

AGRICULTURAL REVIEW OF PAKTYA PROVINCE, AFGHANISTAN



Paktya Abstract

Paktya Province is a mountainous province with irrigated and rainfed agricultural land. The population of Paktya is more than 516,000 with about 51% male and 95% of all people living in rural areas. According to the national statistics, 91% of the population is Pashtun and 9% are Tajik. Literacy rates are estimated at 11 – 15% and predominately male.

The major natural resources of this province are wood, lumber, and gas. Farmers grow wheat, barley, maize, rice and potatoes. Fruit orchards of peaches, apple, pomegranates, and grapes exist in the province. Almonds are produced as well. Commodities are sold in local bazaars and to Pakistani markets. Dairy and meat production is limited to subsistence with forage production inadequate for significant commercial production. Aquaculture is non-existent with little interest because the people do not eat fish.

Paktya is a cold region which limits double cropping to only Chamkani and Dand Patan Districts. Arable land is at a premium due to the terrain and most of land owners cultivate their own land with some renting or sharecropping to smaller growers. The rent for one jerib (2000 m²) is 270-280 Kg wheat. The sharecropper receives a percentage of the yield based on the share of inputs. The majority of landowners own 1 to 2 jeribs, with average ownership of 5-10 jeribs. There are about 10,000 Kuchis that overwinter in Paktya with about 6,000 migrating north in the summer.ⁱ

Supplies of agricultural inputs such as fertilizer, chemicals and seeds originate from Pakistan with no apparent shortages. Enhanced freedom of movement from security and improved roads provides improved access to farm inputs. However, major challenges exist in lack of agricultural services, improved irrigation capacity, and lack of market development. Transitional development activities such as vocational training, improvement of irrigation systems, supporting agricultural extension programs, and organization of commodity associations to improve productivity and markets should be considered priority courses of action for an ADT.

Land and Water Resources

Type of Topography			
Flat	Mountains	Hills	Semi-Flat
32.3%	52.0%	13.1%	2.5%

CSOⁱⁱ

Water Resources for Agricultural Production in Paktya	
District/Region	Types of Irrigation Systems/Rainfed
Azra	Spring irrigated and rainfed land Canal irrigated and rainfed land
Chamkani	Intensively canal irrigated land and orchards Kareze irrigated land and orchards
Dand Wa Patan	Intensively canal irrigated land and orchards Irrigated land and orchards
Gardez	Kareze irrigated and rainfed land Intensively canal irrigated land
Hasan Khail	Irrigated land and orchards Intensively canal irrigated land and orchards
Jadran	Canal irrigated land and orchards Kareze irrigated land and orchards
Jaji	Kareze irrigated land and orchards Intensively canal irrigated land and orchards
Jani Khel	Kareze and spring irrigated land and orchards Kareze irrigated land and orchards
Lija Mangal	Intensively canal irrigated land and orchards Kareze irrigated land and orchards
Sayid Karam	Intensively Kareze irrigated and rainfed land Kareze irrigated and rainfed land
Shamal	Intensively canal irrigated land and orchards Kareze and spring irrigated land and orchards Spring irrigated land and orchards
Shwak	Intensively canal irrigated land and orchards Kareze irrigated land and orchards
Wolma	Intensively irrigated land and orchards Irrigated land and orchards
Zurmat	Intensively canal irrigated land Kareze irrigated and rainfed land

World Food Programme

Soils

Alluvial sub-soils with loess top soils are common in the valley areas. These are calcareous soils with relatively high calcium carbonate (CaCO₃) contents. Consequently, soil pH is generally high ranging 8.0 – 8.5. These soils respond well to tillage and nutrients. Due to the high silt percentage, flood and furrow irrigation is possible. Upland grazing areas are likely to be very gravelly due to detrital type formations, but have the same high CaCO₃ characteristic as the alluvium soils in the valleys. These soils will sustain forages if sufficient water is available and will respond well to nitrogen applications.

The United States Geological Survey produced a Geological and Mineral Resource Map of Afghanistan:

<http://pubs.usgs.gov/of/2006/1038/>

An excellent land cover map of Paktya depicting cultivated land, forests, grazing, and fruit production is available:

<http://www.cawater-info.net/afghanistan/maps/paktya.pdf>

Crop Production

Winter wheat is the predominant cultivated crop for Paktya. Barley is also a winter grain crop that is produced on a smaller area, but is an important crop. Maize (corn) is the largest crop produced in the summer. Rice is a minor crop for Paktya. Wheat, barley, corn, and rice are all grain crops which are critical to food security. While these are not high value crops in the range of produce or even poppy, **they are grain crops that produce maximum levels of storable food per hectare**. This is an extremely important fact to realize when considering any shifts in production in the Paktya agricultural system.

Certified seed for wheat and barley is critical for good yield potential. Hybrid corn seed is a must for acceptable production. Rice can be varietal or hybrid depending on the producer. Quality seed and nutrient management are opportunities for improvement in the Paktya agricultural system.

Commodity	Irrigated		Rainfed		Total	
	Area (Ha)	Yield (mtons)	Area (Ha)	Yield (mtons)	Area (Ha)	Yield (mtons)
Wheat	21,000	53,000	1,000	1,000	22,000	54,000
Total Farm Value			\$1,593 billion Afs			

MAIL 2010ⁱⁱⁱ

Commodity	Area (Ha)	Yield (mtons)	Farm Value (Afs)
Barley	2,356	4,758	\$130.85 million
Rice	1,040	2,405	\$115.44 million
Maize (corn)	10,418	16,252	\$292.50 million

MAIL 2010

Crop Calendar - Paktya			
Crop	Fall Planting	Spring/Summer Planting	Harvest
Wheat (winter)	15 Oct - 30 Nov		15 May - 15 Jun
Barley	15 Oct - 30 Nov		15 May - 15 Jun
Rice		15 - 30 Apr	15 Oct - 15 Nov
Maize		1 - 30 May	15 Sep - 15 Oct
Potato		15 Feb - 7 Mar	15 Apr - 15 May
Kidney Bean		1 May - 15 Jun	15 Sep - 30 Oct
Onion	10 Sep - 10 Oct		15 Mar - 15 Apr
Clover	15 Sep - 15 Oct		1 Mar - 15 Apr
Alfalfa	15 Sep - 15 Oct		Perennial

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Crop	Seeding Rate		Fertilizer Rate: DAP at planting - Urea following			
	kg/ha	kg/jerib	kg/ha	kg/jerib	kg/ha	kg/jerib
Wheat	100	20	100	20	200	40
Barley	75	15	90	18	180	36
Rice	125	25	100	20	200	40
Corn	15	3	100	20	300	60

1 jerib = 0.2 hectares

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Wheat Variety	Type	Maturity	Disease Tolerance
Heart 99	F, Hard Winter Bread	Early to Medium	Resistant to Rust
Roshan 96	F, Hard Winter Bread	Medium	Susceptible to Rust
Maxi-Pak	P F, Hard Winter Bread	Medium	Fair on Rust
PBW 54	P F, Hard Winter Bread	Medium to Late	Good on Rust
Fakhrisarhad	P F, Hard Winter Bread	Medium	Resistant to Rust

P= Pakistan Origin F= Facultative - Facultative wheats have, compared to true winter wheats, in general less cold tolerance, a shorter but distinct period required for vernalization, start growth in spring earlier and flower earlier
 Descriptions of Afghan wheat varieties: http://www.icarda.org/docrep/Reports/National_catalogue.pdf

Industrial crops are usually oilseed crops such as cotton, peanuts and soybeans. These are also high protein commodities which would supplement human nutrition as well as enhance livestock and poultry production. Unfortunately, these crops have not been emphasized in Paktya. The soils are certainly capable of sustaining these crops. Peanuts and soybeans are legumes which fix their own nitrogen. These crops are excellent rotation crops providing some nitrogen for the following winter grain crop.

Vegetable Production

Potatoes and kidney beans are produced commercially and marketed regionally. The remaining vegetables are grown almost exclusively for subsistence in compound gardens.

Common vegetables grown:

Potato	Eggplant	Lettuce	Cucumber
Onion	Pepper	Carrots	Watermelon
Kid. bean	Cabbage	Turnip	Okra
Tomato	Spinach	Radish	Leek

Fruit Production

Commercial fruit production is increasing due to efforts of many donor organizations. Unfortunately, in 2011, donor organizations have not been able to provide facilities and transportation resources for farmers to export their crops to other countries according to the Paktya Agriculture Department. This means farmers must sell their crops at lower prices in local markets. In previous years, about 5 metric tons of apples were exported to India, Dubai, and Pakistan. No apples were exported this year. The Paktya Agriculture Department claims that if storage facilities were available, farmers would not have to sell at lower prices at harvest. The disruption in the supply chain comes as farmers are increasing the size and number of orchards in the Province creating disillusionment.^{iv}

Commercial Fruit Production in Paktya									
Peaches		Almond		Pomegranate		Apple		Grape	
mtons	Ha	mtons	Ha	mtons	Ha	mtons	Ha	mtons	Ha
80	10	250	50	300	25	1,400	200	1,800	180

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Coops and Associations

Paktya has a history of service type cooperatives. Associations are normally more business oriented with focus on supply and value chain enhancement. Associations are usually commodity specific and coops more general in objectives.

Cooperatives in Paktya					
Number of Members			Number of Cooperatives		
2010-11	2009-10	2008-09	2010-11	2009-10	2008-09
4,500	4,003	3,693	35	24	21

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Agricultural Cooperatives Sales, Shares, and Area in Paktya								
Surplus Sales in 1,000 mtons			Members' Share in 1,000 Afs			Total Hectares in Coops		
2010-11	2009-10	2008-09	2010-11	2009-10	2008-09	2010-11	2009-10	2008-09
1	8	19	1052	2718	2523	2432	2542	2220

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Fertilizer Distributed by Agricultural Services Cooperatives in Paktya	
Urea in metric tons	DAP (diammonium phosphate) in metric tons
988	520

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Livestock and Poultry

Farmers raise milking cows, sheep, goats, donkey and chickens for producing of milk, meat, eggs for family consumption and market and transportation. Persistent drought problems have decreased the number of cattle, sheep, goats and poultry.

Paktya	Percentage Owned Household (HH)		Numbers of Animals per HH		Avg Herd/Flock Size per HH	
	Kuchi	Rural	Kuchi	Rural	Kuchi	Rural
Cattle	25	64	777	87,945	1.2	1.9
Oxen	33	19	888	16,359	1.0	1.2
Horses	8	7	1,221	12,792	2.7	5
Donkeys	100	40	3,552	30,258	3.1	1.2
Camels	58	6	6,660	5,535	4.3	1.2
Goats	13	41	2,331	189,543	7.0	6.6
Sheep	100	69	68,043	363,465	25.5	7.4
Poultry	100	89	23,643	821,763	8.9	12.9

NRVA^v

Animal health is a critical component in all aspects of animal production. Paktya has enjoyed major attention from NGOs and the government in providing animal health care providers and facilities. Veterinary Field Units (VFUs) are privately operated clinics that are staffed by trained professionals and/or para-professionals. VFU staff provide vaccinations, deworming, medical and surgical treatments to animals at their office and in the field. They must report contagious disease outbreaks to government, and implement sanitary regulations as well as prescribed control and treatment measures. VFUs educate farmers about animal health and production methods, and the importance of using quality vaccines and medicine. In remote areas where a para-vet or veterinarian is not available; trained Basic Veterinary Workers (BVW) may provide basic services. ADTs have provided training and supplies for the field units in the past.



Paktya Veterinary Field Units (VFUs)

District/Region	Name	Position
Ahmad Abad	Nowroz Abdullah	Paravet
Chamkani	Ab.Qader	Paravet
Chamkani	Abdul Ahad	DVM
Chamkani	Ghazi Jan	Paravet
Chamkani	Namazi Jan	DVM
Chamkani	Rahmat hosain	Paravet
Dand-e-Patan	Lozoz	Paravet
Dand-e-Patan	S.Ibrahim	Asst. Vet
Dand-e-Patan	Zalmai	Paravet
Jani Khail	Hayat. M	Paravet
Jani Khail	M.Alam	Paravet
Jani Khail	M.Ayob	Paravet
Jani Khail	Sakhi .M	Paravet
Paktya Center	Ab, Halim	Asst. Vet
Paktya Center	Niaz gul Mahmaddullah	Paravet
Paktya Center	Rahemdel	Asst. Vet
Paktya Center	Shair Mohmad	Paravet
Paktya Center	M.Nor	PVT
Paktya University Faculty	Sardar.M	DVM
Sayid Karam	Abdul Hamid	Paravet
Sayid Karam	Habibgul	Paravet
Sayid Karam	Jan Khan	Paravet
Sayid Karam	Shah Wali	Paravet
Zurmat	Ab.Rahim Sultan.M	Paravet
Zurmat	Baz.M	Paravet
Zurmat	Janat Gul Gul.Rahim	Paravet
Zurmat	Zabiullah	DVM

(Afghan Veterinary Association)

Dairy

Milk production is an important subsistence activity throughout Paktya. Cattle, sheep and goats are milked for human consumption through various dairy products. The lack of land available for forage production limits the number of animals that can be maintained. The shortage of protein feeds will limit productivity of dairy animals and should be addressed in the future.

Organizations Supporting Paktya Agriculture

Organization	Activities
DAI	Infrastructure improvements
Roots of Peace	Fruit Orchard Plantings
Global Partnership for Afghanistan	Training Nursery Growers Association

The above table is not exhaustive. There are additional NGOs working in Paktya on a minor scale. The list of operators fluctuates constantly, but the Provincial Reconstruction Team in Gardez will have a current list and location.

Paktya Provincial Development Plan (PDP)^{vi}

The Paktya PDP was written by the citizen representatives of Paktya, officials of the Government of the Islamic Republic of Afghanistan (GIROA), and supporting donor countries. The plan is essential to supporting organizations as the local Afghans have identified through their own assessment process priority issues that are critical to capacity building. Incorporating the Plan's strategic agricultural initiatives in development efforts will insure that the Afghan people will be supportive and that they can be credited for the identification of the activity.

General Goal:

- Increase in agricultural productivity to advance rural citizens' quality of life and create opportunities for economic stability without dependency.

Major Projects Identified:

- Construction of cool storage facilities for produce to allow for increased production of fruits and vegetables.
- Establish a dairy processing business to make dairy products and create opportunity to increase the production of milk.
- Build a factory for the processing of fruit that will use all fruit produced and provide incentive for more production from new plantings.

General Observations:

- There is a lack of agricultural professional expertise to provide advice and training.
- Conservation of watersheds must be a priority, with reforestation a major effort.
- Water systems (canals, karezes, and springs) must be improved to provide more efficient and equitable supplies for irrigation.

Long Term Needs Identified:

- Building the animal clinic and poultry facility to supply chicks.
- Establishing a managed water system to supply irrigation and domestic needs
- Improving livestock productivity
- Reforestation of hillsides

Short Term Needs Identified:

- Rehabilitating karezes, clear small streams and canals
- Bore tube wells for domestic use, community gardens, and common grazing areas
- Construct flood walls to protect farm land
- Establish a demonstration farm at the Kotaki village
- Equip a mobile veterinary clinic to support the Kuchis
- Create a 10 hectare nursery with greenhouses in Laja Ahmad Khel district
- Build greenhouses for transplants and produce in Shwak district

Transitional Agribusiness Development Initiatives

National Guard Agribusiness Development Teams (ADTs) from Tennessee, Oklahoma, and Nebraska have served in Paktya province since late 2009 with great accomplishment. The teams have provided training for MAIL personnel as well as farmers in crop production, livestock care, fruit and vegetable marketing, female agricultural entrepreneurship, and many other initiatives. *However, evolution of strategic objectives for Afghanistan from the United States Government should cause fundamental changes in the objectives of ADTs.* Transitioning from a major presence in the development of the agricultural systems to a declining role will necessitate increased emphasis on Afghan capacity. ADTs should design their programs of work to prioritize programs that create organizational structure, support of MAIL officials in providing services, and sustained improvement of agricultural inputs.

Natural Resource Management:

Resource management of watersheds must be a fundamental goal of the people and supporting organizations to provide for sustainability. This includes effective and efficient irrigation systems.

Actionables:

- Work with MAIL and other GIRoA officials to create water management councils that will coordinate strategic water initiatives and pursue equitable distribution
- Train MAIL and other GIRoA officials on watershed rehabilitation practices to include possible terracing, replanting of forests, check dam construction, and managed harvesting of trees
- Assist in organizing district level conservation associations that will extend to villages with the goal of the associations to promote good stewardship
- Identify water conveyance systems needing rehabilitation and facilitate the activity to include karezes, canals, and spring originated sources
- Insure that MAIL representatives are trained in water use requirements of all major agronomic and horticultural crops and assist the representatives in creating educational programs that they can present to farmers to increase irrigation efficiency and timing

Increasing Productivity:

A stated goal of the Afghan Government is to increase agricultural productivity.

Actionables:

- Foster growth of commodity specific associations of farmers that provide educational opportunities for improved cultural practices
- Create crop improvement councils incorporating MAIL, farmers, and farm suppliers that will commit to seed improvement and certification activities. Sustainable growth will necessitate good farmer produced certified seed.
- Assist in the construction of a certified seed cleaning and storage facility to be operated by the provincial crop improvement council
- Train MAIL representatives on improving horticultural stock and insure there is appropriate linkage between MAIL extension and the existing and planned nurseries
- Foster the creation of an agribusiness council that will bring farm supply dealers together in order to identify needs and quality or supply concerns of farm input items
- Support MAIL led livestock associations that concentrate on local livestock markets and managed grazing systems

- Demonstration farms have proven to be very successful in educating farmers on new practices as well as different crops. However, without appropriately trained staff to operate the farm and provide the farmer training; the farms are ineffective. ADTs should apply maximum effort to insure that fully trained personnel exist on these farms.

Market Development:

Increasing productivity necessitates developing additional marketing opportunities. The Afghans have recognized this priority in their Provincial Development Plan. Progress will only exist if the Afghans are involved in creating the business plans for any market enhancements.

Actionables:

- Assist MAIL in developing supply and value chain charts that will allow for identification of points of resistance and opportunity.
- Work cooperatively with commodity associations and MAIL in analyzing and planning for processing facilities identified in the PDP to include dairy and fruit processing.
- Encourage MAIL to improve price discovery of commodities by providing local wholesale commodity prices on a regular basis to farmers. This can be accomplished through the commodity associations.
- Train MAIL personnel to use demonstration farms as an educational platform on how to sanitize, grade, pack and seek markets for produce. Construction of a small grading and packaging shed at each demonstration farm would allow for these educational programs to continue over time.
- MAIL should be encouraged to support the formation of a produce association in each district made up of farmers and bazaar dealers that will identify market opportunities.
- Recommend and facilitate an agribusiness conference that attracts local and regional brokers of agricultural commodities. The conference could provide economic and production outlooks for different commodities as well as networking opportunities for brokers and producers to collaborate.
- Support the University in Gardez with technical education as well as economic information and encourage university faculty participation in the agribusiness conference and support of MAIL's extension efforts.

Population: Paktya – 1390 (2011)

District	Total Population Urban and Rural (Urban Population in (Red))		
	1,000s		
	All	Male	Female
Total	516.3 22.6	263.9 11.5	252.4 11.1
Paktya Center (Gardez)	79.6 22.6	40.6 11.5	39.0 11.1
Ahmadaba	26.7	13.4	13.3
Zurmat	102.8	52.6	50.2
Shwak	5.3	2.7	2.6
Wuza Jadran	33.9	17.5	16.4
Sayyid Karam	61.5	31.6	29.9
Jaji	60.2	30.9	29.3
Laja Ahmad Khel	21.8	11.2	10.6
Jani Khel	33.4	17.2	16.2

Central Statistics Organization

ⁱ Regional Rural Economic Regeneration Strategies (RRERS)

ⁱⁱ CSO: Central Statistics Organization

ⁱⁱⁱ MAIL: Ministry of Agriculture, Irrigation, and Livestock

^{iv} Ariana News, 25 November 2011

^v NRVA: National Risk and Vulnerability Assessment 2005

^{vi} Paktya Provincial Development Plan, August 2007

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