source would you prefer to buy quality of such crops? Yes=1, No=0 به کدام منبع ترجیح میدهید که از ان تخم خوب این نباتات خریداری کنید؟ 1= بلی 0= نی	Private Enterprise تصدی شخصی	
		Govt. Enterprise تصدی حکومتی	
		NGOs موسسات غیر دولتی	

		Local Market بازار محلی	
		Other farmers دیگر دهقانان	
35	<p>For the sources you prefer, why would you buy seed from them?</p> <p>Rank in order of importance 1-3 (1= less important, 2=Somewhat important, 3=Most important)</p> <p>چرا این منبع را ترجیح می‌دهید که از آن تخم خریداری نمائید؟ به ترتیب اهمیت از 1-3 درجه بدهید</p> <p>1= کم مهم</p> <p>2= نسبتاً مهم</p> <p>3= بسیار مهم</p>	Cheap price ارزان است	
		Good quality تخم خوب دارد	
		Trustworthy قابل اعتماد است	
		Reliable مطمئن است	
		Honest صداقت	
		Source of credit منبع قرض است	
		Well known شهرت خوب دارد	
		Other (specify) و غیره	

QUESTIONNAIRE 4D

(Other Farmers in Rainfed Areas, using Local Varieties without Fertilizer)

دهقان که در زمین للمی وراثتی محلی بیدون کود کیمیایوی استعمال میکند

Province ولایت		Name of Enumerator اسم سرویر	
District ولسوالی		Name of Farmer اسم دهقان	
Village قریه		Date of Interview تاریخ مصاحبه	

01	How many jeribs of land did you cultivate by wheat? چند جریب زمین گندم کشت نموده بودید	Jerib جریب	
02	How much wheat seed did you plant on your land? چند کیلو تخم گندم را در زمین خود کشت نموده بودید	کیلو گرام	
03	What wheat varieties did you use? کدام وراثتی گندم را کشت نموده بودید	Variety name اسم وراثتی	Jerib ساحه کشت به جریب

04	Why did you use this local variety and not an improved variety? Rank in order of importance 1-3 (1= less important 2=Somewhat important, 3=Most important) چرا این وراثتی محلی را استعمال میکنید و اصلاح شده را کشت نمیکنید؟ به ترتیب اهمیت از 1-3 درجه بدهید 1=کم مهم 2=نسبتا مهم 3=بسیار مهم	Better than improved از تخم اصلاح شده بهتر است	
		Improved not available اصلاح شده پیدا نمیشود	
		Improved expensive اصلاح شده قیمت است	
		No money پول نیست	
		Don't know نمیدانیم	

05	How much did you pay to hire tractor/oxen for ploughing your land? برای قلبه نمودن زمین کرایه تراکتور و یا قلبه گاو چندافغانی پرداخته بودید	Afs افغانی	
06	How much more did you pay for labour to plough your land? برای قلبه نمودن زمین به مزدور چند افغانی پرداخته بودید	Afs افغانی	
07	How much did you pay to hire tractor for harrowing your land? برای میده کردن کلوخ زمین توسط تراکتور چند افغانی تادیه نموده بودید	Afs افغانی	
08	How much more did you pay for labour to harrow your land? برای میده کردن کلوخ زمین به مزدور چند افغانی پرداخته بودید	Afs افغانی	
09	What was the price of the wheat seed you planted? تخم گندم را که کشتت کرده بودید قیمت یک کیلو ان چند افغانی بود	Price/Kg قیمت یک کیلو گرام	
10	Why didn't you use fertilizer for your wheat crop? Rank in order of importance 1-3 (1= less important 2=Somewhat important, 3=Most important) چرا در گندم خود کود کیمیاوی را استعمال نه کرده بودید؟ به ترتیب اهمیت از 1-3 در چه بدهید 1= کم مهم 2= نسبتا مهم 3- بسیار مهم	Not available پیدا نمیشود	
		Poor quality کیفیت آن خراب است	
		Not necessary ضرورت نیست	
		Expensive قیمت است	
		No money پول نیست	
		Don't know نمیدانیم	
		Other (specify) و غیره واضح شود	
11	How much did you pay for bird control? (Hired or family labour) برای کنترل گنجشک چند افغانی پرداخته اید؟ (مزدور استخدام شده یا عضو فامیل)	Afs افغانی	
12	How much did you pay for security, etc? (Hired or family labour) برای حفاظت گندم چند افغانی پرداخته اید؟ (مزدور استخدام شده یا عضو فامیل)	Afs افغانی	
13	How much did you pay for weeding your wheat crop using herbicide and or labour? چند افغانی برای خیشاوه ، ادیه ضد گیاه هرزه و یا مزدور پرداخته بودید	Afs افغانی	
14	How much did you pay for roguing your wheat crop? برای پاک نمودن مزرعه گندم از تخم ارجل (روگینگ) چند افغانی پرداخته بودید	Afs افغانی	

15	How much did you pay for harvesting your wheat crop including cost of fuel, lubricants, casual labour, etc? برای درو گندم چند افغانی پرداخته بودید که شامل مصارف تیل، ماشین الات، مزدور و غیره میباشد	Afs افغانی	
16	How much did you pay for threshing your wheat crop including cost of fuel, lubricants, casual labour, etc? برای میله کردن گندم (تریشر) چند افغانی پرداخته بودید که شامل مصارف تیل، ماشین الات، مزدور و غیره میباشد	Afs افغانی	
17	How much did you pay for transporting all your wheat crop including cost of fuel, lubricants, casual labour, etc? برای انتقالات چند افغانی پرداخته اید که شامل مصارف تیل، ماشین الات، مزدور و غیره میباشد	Afs افغانی	
18	How much did you pay for pre-cleaning your wheat crop including cost of fuel, lubricants, casual labour, etc? برای پاک کاری چند افغانی پرداخته بودید که شامل مصارف تیل، ماشین الات، مزدور و غیره میباشد	Afs افغانی	
19	How many bags did you use for your total wheat harvest? چند بوجی برای نگهداری گندم استعمال نموده بودید	No. of bags تعداد بوجی	
21	How much did you pay for each bag? قیمت یک بوجی خالی چند افغانی بود	Afs/bag قیمت یک بوجی به افغانی	
22	Which other additional miscellaneous costs did you pay in total? مصارف دیگر متفرقه اگر موجود باشد چند افغانی بود	Afs افغانی	
23	What was the total harvest from your wheat crop? حاصل مجموعی گندم شما چند تن بود	Tonne تن	
24	What price did you ask for when selling your wheat grain? یک کیلو گندم خود را به چند افغانی فروخته اید	قیمت یک کیلو به افغانی	
25	Which other crops did you grow in addition to wheat? Rank in order of importance 1-3 (1= less important 2=Somewhat important, 3=Most important) علاوه گندم کدام نباتات دیگر را کشت کرده اید؟ به ترتیب اهمیت از 1-3 درجه بدهید 1= کم مهم 2= نسبتا مهم 3= بسیار مهم	Rice برنج Maize جواری Cotton پخته Vegetables سبزیجات Pulses حبوبات Oil seed نباتات تیلی Melon خرپوزه Other و غیره	

26	Did you produce enough seed of the other crops you grew apart from wheat? Yes=1, No=0 ایا شما تخم کافی این نباتات را تولید کرده اید؟ 1=بلی 0=نی	Rice برنج	
		Maize جواری	
		Cotton پخته	
		Vegetables سبزیجات	
		Pulses حبوبات	
		Oil seed نباتات تیلی	
		Melon خربوزه	
		Other و غیره	
27	For those crops that you did not have enough seed, would you buy quality seed of these crops if it were available? Yes=1, No=0 به ان عده نباتات که تخم کافی انرا ندارید اگر تخم خوب ان پیدا شود شما انرا خواهید خرید؟ 1=بلی 0=نی	Rice برنج	
		Maize جواری	
		Cotton پخته	
		Vegetables سبزیجات	
		Pulses حبوبات	
		Oil seed نباتات تیلی	
		Melon خربوزه	
		Other و غیره	
28	From what source would you prefer to buy quality of such crops? Yes=1, No=0 به کدام منبع ترجیح میدهید که از ان تخم خریداری کنید؟ 1=بلی 0=نی	Private Enterprise تصدی شخصی	
		Govt. Enterprise تصدی حکومتی	
		NGOs موسسات غیر دولتی	
		Local Market بازار محلی	
		Other farmers دیگر دهقانان	
29	For the sources you prefer, why would you buy seed from them? Rank in order of importance 1-3 (1= less important 2=Somewhat important, 3=Most important) چرا به این منبع ترجیح میدهید؟ به ترتیب اهمیت از 1-3 درجه بدهید 1=کم مهم 2=نسبتا مهم 3=بسیار مهم	Cheap price ارزان است	
		Good quality کیفیت خوب دارد	
		Trustworthy قابل اعتماد است	
		Reliable مطمین	
		Honest صادق	
		Source of credit مبع قرض است	
		Well known شهرت خوب دارد	
		Other (specify) و غیره واضح شود	