

3. Tendencies in Uzbekistan Farm Production

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Agriculture plays an important role in the economy of Uzbekistan, employing about 40% of the population and producing one third of GDP. A significant share of agricultural production consists of cotton, making Uzbekistan the fifth largest producer and the third largest exporter of cotton in the world. After achieving independence, government agricultural policy mainly concentrated on two objectives: developing cotton production to support state hard currency earnings through export and achieving self-sufficiency in grain production. In order to fulfill those goals the government has preferred to take a slow “step-by-step” path in reforming agriculture based upon the strong state control of production and marketing of those two “strategic crops”.

There are some barriers, however, that restrain production efficiency, lowering the income in the private sector of the economy. The purpose of this paper is to show the impact of new market conditions on agricultural development in Uzbekistan. Unfortunately, statistics and available economic indicators do not sufficiently elaborate current economic reforms and agrarian policy. Microeconomic study of structural changes in agricultural production has been chosen as the methodological approach.

The resulting data are based on field studies of different forms of ownership and organizational units in Uzbekistan agriculture. The survey was conducted in 2002 and covered 1200 farms in two provinces.

3.1. Types of Farming in Agricultural Production

Several Presidential Decrees and Decrees adopted by the Cabinet of Ministers since 1992 have created favorable legislative conditions for different types of farming. From about ten different organizational units and types of ownership, the government has identified the three most appropriate for conditions in Uzbekistan. The main condition limiting land reform and farm reorganization is the prohibition private ownership of land. In addition, it is forbidden to use land as collateral for receiving bank loans or to sell land plots¹. The government as a main reformer assumes that private ownership of land causes fragmentation of the area under cultivation, destroying the irrigation systems, which results in declining cotton and grain production-- an important source of the state budget. In addition, it is presumed that the creation of large land ownership could become a factor of instability and a reason for conflict in society. Therefore three types of farming have been deemed appropriate for reorganizing agriculture in Uzbekistan and are currently operating in the country: Agricultural Cooperatives (*Shirkats*), Dekhkan Farms and Private Farms.

Agricultural Cooperatives (Shirkats) are the legal successors of former *kolkhozes* and *sovkhoses*, dealing mainly with the production of the strategic crops cotton and wheat. This is the biggest production unit: the average size of farms studied in Sirdarya province were 1554 ha and in Bukhara province 896 ha. The agricultural cooperative consists of smaller units called *oilavii pudrat* – family contractors (previously *brigads*). Land is owned by the state and the cooperative receives land for unlimited use for agricultural purposes. There are two types of contract agreements shirkats have with contractors. One is a production contract with a family of contractors for one year. The contract usually includes the production amount of the main crops – cotton and wheat. Shirkats are obliged to guarantee the supply of all necessary material and technical resources. The other is a land rental agreement, which is usually made for a longer term. At the beginning of each year the shirkat administration receives a state order plan from a top-level government organization, which identifies the amount of production and area to be sown. It is prohibited to grow crops different from the state order. The average size of family contractors in Bukhara province was 15.9 ha, while in Sirdarya province it was around 18.2 ha. The labor intensity per unit of arable area also differs by region. In Sirdarya province it is 0.41 worker per ha, while in Bukhara province it is 0.23. The main share of employees in *oilavii pudrat* are family members, with both provinces having about the same share, about 83%.

Private Farms – Fermer Khohajaligi are considered a new market-oriented production unit. Private farms (averaging about 20 hectares nationally) increased in number quickly in the late 1990s (reaching about 63.000 in 2002), accounting for almost 1.2 million hectares in 2002. Private farms received land from the state for a long- term lease of up to 50 years. However, investigations show that in Sirdarya province only 16.9 % of farmers have leased land for 50 years, with 80 % of farmers receiving land for 10 years and only 2.1 % receiving land for 20-30 years. According to the Law on Farms (1992), private farmers are fully independent from local authorities and shirkats in organizing agricultural production. However, studies

¹ Except the case of selling a house with a backyard.

show that private farmers also have to produce state ordered crops, limited not only to cotton and wheat, but also including fruit, vegetables and melons.

Dekhkan Farms – Shirkat employees and private farmers have an additional source of income from personal household plots of less than 0.35 hectare call *tomorka*. Since independence the total area under these smallholdings has increased significantly and has reached 750.000 ha. The tomorka are usually located on former shirkat lands and are geared primarily towards agricultural production. According to the law, house construction is prohibited on these lands. Since 2000, the state has encouraged farmers to register their tomorka as *dekhkan farms* on the basis of long term (50-year) leasing. The registration helps farmers to receive credit, however at the same time it increases state control on income through taxation; therefore, farmers participate unwillingly in this program. This type of production could be considered as a purely private type because farmers make independent decisions on production and marketing. Limiting factors are the size, location of farm and irrigation.

3.2. Plant Production

Crop pattern and diversity of crops in many cases depend on the level of farming freedom. Therefore the shirkats and private farms have the smallest selection of crops due to the strong state procurement system. In contrast dekhkan farms have more diversified production. However, there are also differences on the regional level – the high diversity of crops in Sirdarya province can be explained by the salt tolerance of melons, water melons and some other crops, which are produced in this region (Table 3.1.).

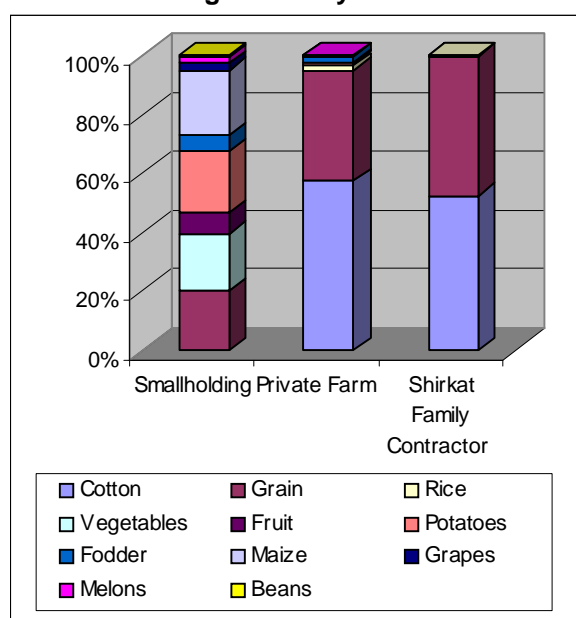
Table 3.1. Crop Diversity in Different Types of Farming (average number of crops)

Provinces	Shirkat Family Contractors	Private Farmers	Dekhkan Farmers
Sirdarya	1.15	1.37	3.24
Bukhara	1.15		1.04

Source: Farm survey 2002.

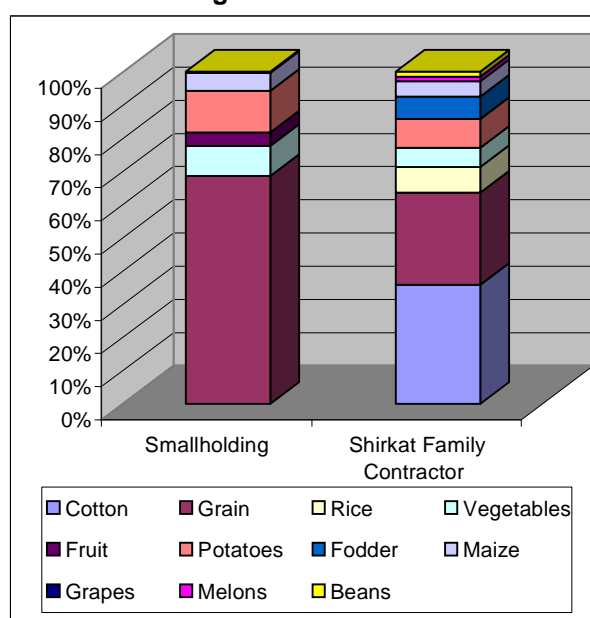
The results from the Farm Survey conducted in Sirdarya and Bukhara provinces in 2002 are presented in Graph 3.1. and Graph 3.2. It is observed that the main share of crops sown by private farmers and shirkat family contractors consists of the strategic crops cotton and grain (mainly wheat). Cotton was not grown in smallholdings but the share of wheat was significant, reaching 68.8% in Bukhara and in Sirdarya three times less. However, in Sirdarya province the share of grain in private farms and shirkat family contractors is much larger than in Bukhara province. Therefore the reason for not growing wheat in smallholdings could be explained by the fact that producers in Sirdarya province usually receive grain as salary due to a lack of cash or delay in payment, which is quite a common situation. In addition, it should be mentioned that shirkat family contractors in Bukhara province were producing much more diversified production than their colleagues in Sirdarya province who were limited mainly to cotton, wheat and rice. In spite of a great demand for animal feed the share of fodder crops was the lowest among other crops in both regions. As a result it has negatively impacted livestock productivity and soil fertility.

Graph 3.1. Crop Patterns in Different Types of Farming in Sirdarya Province



Source: Farm survey 2002.

Graph 3.2. Crop Patterns in Different Types of Farming in Bukhara Province



Source: Farm survey 2002.

Farmers have a limited amount of land, therefore land-use intensity such as second or even third cropping is a very important factor in achieving high efficiency. However, only 3% of smallholdings in Bukhara province used a second crop such as wheat, maize or vegetable production. In contrast, 25% of Sirdarya province smallholders used a second cropping to compensate for the low income received from work for shirkat and state salaries. The largest share in second cropping consisted of wheat – 22.8 % and greens – 21.4 %, the next was fodder –10% and vegetables 5.8 %, and the smallest percentages of field area were devoted to maize for grain – 2.5 % and potatoes - 1.8 %.

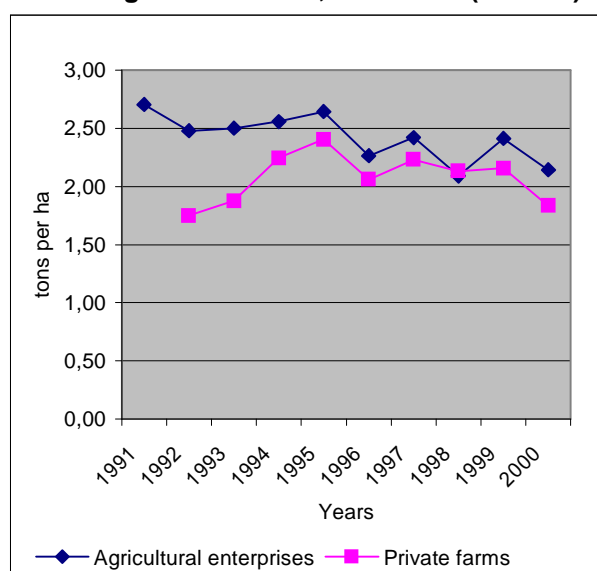
Crop rotation is another factor which has direct impact on soil fertility and yield. Some farms in Uzbekistan have the bad practice of growing the same crop year after year over 20-30 years, which results in the spread of plant diseases and a larger population of pests. Only 16.8 % of respondents from family contractors mentioned that crop rotations took place in agricultural production. According to the recommendations of agricultural research institutions the share of alfalfa should be around 30 % of cotton crop rotation; in fact it occupies less than 7%.

3.3. Productivity

An analysis of statistical data since independence in 1991 indicates a decline in cotton productivity in all types of farms. Graph 3.3. shows some growth in the first half of the 90s and then a significant decline in yields in the second half of the decade in agricultural enterprises and private farms. The gradual fall in yields was caused mainly by soil and water salinization due to incorrect crop rotation and the dismantling of drainage schemes on farm and inter-farm levels.

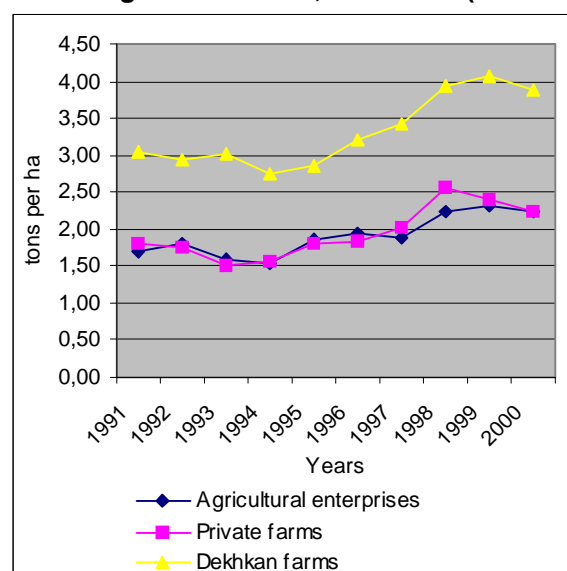
The historical examination of grain yields shows the opposite tendency in comparison with cotton productivity. Significant efforts by the state in achieving self-sufficiency in wheat production encouraged wheat producers to increase productivity (Graph 3.4.). The growth in wheat prices was much higher than for cotton, resulting in a much smaller difference between world prices and farm prices. In Graph 3.4., a large gap of 58% is evident between dekhkan farms and the rest of producers. It should be pointed out that private “market” oriented dekhkan farmers are approaching 4-6 tons/ha a biological optimum of wheat production for arid climatic conditions. Another factor which increases grain productivity is irrigation.

Graph 3.3. Cotton Yields in Different Types of Farming in Uzbekistan, 1991-2000 (tons/ha)



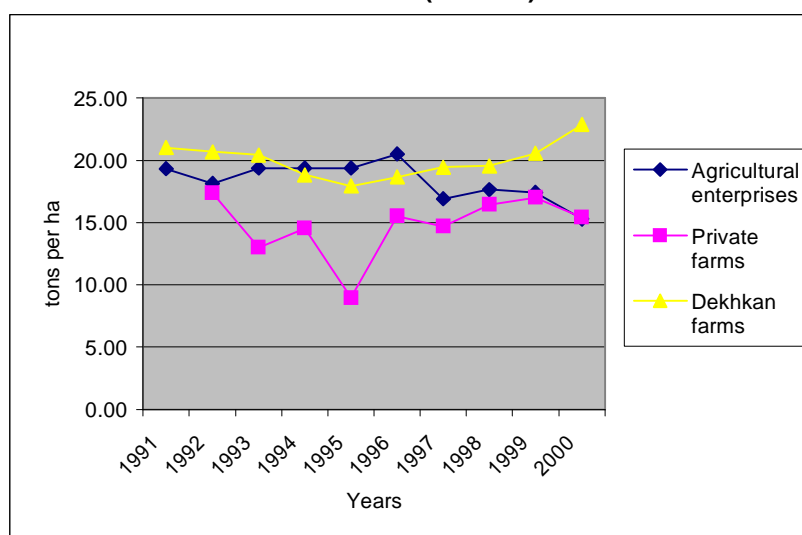
Source: Statistical Department, Uzbekistan Ministry of Macroeconomics and FAO data.

Graph 3.4. Grain Yields in Different Types of Farming in Uzbekistan, 1991-2000 (tons/ha)



Source: Statistical Department, Uzbekistan Ministry of Macroeconomics and FAO data.

Research has shown that the tendencies in yields for “state order” crops are similar for private farmers and agricultural enterprises due to low incentives for producers in selling their products. On the other hand, products such as vegetables and potatoes, which may be sold in the market, are cultivated more intensively, leading to yields much higher than for other crops (Graph 3.5.).

Graph 3.5. Vegetable Yields in Different Types of Farming in Uzbekistan, 1991-2000 (tons/ha)

Source: Statistical Department, Uzbekistan Ministry of Macroeconomics and FAO data.

Even the same crops differ in yield depending on region and type of farming. Cotton yields in 2002 in surveyed sites were greater in Bukhara province in shirkat family contractor production, while in Sirdarya province they were greater in private farms. Cereals had high yields in all types of farming, particularly smallholdings, while in fruit and vegetable production private producers in Bukhara got lower results despite more intensive cultivation (Table 3.2.).

Table 3.2. Yield per hectare in Different Types of Farming (tons/ha)

	Sirdarya region (province)			Bukhara Region (province)		
	Private farm	Smallholding	Shirkat family contractor	Private farm	Smallholding	Shirkat family contractor
Cotton	2.50		1.88	2.64		2.85
Grain	3.09	4.23	2.67	2.81	3.45	3.04
Rice	2.29			3.80	3.13	4.39
Vegetables	20.00	9.25		12.88	14.4	21.88
Potatoes	15.00	8.93		20.00	14.6	21.19
Animal Feed	10.60	11.22		6.83		12.00
Fruit	16.3	13.25		8.00	9.01	12.00
Beans		2.50			5.60	
Maize		8.42			6.65	5.75
Greens		2.35				
Melons		11.42		16.00		

Source: Farm survey 2002.

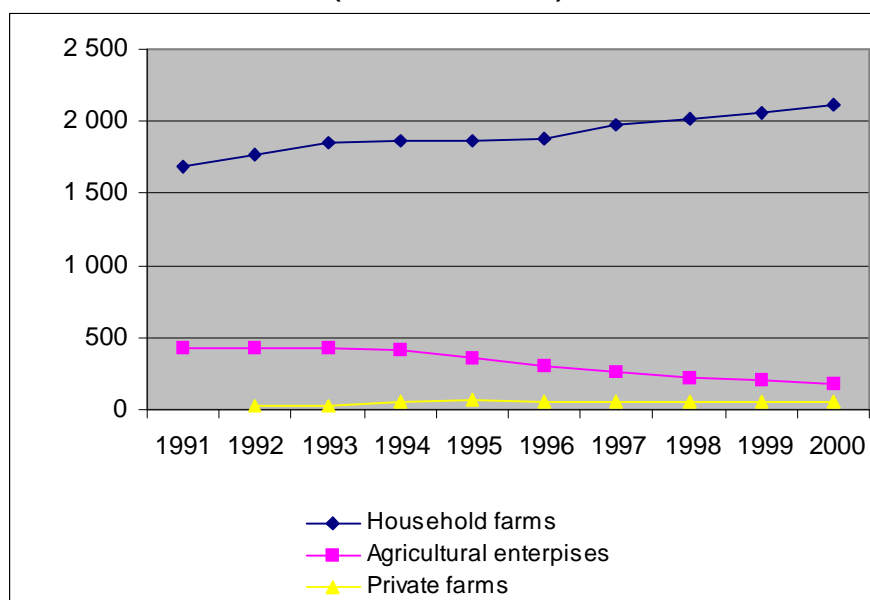
Surveyed farmers encountered several difficulties in plant production in 2002. In both regions farmers noted problems caused by weeds (66%) and land salinization (68%). Those problems resulted from insufficient crop rotation and lack of incentives for water conservation and drainage system maintenance. Farmers of Bukhara province were more likely to mention poor irrigation (72%), while their Sirdarya counterparts were quite satisfied with irrigation (68%). The reason for the water deficit is the high cost of energy, because more than 80 % of irrigation water is obtained by pump in Bukhara province. A relatively smaller number of farmers (38% in Bukhara and 45% in Sirdarya provinces) reported difficulties obtaining access to agrochemicals from the state supply network.

3.4. Livestock Production

Since independence, the number of cattle has increased by 5 % in all types of farming, while the number of sheep and goats has fallen by 12 %. Government policy has mainly been directed to maintaining the number of livestock even with negative effects on productivity. Therefore in comparison with other CIS

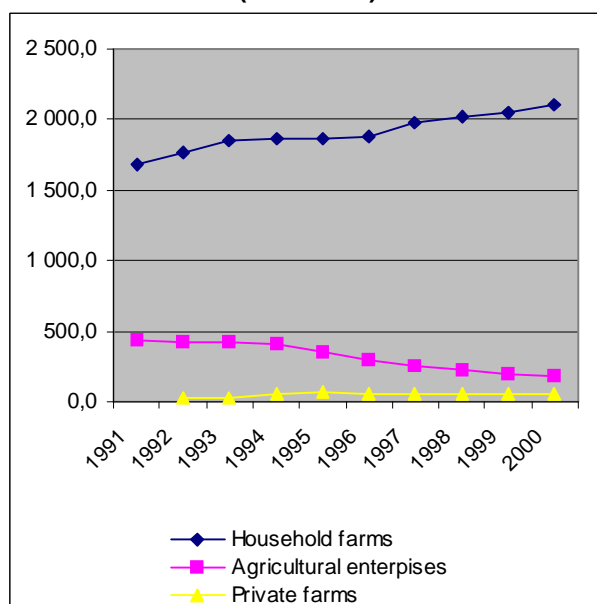
countries Uzbekistan has maintained its quantity of livestock at levels of the pre-reform period. However, since independence significant institutional changes have occurred, which have affected livestock numbers according to farm types. There has been a decline in the number of all types of livestock held by large agricultural enterprises and an increase in the quantity held by household farms, except pigs and poultry (Graphs 3.6. – 3.10.). Poultry production has collapsed in all types of farming due to the lack of specialized feed, medicine and veterinary care. Since 1998, pig production has shown signs of improvement due to the development of the sausage industry, for which pork is a basic ingredient.

Graph 3.6. Trends in cattle stock (cows) in Uzbekistan by different types of farms 1991-2000 ('000 cattle heads)



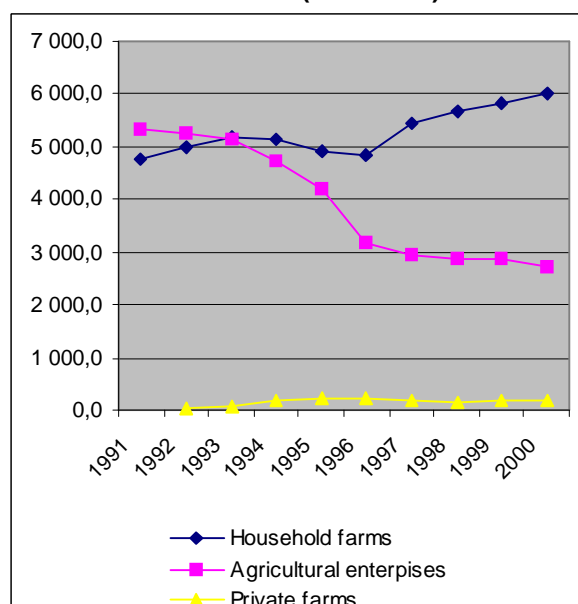
Department of Statistics of the Ministry of Macroeconomics and Statistics of the RUz. 2001 and FAO data

Graph 3.7. Tendencies in Cattle Numbers in Uzbekistan by Types of Farming, 1991–2000 ('000 head)



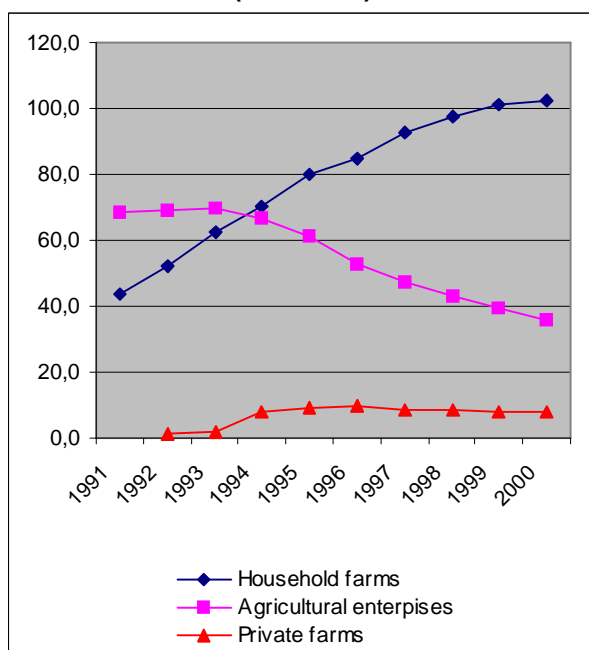
Source: Statistical Department, Uzbekistan Ministry of Macroeconomics and FAO data.

Graph 3.8. Tendencies in Sheep and Goat Numbers in Uzbekistan by Types of Farming, 1991-2000 ('000 head)



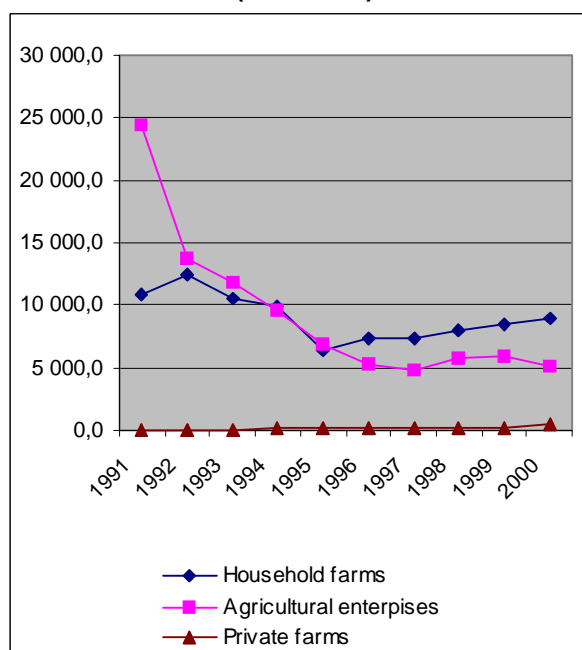
Source: Statistical Department, Uzbekistan Ministry of Macroeconomics and FAO data.

Graph 3.9. Tendencies in Number of Horses in Uzbekistan by Types of Farming, 1991-2000 ('000 head)



Source: Statistical Department, Uzbekistan Ministry of Macroeconomics and FAO data.

Graph 3.10. Tendencies in Number of Poultry in Uzbekistan by Types of Farming, 1991-2000 ('000 head)



Source: Statistical Department, Uzbekistan Ministry of Macroeconomics and FAO data.

According to the 2002 survey results most of the dekhkan and private farms in both regions deal with livestock production. Table 3.3. demonstrates that cattle, particularly cows, are the most widespread type of livestock. It should also be mentioned that the average number of livestock owned by private farms is 3-5 times more than in smallholdings. In addition this indicator is much higher in Sirdarya province than in Bukhara province due to more available pastures. The second most frequently owned type of livestock is sheep and goats, of which private farms raise more than 4 times on average than dekhkan farms in both regions. Many smallholdings own horses in Bukhara province, while in Sirdarya province this number is insignificant. A negligible number of private farms raise pigs.

Table 3.3. Number of Livestock in Different Types of Farming

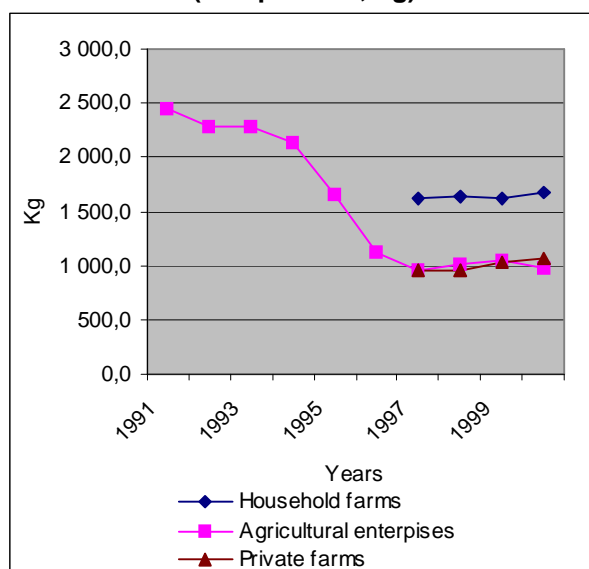
	Sirdarya Province				Bukhara Province			
	Dekhkans		Private Farms		Dekhkans		Private Farms	
	% owning	Average Owned	% owning	Average Owned	% owning	Average Owned	% owning	Average Owned
Bulls	41.0%	2.52	3.5%	10.75			26.0%	3.82
Cows	74.0%	1.74	4.0%	22	84%	4.20	37.0%	4.82
Young bulls	15.5%	1.39	2.5%	6.4	78%	1.67	16.5%	3.86
Young cows	33.5%	1.16	3.5%	9.63	75.5%	1.72	25.5%	5.36
Sheep	18.0%	8.51	3.0 %	35	10.5%	6.77	21%	26.78
Horse	1.5%	5.00	2.0%	3.60	13%	2.30	3.5%	3.2
Poultry			1.5%	155.00			3.5%	129.60
Pigs			0.5%				2.0%	4.00
Donkey			1.0%				2.0%	3.00
Bees			1.0%				2.5%	4.00

Source: Farm survey 2002.

Livestock productivity in Uzbekistan is very low compared to the European level. An analysis of available data for agricultural enterprises indicates a sharp decline (more than 2 times) in milk productivity and eggs per hen. (Graph 3.11. and Graph 3.12.) However since the second half of the 1990s the state has taken serious measures to improve animal vaccination services and provide protein-rich feed. In the

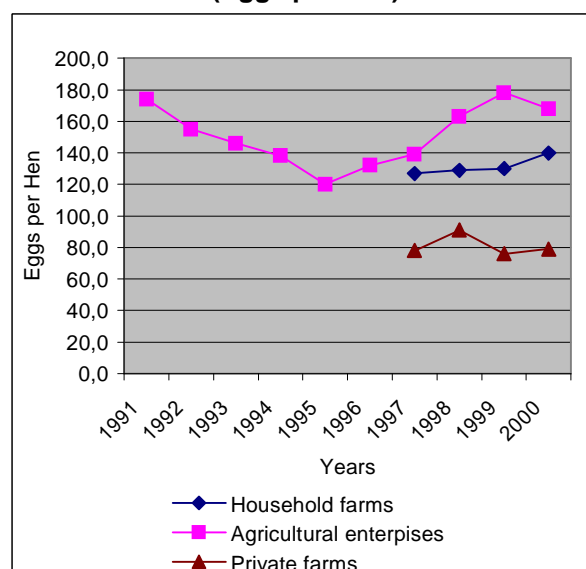
surveyed farms, the average milking in liters per day was 9.6 in summer and 6.7 in winter. In Sirdarya province the yield of milk was about 20% higher than in Bukhara. The average number of eggs laid per hen per month was very low: 10 in winter and 13.2 in summer.

Graph 3.11. Tendencies in Livestock Productivity by Types of Farming, 1991-2000 (Milk per Cow, Kg)



Source: Statistical Department, Uzbekistan Ministry of Macroeconomics and FAO data.

Graph 3.12. Tendencies in Livestock Productivity by Types of Farming, 1991- 2000 (Eggs per Hen)



Source: Statistical Department, Uzbekistan Ministry of Macroeconomics and FAO data.

About 45% of farms used different types of fodder to feed livestock. Regarding fodder and pastures, the survey showed the following results: 37% of farmers reported pasturing their livestock in their own plots, 29.5% responded that they were allowed to graze their livestock on shirkat cropland, 9% pastured in communal pasture and about 12% along roads and canals. The survey also asked about the difficulties farmers faced in livestock production. The most common response in all types of farming was the lack of fodder – 49%, the second-ranked problem is the low availability of pasture, mentioned by 26% of farmers 21% answered disease among animals and 19% mentioned low prices for their products.

3.5. Conclusions

During the first years of independence (1990 – 1996) total farm output declined. However, as land reform and farm restructuring became accelerated in the middle of the 1990s farm output recovered and reached the pre-independence level by the end of the decade. The area under cultivation for strategic crops not only reversed its decline, but the area of wheat actually increased. The fall in productivity of state cotton production is explained by the decline in soil fertility, the absence of crop rotation and the lack of stimulus for farmers. On the other hand, private sector production particularly in dekhkan farms, increased significantly.

Acknowledgements

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