

Economic Research Center

# **THE RESEARCH ON AGRICULTURAL INPUT MARKET IN AZERBAIJAN**

**Economic Research Center**

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**Introduction**

One of the greatest challenges of economic management in the country is to diversify the economy in the face of growing dependence on the oil sector. Therefore, development of rural areas is a priority for Azerbaijan with the agricultural sector being a key to this development. The agricultural sector is the most important source of employment in Azerbaijan. Agriculture accounted for approximately 5.9 percent of GDP in 2008 - the largest economic sector in Azerbaijan after oil, construction, transport and communication. Agriculture's share of employment has increased to 38.8 percent in 2008 from approximately 31 percent in 1990.

The real annual increase in the agrarian sector made up 4,5 percent on average during 2003-2008. On the basis of privatized lands and properties of the cancelled state farms, collective farms and interfarm enterprises following the reforms, 1191 collective, 156 agricultural production cooperatives, 2651 village farm holdings and other private agencies were established, and 843,2 thousand families turned into physical persons. In comparison it have to be mentioned that oil sector gives 60 percent of GDP and covers only 2 percent of employees. 3,2 percent of investment potrfolio and 7,5 percent of fixed capitals belong to agriculture. As result average monthly wage in agricultural enterprices is 86,8 AZN, while same figure for industry is 344,8 AZN, for construction is 381,4 AZN, for transport and communication is 250,4 AZN in 2007. Since 1999 the producers of the agricultural products have been exempted from all taxes except for land tax. Agriculture received other exemptions from government, for exemple, the debts of the farmers in the districts occupied and eliminated as a consequence of land reforms were cancelled. Moreover the government has started to pay the 50 percent of expenditures spent by the farmers on purchase of fuel, motor oil and fertilizer as well as provide subsidies for grain growing, the "Agroleasing" OJSC has been established to improve technical supply, and the producers are provided with equipments and fertilizers via leasing with concessional terms. The important projects with a total amount of USD 158 million have been implemented in the agrarian sector of the country with the support of international organizations.

<b>Fields</b>	<b>GDP (%)</b>	<b>Employment (%)</b>	<b>Investment (%)</b>	<b>Fixed assets (%)</b>	<b>Avarege monthly wages (AZN)</b>
Industry	60,6	7,1	60,8	56	344,8
<b>Agriculture</b>	<b>5,5</b>	<b>38,8</b>	<b>3,2</b>	<b>7,5</b>	<b>86,8</b>
Construction	7,1	5,6	0,1	2,7	381,4
transport and communication	5,7	5,1	12,2	15,3	250,4
Others	21,1	43,4	23,7	18,5	

**Table 1. The shares by sectors of economy (2007)**

Source: State Statistical Committee and National Bank of Azerbaijan

<b>Years</b>	<b>Total</b>	<b>Of which</b>
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		<b>plant-growing products</b>	<b>livestock products</b>
All categories of farms			
1995	713.4	418.1	295.3
1996	903.7	529.7	374
1997	824.5	486.5	338
1998	884.3	538.6	345.7
1999	946.2	541.7	404.5
2000	1060.7	617.7	443
2001	1179.9	718.6	461.3
2002	1270.5	774.1	496.4
2003	1366.5	807	559.5
2004	1476.6	874.8	601.8
2005	1732.1	988.2	743.9
2006	1908.7	1063.3	845.4
2007	2765	1726,4	1038,6
Agricultural enterprises and other organizations			
1995	233.6	194.7	38.9
1996	295.9	246.6	49.3
1997	213.7	178.1	35.6
1998	59.6	54.7	4.9
1999	37.6	33.4	4.2
2000	23.9	17.8	6.1
2001	22.9	14.9	8
2002	22.8	11	11.8
2003	41.6	10.3	31.3
2004	63.2	13	50.2
2005	68.9	14	54.9
2006	61.2	13.5	47.7
2007	119,6	23,2	96,4
Private owners, family peasant farm holdings and households			
1995	479.8	223.4	256.4
1996	607.8	283.1	324.7
1997	610.8	308.4	302.4
1998	824.7	483.9	340.8
1999	908.6	508.3	400.3
2000	1036.8	599.9	436.9
2001	1157	703.7	453.3
2002	1247.7	763.1	484.6
2003	1324.9	796.7	528.2
2004	1413.4	861.8	551.6
2005	1663.2	974.2	689
2006	1847.5	1049.8	797.7
2007	2645,4	1703,2	942,2

**Table 2. Gross output of agriculture ( by actual current prices, mln. manats )**  
**Source: State Statistical Committee**

The agricultural sector is also very important for food security and reduction of rural poverty. Agriculture is an important source of income and stability for rural areas where the benefits of Azerbaijan's petroleum wealth are much less evident. In Azerbaijan, the reliance on agriculture as a major source of income is associated with a lower risk of poverty. Further, the share of expenditures on food by Azerbaijani households is high and even higher for the rural poor. Of this, rural households produced half of the food they consumed, and for the poorest households the reliance on own consumption was even higher and grew over time.

### **Land and water resources**

The total land fund of the Azerbaijan Republic amounts to 8641.5 thousand hectares and 4756.5 thousand hectares or 55 % of it is good for agriculture. 1432.6 thousand hectares or 16.6 % of the total area are irrigated lands.

1808,4 thousand hectares out of the total land fund is arable for farming. 181,6 thousand hectares out of the land fund is under occupation and 224,7 thousand hectare land favorable for agriculture are multiyear sowings, 117,6 thousand hectare are hayfields, 2560 thousand hectares are pastures, and 45,7 thousand hectare are resting fields. There are 258,1 thousand hectares of courtyard fields (227,6 thousand hectares of it are favorable for agriculture) and 1038,8 thousand hectares of forest areas in the country.

The sowing area per capita is decreasing year by year as a result of land assignment to the non-agricultural premises and private constructions due to the population increase as well as land erosion, rising level of underground waters as a result of rising Caspian Sea level, improper implementation of ameliorative measures, violation of agricultural technology etc.

If sowing area per capita was 0,36 hectares in 1959, it went down to 0,23 hectares in 1970, 0,21 hectares in 1979 and 0,155 hectares in 2006.

40 percent of lands in the mountainous areas have eroded to some extent and approximately 47 percent of the irrigated sowing areas have become partially salty thus requiring ameliorative measures in 657 thousand hectares.

Approximately 70-75% of lands in the neighbourhood Turkey and Iran are arable lands and 65-70% of them are used for sowing. The 81.6% of arable lands in Turmenistan and 80.7% in Ukraine are included into the sowing turnover. The lands in Azerbaijan are poorly used for agricultural purposes as compared in the mentioned countries. Sowing areas comprise a small percentage of the arable lands. Hence involvement of new land plots into for agricultural pruposes becomes very important for increased goods production, efficient use of labour resources in villages and establishment of new farming types.

	<i>Azerbaijan</i>	<i>Armenia</i>	<i>Georgia</i>	<i>Iran</i>	<i>Russia</i>	<i>Turkey</i>
Per sq. km	370	222	763	60	198	238
Per capita	4	3,2	11,3	1,6	18,2	3

**Table 3. Regional Water resources by country (th. m per year)**

**Source: Water resources management in the republic of Azerbaijan: overview and outlook, Country Report**

<i>Area, th. km2</i>	<i>Population, mln.</i>	<i>Surface</i>	<i>Ground</i>	<i>Total</i>	<i>Total use, (km3/y)</i>	<i>Yield-Use, (km3/y)</i>
86600	8,7	29	3	32	16,4*	15,60

\* - Total abstraction includes net water use + efficiency rate

**Table 4. Basic information concerning water resources and their use in Azerbaijan**  
**Source: Water resources management in the republic of Azerbaijan: overview and outlook, Country Report**

Water resources of the country are limited. Only 10 billion cubic meters or 30 percent of the land water resources form in the territory of the country, while the remaining 70 percent in neighbouring countries. The main discharge of water flow of inland rivers takes place in spring and autumn. In that the flow of most of them is not regulated, the accumulation and use of flood waters become difficult. Consequently, it becomes impossible to use 3,2 billion cubic meter quality irrigated water every year. The existing artificial water basins can contain only 21,5 billion cubic meter water resources. The majority of them are used for hydroenergetics and irrigation purposes. At present about one third of underground water resources are used. 7-9 billion cubic meter water is used every year in the country, 67% of which is used for agricultural needs.

There are still problems in this sphere. That is, it is necessary to rehabilitate and execute interfarm networks, which were once at the discretion of previous collective farms and state farms, as well as outdated irrigation systems that were exploited for many years, improve ameliorative state of lands, and build new water basins, irrigation and collector-drainage networks. At the same time, limited water resources in the country call for efficient and economic use of existing water resources, improvement of technical state of irrigation systems and application of advanced water-saving irrigation equipment and technologies.

### **Production of plant-growing products**

Before independence in 1991, Azerbaijan was a main producer of cotton, wheat, grapes, and vegetables for the Former Soviet Union (FSU) markets. Real output declined rapidly between 1991 and 1994, when the production of grains fell by 19%, cotton by 48%, grapes by 66%, and vegetables by 43%. The decline in agricultural production leveled out during the past few years. From 1996 to date, fundamental changes have been introduced, including the abolition of the state order system for agricultural products, the discontinuation of official pricing of inputs and outputs, the replacement of state input supply and farm output marketing organizations with privately owned and managed companies, and distribution of farm land to individual farm members.

The volume and structure of plant-growing products have recently changed. Firstly, it affected the growing structure of the country enabling it to be formed at the level of domestic and foreign market requirements. The production of plant-growing products has increased since 1999. The grain production reached 2004,4 thousand tons in 2007 as compared to 1098,3 thousand tons of 1999, potatoes from 394,1 to 1037,3, vegetables from 670,8 to 1227,3, market garden crops from 206,3 to 417,6 and fruits from 436,5 to 677,8 thousand tons. A switch to surplus is experienced with regard to the provision of some products in the country. The annual demand of population for potatoes, vegetables, market garden crops and fruits is already satisfied with domestic production and their export opportunities are expanding. Yet, the production indicators of market garden crops, including grain, are well below the potential opportunities of the sphere. Average productivity of grain and grain-bean crops that appear to be the main foodstuff adds up to 27,1 s/ha in Azerbaijan. However, it is possible to significantly increase the crop production just by applying up-to-date technologies without any expansion of sowing areas.

The good that is most imported to satisfy the domestic demand is vegetable oil. At the same time, the country has great potential to increase its production, particularly olive oil. Besides, it is

possible to achieve increase in production of potatoes, vegetables, beet-sugar and other agricultural products by intensifying farm operations.

Seed-growing is of great importance in rise of productivity and quality of agricultural products, and improvement of food supply. More than 300 legal and physical farm persons, including 20 public agricultural production enterprises are engaged in production of seeds and saplings now. The total amount of annually produced grain seeds in these farm holdings comprises only 7 to 10 % of the total demand in the country. Furthermore, it is necessary to bring seed-growing works up to current requirements in the public and private farms engaged in production of seeds and saplings. Despite the fact that the growing of grain and grain-bean crops has relatively advanced in the country on the whole, the problems with regard to growing of fodder crops, vegetables and market garden crops and in the sphere of nurseries remain unsolved.

The processing, storage and sale of produced products are one of the important issues. Tens of new small and large enterprises have been built or rehabilitated recently towards processing of agricultural products. Yet, necessary market leverages and infrastructure corresponding new economic relations for the purchase and sale of products are slowly established. Because of deficient purveyance and sale bases, the delivery, storage and sale of fruits and vegetables are poorly organized. According to the calculations, 10-15 percent of the grown vegetables are lost each year due to the mentioned reasons.

The classification, packing, storage, advertisement and transportation issues should be settled and promotional activities should be conducted towards production and export to enhance export of agricultural products and sell competitive products in the external market. The shortage of processing enterprises for different agricultural products that fail to match the contemporary standards prevents production growth of agricultural products, causes loss of some part of products and adversely affects on the provision of consumers with a range of local products.

### **Production of livestock products and product processing**

Reforms regarding livestock started in 1994. The implementation of reforms in this sector was very crucial since the number of cattle was decreasing annually by 70 thousand head on average, while small-cattle by 243 thousand head, meat production by 25 thousand tons and milk production by 47 thousand tons since 1990. A sharp increase was obtained in the number of cattle and production of livestock products as a result of reforms. That is, the number of cattle increased by 490,2 thousand heads (24,2%) and that of small-cattle by 2 million heads (33,3%) for January 1<sup>st</sup>, 2008 as compared with the respective period of 2001. Presently, there are 26 poultry enterprises operational in the country. The chicken meat produced in these enterprises accounts for about 70% of consumption in the country. Notwithstanding all these, meat and milk production does not fully meet demands in the country.

One of the important problems in livestock development is a weak forage reserve. Such expensive forages as haylage and silage have been removed from livestock ration. A total of 6.4 million tons of green corns and 2.4 thousand tons of 2.4 edible roots were produced in 2007. Cows and buffaloes are grazed mainly in the pastures around villages. The grass cover of these areas has become very sparse and dry grass productivity of winter pastures has decreased to 3-4 quintal. Mixed forage is not currently produced except for in poultry enterprises.

Years	Cattle	Buffaloes	Total	of which:			Sheep	Goats	Sheep and goats	Pigs	Poultry
				cows	dairy buffaloes,	total					
1995	1340.9	291.9	1632.8	619.6	122.9	742.5	4373.1	184.5	4557.6	33.4	14417.8

1996	1383.7	298	1681.7	644.6	128	772.6	4434.3	210.1	4644.4	30.4	13333.4
1997	1477.9	302	1779.9	691.8	134.9	826.7	4648.2	273.8	4922	23.4	12030.7
1998	1550.2	293.3	1843.5	727.4	135.5	862.9	4896.1	370.9	5267	21	13234
1999	1621.1	292.1	1913.2	760	135	895	5102.8	409.1	5511.9	26.1	13873.7
2000	1664.4	297	1961.4	786.5	139.3	925.8	5279.6	494.2	5773.8	19.7	14711.1
2001	1722.9	298.7	2021.6	818.4	140.5	958.9	5553.1	532.6	6085.7	18.6	14740.5
2002	1794.3	303.6	2097.9	859	142.7	1001.7	6002.9	556	6558.9	16.9	15351.2
2003	1872.2	306.4	2178.6	897.7	144.6	1042.3	6392.4	594	6986.4	19.8	17137.5
2004	1934.4	307.4	2241.8	930.9	144.8	1075.7	6676	604.1	7280.1	20.4	17545
2005	2007.2	308.6	2315.8	969.1	147.9	1117	6887.4	601.4	7488.8	22.9	18253.3
2006	2077.1	302.9	2380	1006.3	145	1151.3	7105.3	593.4	7698.7	22.9	19036
2007	2145.9	299.1	2445	1041	142.6	1183.6	7290.6	577.8	7868.4	21.3	18760.6

**Table 5. CATTLE-BREEDING, Livestock (1000).**

Source: State Statistical Committee

There are 45 meat and 127 small milk processing enterprises operating in the country, which do not entirely meet existing demand. For instance, due to insufficient number of milk processing enterprises, at least, 150 thousand tons of milk loses by an exchange every year. 14 percent or 23 thousand tons of cut meat are sold without any initial industrial processing. Only 43,5 percent of produced milk is processed in an industrial way, and ultimately people's need for butter, cheese, curds and sour cream is mostly satisfied at the expense of exported products. Suggestions made by the private sector regarding new meat and milk processing enterprises in the neighbourhood of raw materials base and construction of refrigerators for storage of raw materials should be endorsed.

Years	Meat (carcas weight)	Milk	Eggs mln.units	Wool (grea.weight)	Cocoons
1995	82.0	826.5	455.8	9.0	1.1
1996	85.7	843.3	477.3	9.1	0.8
1997	90.5	881.5	492.4	9.6	0.4
1998	99.9	946.5	509.0	10.3	0.1
1999	104.6	993.4	526.3	10.5	0.0
2000	108.7	1031.1	542.6	10.9	0.1
2001	114.1	1073.7	555.5	11.6	0.1
2002	124.6	1119.8	561.6	11.8	0.1
2003	134.4	1167.8	681.9	12.1	0.1
2004	143.7	1213.7	829.4	12.3	0.1
2005	149.6	1251.9	874.6	13.1	0.1
2006	155.5	1299.5	760.9	13.6	0.1

**Table 6. Main animal products (1000 t)**

Source: State Statistical Committee

#### Artificial insemination and pedigree work

Milking from each cow and buffalo around 1110 kg in 2007 confirms that pedigree work is not properly carried out among cattle and fight is poorly implemented against barrenness. There are

currently over 80 private pedigree farms working in the country. Besides, 11 artificial insemination centers have been established in the regions, 60 in cities and districts, and 900 in villages and towns. 255 technicians were trained in artificial insemination during 2007-2008 and they were given necessary equipment. As a result of artificial insemination of 16,3 thousand heads of cows, buffaloes and heifers in 2007, 12,9 thousand heads of calves were made, which is too below the current demand. In order to eliminate the problems in this sphere works currently implemented to improve gender structure of cattle should be expanded and at least 7-8 thousand heads of strains of cattle should be brought from abroad every year.

Facilitating linkages between network vets, technical resources, and other sector players may be resulted in the introduction of a new livestock service in the market: artificial insemination (AI) of cattle. AI gives cattle farmers the choice of using the best possible bulls to sire their calves, not only to increase productivity, but to improve the health and well-being of the herd. Many devastating cattle diseases are transmitted sexually, so using stud bulls from other owners is potentially dangerous. But tight quality control of the insemination process not only ensures the safety of a farmer's stock, it does so at a fraction of the cost of an actual siring. While a bull may cost thousands of dollars, AI costs around ten dollars. The service thus could enable farmers to save money, increase productivity, and create a sustainable future for their herds.

Awareness	Reach	Market penetration	Retention
(% of respondents fully aware of service benefits)	(% of respondents aware of benefits who have tried service)		(% of respondents who have tried service and used it in last calendar quarter)
(A)	(B)	(A x B)	
68,5	32,5	22%	93,6
44,1	27,5	12%	95,5

**Table 7. Awareness, reach, and retention rates of veterinary and livestock production services, Lenkaran and Masalli regions**

**Source: BDS Market Facilitation in Azerbaijan: Veterinary Services for Small Livestock Holders (2005, October)**

### **Agrarian entrepreneurship and farmers**

The “State Program on socio-economic development of regions of the Azerbaijan Republic (2004-2008)” has been realized. “State Program on Reliable Foodstuffs Supply for Population in 2008-2015” is implementing. Nevertheless, there are still problems that hinder establishment of complete favourable atmosphere stimulating population's settlement in the villages. Though all households have access to the electricity network, the intervals during electricity supply in the village affect adversely on the production of products. There are still problems in the reliable gas and water supply of the population. At present some part of the families in the villages take water from rivers, lakes and irrigation channels. Almost all villages of the country have used roads. However, the intravillage and intervillage roads do not meet current demands completely.

The number of juridical persons engaged in entrepreneurship activity in the agrarian sector of the country adds up to 15669. 9521 of them are entrepreneurs engaged in agriculture and 6148 in the processing sphere.

The state conducts financial support to expand entrepreneurship activity in the production of agricultural products and foodstuffs.

That is, during 2002-2007 and six months of 2008 the National Fund for Entrepreneurship Support provided 6738 entrepreneurships in total with concessional credits in the amount of 271,4 million manats for funding of investment projects in 63 cities and districts of the country through licensed credit organizations. 147 million manats of these funds was directed towards funding of 5431 projects on production and processing of agricultural products and production of foodstuffs. Out of these funds:

- 25,5 million manats was allocated for funding of projects on production of different foodstuffs;
- 42,5 million manats for funding of projects on processing of agricultural products;
- 79 million manats for funding of projects on production of agricultural products, and development of husbandry and livestock.

( heads )

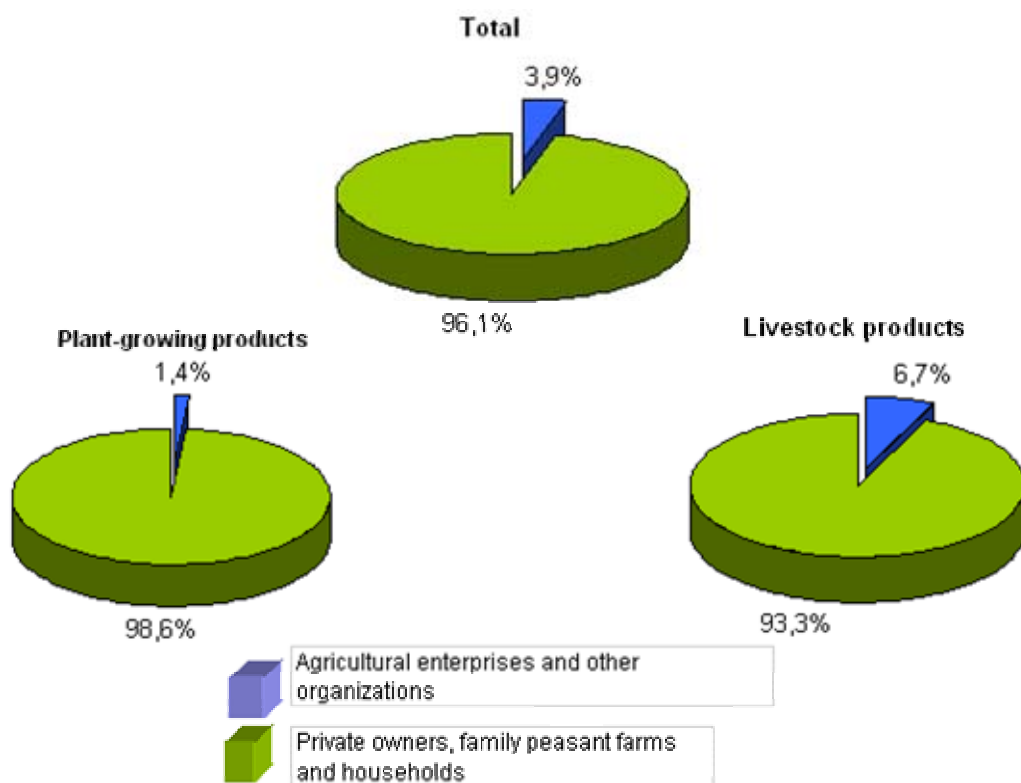
	1996	2000	2001	2002	2003	2004	2005	2006	2007
Gattle and buffaloes	140	195	194	200	207	211	217	220	222
of which:									
cows and dairy buffaloes	70	92	92	95	99	101	104	106	107
Sheep and goats	310	540	554	599	634	658	671	678	683
Pigs	1	1	1	1	1	1	1	1	1

**Table 8. Livestock per 100 holdings of rural population**

**Source: State Statistical Committee**

The expansion of entrepreneurship activity, implementation of further promotional activities in this regard, and increasing crediting of agrarian sector turn out necessary in food supply. It is particularly necessary to establish warehouses, refrigerators and elevators to store foodstuffs, produce agricultural equipment and fertilizers, establish packing enterprises, expand production of grain, forage, meat and dairy products, fruits and vegetables and other foodstuffs and develop processing industry.

**Diagram 1. Structure of agricultural products by categories of holdings (in comparative prices per cent to the total)**



The parameters of different new farming forms should be the major consideration to develop private agencies. The parameter of private sector in the agrarian sector means land size, number of livestock and production volume. During establishment of such farms, principally the size of lands favorable for agriculture and the number of livestock of these farms should be determined exactly.

A more effective experience regarding organization of private agencies was obtained in the Republic of Latvia. In Latvia each farmer shares 30 hectares of land on average. To study experience of foreign countries regarding organization of private agencies and determine their parameters are not of little importance. The data on development of farms in the foreign countries show that each farmer shares 4.3 hectares of lands in Greece, 5.6 hectares in Italy, 14.1 hectares in Belgium, 14.9 hectares in Netherlands, 16 hectares in German, 22.7 hectares in Ireland, 27.1 hectares in France and 64.1 hectares in Scotland.

Other European countries are also well experienced in determining favourable parameters of private agencies. For example, in Poland the special weight of lands used by peasant farm holdings among favorable agricultural lands amounts to 77%. The size of lands used by each peasant farm holdings is 5.3 hectare on average.

Another indicator that characterizes private agencies is the number of employees. For example, the parameters of peasant farm holdings vary depending on the number of the work-abled in the family. The experience of foreign countries and several republics included in the commonwealth of independent states on development of peasant farm holdings in this sphere show that while the number of the work-abled in the peasant farm holdings is 4 persons on average, high results are achieved. However, the number of the work-abled in most of peasant farm holdings is not more than 2-3 persons. Accordingly, the peasant farm holdings have to involve teenagers and children in work. Therefore, the number of the work-abled in the family should be considered along with other factors and conditions during establishment of new peasant farm holdings. The management of

private agencies is another important issue. The experience of Sweden is noteworthy in this respect. Top management of cooperatives in Sweden is an annual common gathering of all high rank people – advisory board chairman, secretary, and accountants.

Thus, studying the experience of the world countries reveal that there is a favorable condition to organize private agencies and intensify their activity in our independent republic. It is possible to make the best use of this situation and produce more as a consequence of establishment of private agencies.

Years	Total	of which				Private owners*
		collective	state farms	farms	other states	
1990	3014	983	820	-	1211	66
1991	3112	1176	752	14	1170	95
1992	2755	1196	731	134	694	320
1993	2635	1096	719	140	680	440
1994	2406	1125	720	117	444	815
1995	2487	1119	688	315	365	1999
1996	2613	982	569	746	316	4110
1997	2185	345	330	1280	230	5671
1998	5605	2	-	4847	756	3721
1999	3311	2	-	2795	514	3613
2000	2910	2	-	2500	408	3248
2001	2420	2	-	2171	247	2604
2002	1984	2	-	1663	319	2589
2003	2143	2	-	1839	302	2607
2004	2241	2	-	1937	302	2661
2005	2506	2	-	2201	303	2681
2006	2518	2	-	2242	274	2456
2007	2282	2	-	2016	264	2488

\* Registered juridical persons

**Table 9. Number of agricultural enterprises and private owners**

**Source: State Statistical Committee**

The insurance in the agricultural sphere of Azerbaijan is one of less developed sectors, its share in the general portfolio of insurance comprises less than 1%. The problem of the financial protection of their property interests in view of the high dependence of the agrarian sphere of the economy on the spontaneous forces of nature always stands before the agricultural producers. Thus, for instance, natural cataclysms showed the importance of the development of insurance in the agricultural sector. The forces of nature are not predicted. Therefore, there is insurance with one of the effective instruments of managing risks in the agriculture and making it possible to ensure stable conditions of the production activity of economic subjects irrespective of the natural anomalies.

The insurance of the agricultural production is an important element of the system of financial-credit provision. At present in the world there are different systems of the agricultural insurance supported by States. Thus, for instance, in Greece the system of insurance is in the hands of State. Through its state insurance company the State collects insurance payments, manages functioning of the program and covers losses. Commercial insurance companies deal only with the insurance of

the cultures, which do not have support from the State. The systems based on the close co-operation of state and private sector effectively work in Spain and Portugal where the State plays a key role, ensuring the subsidy of insurance premiums and re-insurance. In Italy, France, Austria and Germany the preference is given to the private sector.

But in each system of the insurance of agriculture there is one special feature - its high cost. Taking into consideration the climatic risks, the insurance companies should establish higher tariffs in the agrarian sector than in other branches in order not to prove to be in the loss. Only with the real state support it will be possible to reach the equilibrium between proposal and demand in this the field and speak about the creation of the system of agricultural insurance capable to give real guarantees to producers in the entire country. State must push slightly farmers to the insurance, not only explaining its need, but also assuming part of the insurance payments of producers.

The development of the agrarian sector in Azerbaijan can become one of the priority directions of the national economy, being serious alternative to the oil sector of the country. The farmers need support for this. State repeatedly rendered financial aid to the agrarian sector, special attention was paid to the agricultural production. New stage for the development of the country's agrarian sector must be State Program on Reliable Foodstuffs Supply for Population of Azerbaijan in 2008-2015. The Program envisages measures on insurance in the agriculture. The measures imply the introduction of contemporary insurance in the agricultural production, and also the improvement of the list of risks for the financed agricultural property.

It is early to speak of how this system will function in Azerbaijan in future, but the experience of other countries testifies that it is necessary to accept at least 5 years with the prospect to form the system. Usually firstly the basic concept of the system of agrarian insurance is devised, in which it is desirable to prescribe the role of basic sides (state, insurance companies and producers) and to determine the tasks of system, and then it is possible to make additions.

For example, in the USA the system constantly develops and the Government makes changes, introducing provisions to the Law on Agrarian Sector. Here it is necessary to note that such changes in the USA mainly deal with financing of program and procedure of subsidies.

As a whole, the functioning of system is realized by introducing laws and provisions on institutions, which are responsible for the agrarian insurance (Agency on Control of Risks, Federal Corporation for Agrarian Insurance). In Spain the basic condition of the system is fixed in the law on agrarian insurance. There are appropriate legislative documents in Canada at the level of provinces.

### **Finance-credit and leasing**

The consumption of main foodstuffs per capita in the Azerbaijan Republic was as follows in 2007: 182,0 kg grain and grain products, 158,9 kg bread and loaves, 22,8 kg meat and meat products, 178,7 litre milk and dairy products, 97 eggs, 96,7 kg potatoes, 191,6 kg vegetables, 70,7 kg fruits and berries, 14,2 kg sugar (including confectionary), including 11,8 kg sugar, 8,7 kg vegetable oil, 2,4 kg fish. As compared with the previous year the calorie content of daily food allowance in 2007 increased and comprised daily 2505,4 kilocalorie per capita which is 247,4 kilocalorie, or 10,9 % more than the minimum level (2258 kilocalorie per capita every day) of foodstuffs within the minimum consumption basket. This shows that the recent activities have positively affected on provision of population with foodstuffs. Besides, it is necessary to significantly enhance the foodstuffs consumption per capita and gradually match it with the level in advanced countries.

The rise of agricultural products and foodstuffs, establishment of new job opportunities, increasing incomes of population groups in more need for social protection as well as minimum pensions and salaries, and bringing the need criteria up to the living minimum wages are the major requirements for implementation of defined objectives in this sphere.

In July, 2004, «Agrarkredit» signed an agreement with National Fund for Entrepreneurship Support (NFES) to use its funds to give credits to KOMs through «Agrarkredit». Export-oriented KOMs in the private sector, innovative projects and infrastructure development projects for tourism were identified as the target groups for these funds. «Agrarkredit» started to grant credits from this Fund as of September, 2004 and had given credits in the total amount of 4.8 million manats to 325 entrepreneurs by October 1, 2008. under this project, 3.3 million manats were left for 93 entrepreneurs on October 1, 2008. credit terms that have been set by Azerbaijani government is very good for the banking sector. Annual interest rate on credits is 7% and they are given on a 2 to 7 year condition. Concessions are offered during the first 2/3 period of credit use and only interest rates are paid during this period. Credits are given on the condition that a collateral in the amount of 150% of the value of the credit is provided. “Agrarkredit” pays an annual 1% commission to NFES for its funds.

Agrarkredit Stock Credit Union had net assets in the amount of 27392.6 thousand manats, debts in the amount of 6735.6 thousand manats and capital in the amount of 20657.0 thousand manats on January 10, 2008 were. For the same time, investment funds comprised 4689. thousand manats. The value of main funds were 1016,0 thousand manats, 904.3 thousand of which were service buildings. The total income was 3555.7 thousand manats, total expenditures 2592,7 thousand manats and profit of 963.0 thousand manats in the actual consolidated budget on October 1, 2008. The remainder of the credits for the agricultural development in the country given by the «Agrarkredit» Stock Credit Union was 3063.3 thousand manats from the World Bank’s “Farm Holdings’ Privatization” project and its supplemental Revolver Fund, 11020,6 thousand manats from the world rural credits project and 3331.5 thousand manats from the NFES for January 10, 2008.

In 2007, 212 agricultural enterprises out of 2098 became unprofitable. This comprised 10,1% of the total number. The economic situation in the agricultural enterprises has relatively improved during the recent years. The share of unprofitable farm holdings shrank from 35.7 % (in 2001) to 10.1 % (in 2007).

Even such a financial position of agricultural enterprises did not make them appealing for foreign investors and due to lack of profits, the internal funds for long-term investments were restricted to amortization, the amount which steadily decreased with regard to exceeded retirement of fixed assets as compared to their exploitation

One of the primary reasons for insufficient agricultural production is considerable failure in material and technical supply. Agricultural technologies include basic machines that are below standards. The same goes with the use of mineral fertilizers and means of plant protection.

Years	Tractors	Ploughs	Cultivators	Seeding machine	Mowers	Press choose	Reaper	Combine			
								cereals harvesters	grain maize harvesters	fodder harvesters	potatoes harvesters
1985	38772	14100	10038	10560	4620	4470	716	4493	632	1793	14
1990	40883	13318	7278	8998	3187	4316	335	4544	361	1624	42
1994	33508	10156	4958	7028	2461	3270	144	4509	277	1148	24
1995	33174	8770	4512	6702	2088	3269	165	4273	239	1075	13

1996	32855	8601	4633	6532	2046	3263	130	4295	243	1019	12
1999	29500	6477	4180	4897	1296	1984	-	3634	158	640	-
2005*	14887	3019	1009	1412	1056	903	-	1298	43	139	10

**Table 10. Stock of main agricultural equipment (end of the year)**

Source: State Statistical Committee

\* Agricultural census 1 June 2005

Years	Cotton harvesters	Beet harvesters	Sprinkler system	Irrigation system	Hard mineral fertilizer spreaders	Machines for:		Sprayers And dusters	Milking machines	Fodder distributors		Conveyor for harvesting
						hard organic fertilizer	liquid organic fertilizer			for cattle	for pigs	
1985	4238	5	1795	199	3825	981	261	12219	1690	2400	105	5658
1990	3658	6	582	2072	2928	1208	194	8915	1932	1250	49	5455
1994	2882	20	634	2101	1789	832	163	4841	1078	460	10	3717
1995	2653	19	478	1859	1676	1019	190	4247	891	434	11	3460
1996	2430	17	618	1922	1523	801	217	3926	656	342	1	2995
1999	1751	12	...	963	1086	516	...	...	165	...	...	....
2005*	22	16	5	92	135	-	-	201	50	68		49

**Table 11. Machines**

Source: State Statistical Committee

\* Agricultural census 1 June 2005

The assistance from the republic budget has sharply increased during the recent years. However, the number of investments in the agriculture has been less than the average number of investments in economics. The crediting and banking services sector also do not show active interest in investment projects of agricultural production, that led to situation of slow development of leasing.

Table 12 shows that sum of investment into the major capital under the current prices went up sharply by all parameters of agrarian field during the study period. 243,3 mln.manats was invested in the agriculture which is 54 times more than in 1995. It is noteworthy that the number of investments in the agricultural sector was few in the first years and annual rise of investments has been observed only since 2002.

Years	Investment (mln.manats)
1995	4,50
1996	9,7
1997	4
1998	6,9
1999	11
2000	6,5

2001	8,3
2002	17,3
2003	35,1
2004	35
2005	40,7
2006	58,3
2007	243,3

**Table 12. Investments in the agrarian sector**

**Source: State Statistical Committee**

Labour unit cost increases and it means labour-intensive development of agrarian field.

Years	Fixed assets (manats)	Number of labor force	Per capita (manats/number of employees)
1996	2227000000	1172000	1900
1997	2247000000	1071000	2098
1998	2203000000	1139000	1934
1999	2256000000	1566000	1441
2000	2611000000	1517000	1721
2001	2672000000	1482000	1803
2002	2705000000	1495000	1809
2003	2743000000	1497000	1832
2004	2800000000	1502000	1864
2005	2983000000	1510000	1975
2006	3439000000	1548000	2222
2007	35400000000	1556000	2275

**Table 13. Per capita fixed assets in the agrarian sector**

**Source: State Statistical Committee**

We have calculated the impact of investments on the agrarian sector of Azerbaijan. The regression (1) shows that the efficiency of investments is still little.

$$Y = 723.8 + 3.6X \quad (1)$$

*Y is the final product in the agrarian sector, X investments in the agrarian sector*

Year	2008										
Month	January	February	March	April	May	June	July	August	September	October	November

credit mln. ZN)	199	206,1	213,3	230,9	241,7	242,5	247,5	246,7	253,5	255,9	258,7
share (%)	4,2	4,3	4,3	4,4	4,4	3,9	3,9	3,8	3,8	3,8	3,8

**Table 14. Credits on agriculture and processing (end of period)**

Source: State Statistical Committee

The amount of credits on agriculture and processing (end of period) shows the low level of creditizing of agriculture. Point is that there is gap between credit rate and profitability rate of agriculture fields. Especially this problem heightens during last deflation process in Azerbaijan, when the price on agriculture products moves down.

Leasing plays a vital role in the renewal of major capital in the circumstances of investment and credit deficit. Works carried out with outdated facilities in the agriculture appear to be of poor quality and consequently cause a lot of losses. On the whole, products in the amount of 30-40 million manats on average are annually lost as a result of underdeveloped material and technical capacity. Therefore, establishment of a large network of service enterprises to meet current demands turns out to be very important. The "Agroleasing" OJSC was established with Decree 468 of October 23, 2004 of the President of Azerbaijan Republic on "Additional measures of expanding leasing in the agrarian sector" to accelerate the implementation of planned activities in the agrarian sector, facilitate entrepreneurs' works and timely provide them with necessary equipment with concessions. Agroleasing is operational in the regions with its 10 sale service enterprises and technical service enterprises in 57 districts of the country.

«Agroleasing» Open Stock Company's main mission is to strengthen the material and technical capacity of agricultural producers and render them agro-technical services. The company provides agricultural producers mainly with agricultural technology, equipment, spare parts, agro-chemical substances and anti-parasite drugs.

The company implements a wide range of more than 20 service activities like sowing, cultivation, crop harvesting etc. upon the request of entrepreneurs working in the agrarian sphere, and assists them with the production with modern technologies. There are 4 inter-district supply bases in the regions of the republic, 55 farm-based regional agro-service branches, over 100 mechanized teams, and one central supply base in Baku. At the expense of the funds from the state budget and other sources, which were stipulated for 2005-2008 years, the company brought 565 combine harvesters, 1484 tractors, 120 excavators, 4023 various agricultural technologies, and 19 sets of technological equipment in consideration of 7 forage, 6 milk plants and 6 refrigerators. On top of that, 136.74 thousand tons of mineral fertilizer and 294.3 thousand liters of anti-parasite drugs were purchased. Thanks to the agro-service branches and their mechanized teams of the company, grains were reaped in total 340 thousand hectares, an area of 1270 thousand hectares was ploughed, and sowing and plastering of the similar size were carried out. These activities continued in 2008.

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of agricultural farms	2430	2011	6327	3662	2158	1753	1863	1783	1715	1782	1733	2098
of which unprofitable	1509	1508	5486	2583	1132	626	541	452	294	203	214	212

%	62.1	75	86.7	70.5	52.5	35.7	29	25.4	17.1	11,4	12.3	10.1
Gross income, thsd. manat (by factor cost)	35470	-	-	-2123	1118	4348	4936	5324	10490	14757	16543	36932
Balance income, thsd.manat	-	-	-	-	-3315	189	40	95	2872	5892	6235	20000
Level of all financial and economic activity, %	-19.6	-50.3	-41.3	-27.2	-19.2	1	0.1	0.2	5.1	9.1	8.5	14.9
Income of sales of agricultural	-	-	-	-	-2515	220	425	450	2946	5872	6104	18832
of which crop products	-	-	-	-	-6697	-616	1066	1170	1394	2151	2769	1864
animal products	-	-	-	-	-1753	-633	-846	-757	835	3117	4147	15171
Level of agricultural production profitability, %	-17.8	-43.4	-40.7	-26.4	-14.6	1.1	1.4	0.9	5.2	9	8.4	14
of which crop products	-7.7	-44.4	-39.5	-20.9	-7	14.7	17.8	27.6	39.4	41.5	22.7	28.7
animal products	-41.2	-47.4	-51.6	-43.4	-23.2	-5.7	-3.1	-1.8	1.7	5.4	6.6	12.9

**Table 14. Financial results of agricultural enterprises activity**

Source: State Statistical Committee

### Cobb-Douglas production function for agriculture

Dependent Variable: LOG(AGRAR\_GDP)

Method: Least Squares

Date: 12/17/08 Time: 13:39

Sample: 1996 2007

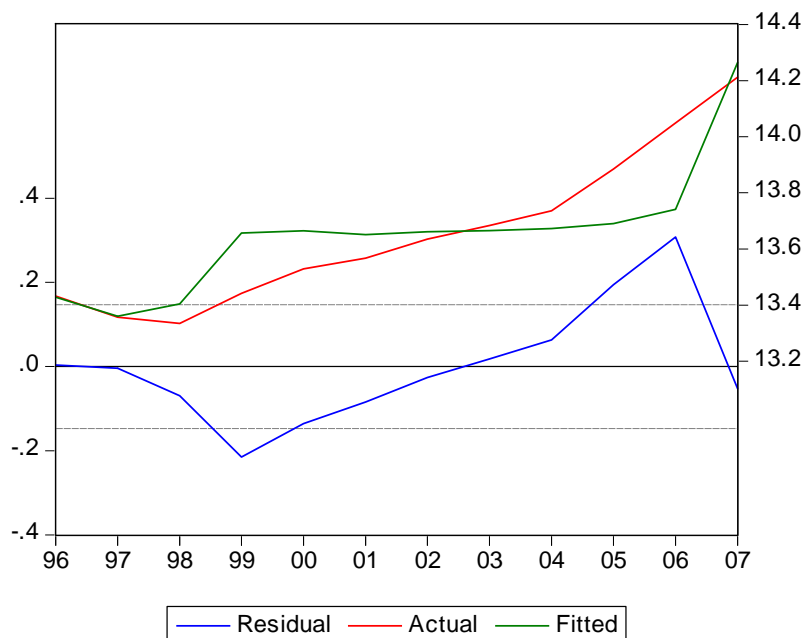
Included observations: 12

$LOG(AGRAR\_GDP) = C(1) + C(2)*LOG(K) + (1-C(2))*LOG(L)$

---

Coefficient	Std. Error	t-Statistic	Prob.
-------------	------------	-------------	-------

C(1)	-2.226890	0.472310	-4.714893	0.0008
C(2)	0.222690	0.060789	3.663354	0.0044
R-squared	0.740949	Mean dependent var	13.65515	
Adjusted R-squared	0.715044	S.D. dependent var	0.275820	
S.E. of regression	0.147236	Akaike info criterion	-0.842544	
Sum squared resid	0.216785	Schwarz criterion	-0.761726	
Log likelihood	7.055265	Hannan-Quinn criter.	-0.872466	
F-statistic	28.60249	Durbin-Watson stat	0.930744	
Prob(F-statistic)	0.000324			



**0.22% of one percentage point of product growth in agrarian sector is attributable to capital and 0.78% to labour.**

In 2009, for the government to pay 50% of fuel, motor oil and mineral fertilizer costs incurred by agricultural producers, 76.5 mln. manats were envisaged as per Decree 1907 of January 23, 2007 of the Azerbaijan President on “State support for agricultural producers”, 60.0 mln. manats have been envisaged from 2009 state budget for the implementation of the “State Program on provision of people with foodstuffs in the Azerbaijan Republic during 2008-2015” approved by the Azerbaijan President Decree to stimulate rise of agricultural products and improve food supply of people on the basis of local production in the Azerbaijan Republic, and 220,0 thousand manats for funding of “State Program on Horse-Breeding Development”.

205,7 mln. manats or 52,0 mln. manats (33,8 percent) more than in 2008 is predicted in the current expenses of 2009 state budget for stable financial provision of amelioration and irrigation systems, while 20,6 mln. manats or 4,2 mln. manats (25,6 percent) more than in 2008 is predicted for forestry, fishery, protection of the environment, hydrometeorology and implementation of other environmental measures.

Lack of optimal mechanism of aids provided from the state budget to the agricultural producers for fuel, motor oil and mineral fertilizers used in cultivation of sowing areas results in several problems:

- The major prerequisite to be eligible for the state budget assistance for the producers is 1 hectare sowing area cultivated for production of agricultural products and perennial sowings. The state allocates 40 manats for fuel and motor oil used to cultivate the sowing area and perennial sowings. We consider it unacceptable to allocate the same amount of funds to farmers regardless of the products they grow and cultivate. The major preference in providing funds to farmers should be their specialization in any product and strategic importance of the goods. That is, the wheat producer is preferred to the tobacco producer in USA and this difference shows itself in the state assistance more than 70 times. Thus, the strategic sphere should be much more stimulated in allocation of funds. We suggest that each farmer should be treated in accordance with first cost, production cost and need criteria of the product they will grow. This should be carried out as per the concrete specialization in sowing and livestock spheres and further among them.
- The village territorial committee should work out the list of producers and information on the sowing area and perennial sowings used by them for the production of agricultural products as per the rules of the Cabinet of Ministers and submit to the district commissions by the end of May at the latest. Since there are enough funds in the budget, it is not necessary to extend this period until June and simultaneously extend the productivity period by the farmers. Considering that the timely funds provided to the farmers affect greatly on productivity, there is no logic in delaying the process. Though the process in 2007 started on June 10, the farmers received funds in September. This means that the main preparation works for agricultural period lags behind. In turn, such delays damage farmers seriously. Inasmuch as the timely launch of campaign directly affects on the production of goods, it is necessary to decide on provision of funds in late June.
- The development of districts should be considered during provision of subsidies. The USA researchers consider that subsidies help the regional development. The provision of free financial assistance stimulates development of agricultural sector and accordingly other sectors of economy. Therefore, several countries, including Italy enjoyed the subsidy policy to eliminate disbalance of regional development.
- The export of products should be taken into consideration during provision of subsidies. 70 percent of subsidies from the state budget are directed towards growing exportable agricultural products to European Union countries. To enhance the export potential of Azerbaijan, a special weight of exportable products should be taken into account in providing subsidies.
- In order to push agricultural specialization and sustainability in the areas entrepreneurs are engaged in, superior and efficient activities should be encouraged among them in a sense that the use level of funds allocated to farmers (in 2007) could be evaluated and a different approach, combined with the application of concessions, should be taken towards farmers in the next years (including 2008) who did well in their productiveness performance and expanded their production in the previous year. This is likely to be reflected in the motivation activities for the allocated subsidies, such as 20% more subsidy assistance than envisaged.

The President of Azerbaijan Republic issued a decree 468 of 23 October, 2004 on “Additional measures to expand leasing in the agrarian sector” to speed up the implementation of activities under the State Program on socio-economic development of regions of the Azerbaijan Republic (2004-2008). As part of the implementation of the very decree, “Agroleasing” Open Stock Company was established in the first stage with 100% of its control envelope of shares belonging to the state, areas both in the capital and regions were allotted for the company headquarters and

regional offices and buildings, reception and maintenance of technology, and organization of technical services, and relevant decrees were adopted by the Cabinet of Ministers of Azerbaijan about laws to regulate the leasing of technology and sale of fertilizers.

In line with funds allocated, during 2005-2006 “Agroleasing” OJSC purchased different agricultural equipment, agrochemical substances, machine and mechanisms, and equipment and inventories to establish material and technical capacity of society, delivered agricultural equipment for leasing and agroservice purposes, organized sale of agrochemical substances, and established “Regional Agroservice and Supply Bases” and “Agroservice” branches in the regions to render agroservice and sell agrochemical substances.

During the audit in “Agroleasing” OJSC, the following shortcomings were discovered along with the works conducted according to 2007 Action Plan of the Accounting Chamber of the Azerbaijan Republic:

- The Ministry of Finance and “Agroleasing” OJSC awarded a “Loan Agreement” of 11 July, 2006 on reimbursement of funds estimated at 20,0 mln. manats within 5 years (this period was defined as 10 years with Decree 1907 of 23 January, 2007 of the President of Azerbaijan Republic) allocated from the budget for Society in 2005.

22.2% or 792.5 thousand manats out of 3565.8 thousand manats, which were calculated on the basis of rental contracts in 2006 out of the 5 year-long state budget funds allocated to the company were collected back, which proves that it is not realistic that “Debt Contracts” were timely followed. It was also verified by the implementation level of concluded leasing contracts. That is, though the leasing amount, together with the initial payment, was defined at 645,0 thousand manats within two years according to leasing contracts signed with 111 people, only 494,5 thousand manats was obtained in total and accordingly the leasing fees not yet paid by 80 people with leasing contracts (72,1% of people have leasing contracts) comprised 160,5 thousand manats including additional payments (10.0 thousand manats);

- Despite the permission from the state procurement agency for direct contracts by several lots in relation to the procurement of agricultural technologies, direct contracts were not concluded with producer enterprises and real reserve sources were not fully used to lower the prices. The procured equipment was poor in quality and the range of necessary equipment for agriculture was not studied completely. Accordingly, out of 3608 different agricultural equipment procured within 2005-2006 and estimated at 44889,0 thousand manats 1173 (40,1%) in the amount of 17990,7 thousand manats became useless in the markets in 01.05.2007;

- the price of agricultural equipment and fertilizers increased by 1159,4 thousand manats in 01.01.2007 as a result of extra prices imposed on sale of procured equipment, agrochemical substances and pesticides and their provision for service or leasing. These extra percentages were applied without conducting calculations and were not agreed with the Observation Council of the Society and respective agencies;

- The company purchased agrochemical substances and pesticides (including pesticides in the amount of 1339,2 thousand manats) in the total amount of 13226,0 thousand manats during 2005-2006. 882,5 thousand manats was obtained from sale of fertilizers in 01.01.2007, while the amount of funds not collected was 8300,2 thousand manats. Pesticides comprising 37,3 thousand manats were sold from the total purchased pesticides estimated at 1339,2 thousand manats whereas pesticides making up 1301,9 thousand manats remained useless in the warehouses;

product name	2000	2001	2002	2000-2002 average
1. wheat flour		0.8196	2.1215	1.4706
2. fresh and dried	6.0408	5.7053	4.9519	5.5660

-  
result  
decree

vegetables				
3. fruit/vegetable flour		1.2857	1.2948	1.2902
4. fresh apple	0.8056	0.4993	1.9981	1.1010
5. dessert (edible)	15.1061	6.0882	9.9070	10.3671
6. fresh/dried	0.9815	0.4575	2.6983	1.3791
7. fresh/dried fruit	0.8196	0.9190	2.7434	1.4940
8. neat/mixed fruit juice	4.3134	3.4745	6.3716	4.7198
9. tea	2.3204	0.6087	0.2974	1.0755
10. meat and fish feeding	16.8212	16.8485	17.1498	16.9398
11. raw tobacco	0.5254	2.2668	2.4716	1.7546
12. cigarette (tobacco)	1.6087	3.0785	1.8149	2.1674
13. refined tobacco, pure	2.1181	2.4486	1.0952	1.8873
14. goat's skin, raw	0.2180	7.2765	7.4948	4.9964
15. oxide, raw	5.1925	1.7648	1.9253	2.9609
16. sheepskin, woolless	2.4546	1.2246	1.9548	1.8780
17. oily seeds/rich fruits		4.5732	3.3891	3.9812
18. cocoon worm	3.3361	2.8276	1.9472	2.7036
19. raw cotton, pile irrelevant	2.9148	0.2209	7.4761	3.5373
20. cotton pile	9.1281	2.5163	1.2940	4.3128
21. cotton waste	2.4229	0.7219	0.2170	1.1206
22. combed cotton wool	539.3193	207.4011	250.4334	332.3846
23. cotton oil seed	43.3016	45.2488	69.9280	53.8262
24. safflor	1.2729	1.1007	1.1766	1.1834
25. vegetable oil	17.6422	4.2212	5.6168	9.1601

As a  
of the  
of the

Azerbaijan President on "State support for producers of agricultural products", the Cabinet of Ministers of the Azerbaijan Republic adopted decision 32 of 15 February, 2007 on sale of mineral fertilizers used for production of agricultural products at a discount of 50 %. Despite the fact the decision came into force on February 15, 2007 and notwithstanding the absence of official order about the application of this decision to mineral fertilizers kept in warehouses since 2006, 9130,32 tons of nitrogen and 127,26 tons of superphosphate fertilizers were sold to people at a discount of 50% during February-May of 2007 and therefore, 782,4 thousand manats was not collected and not paid to the company;

- The requirements of Decision 221 of 29 November, 2005 made by the Cabinet of Ministers were disobeyed and in 2006, physical persons were provided with 4309,1 tons of nitrogen and

435,5 tons of superphosphate fertilizers by the order of “Agroleasing” OJSC. Thus, 238,9 thousand manats was collected and unpaid remainder of funds was 627,5 thousand manats and etc.

### Revealed comparative advantages in agriculture

Let's first see the evaluation carried out by expert group of Center for Economic Reforms of the Ministry of Economic Development in 2003 using Balassa index and Net Export Index methods based on Apparent Comparative Advantages (ACA) principle. The data in the table specify that Azerbaijan with favorable natural-economic conditions in growing agricultural products has a competitive advantage in growing tobacco, nuts, tea, vegetables, oily seeds, raw cotton and pharmaceutical plants. The cleaned tobacco and nuts are more competitive among agricultural products. The silkworm cocoon and animal leather (not processed) may be included among the list of competitive agricultural products.

**Table 15. Evaluation results with balassa index method**

**Source: Research of current and future comparative priorities of economy of Azerbaijan. Baku, 2004. Research was conducted by the Ministry for Economic Development Economic Reforms Center**

product name, description					
2000	2000	2001	2002	2000-2002	
1. fresh and peeled tomatoes	-0,11	-0,05	0,92	0,26	
2. fresh and dried vegetables	0,98	1,00	0,98	0,99	
3. fruit/vegetable flour	-1,00	1,00	0,42	0,14	
4. fresh apple	0,33	0,45	0,69	0,49	
5. dessert (edible) fresh/dried	0,98	0,94	0,99	0,97	
6. fresh/dried fruit	0,64	0,66	0,87	0,72	
7. fruit jam jelly	0,44	0,00	-0,19	0,08	
8. neat/mixed fruit juice	-0,11	0,26	0,46	0,20	
9. sugar made fruits	0,97	1,00	0,61	0,86	
10. wet/dry grass	-0,18	1,00	-0,41	0,14	
11. meat and fish feeding	1,00	1,00	1,00	1,00	
12. wine	0,80	0,81	-0,76	0,28	
13. distilled strong drinks	0,71	0,89	0,27	0,62	
14. raw tobacco	0,98	0,69	0,23	0,64	
15. cigarette (tobacco)	-0,17	0,41	0,20	0,15	
16. oxide, raw	1,00	1,00	0,84	0,95	
17. goat's skin, raw	1,00	1,00	1,00	1,00	
18. sheep skin, woolly	0,98	0,88	0,98	0,95	
19. sheepskin, woolless	1,00	1,00	1,00	1,00	
20. beans	1,00	-1,00		0,00	
21. oily seeds/rich fruits	-1,00	0,99	0,99	0,33	
22. raw silk	1,00			1,00	
23. cocoon worm	1,00	1,00	1,00	1,00	

24.	raw cotton, pile irrelevant	1,00	1,00	1,00	1,00
25.	cotton waste	1,00	1,00	1,00	1,00
26.	carded cotton wool	1,00	1,00		1,00
27.	raw wool	0,98	1,00	1,00	0,99
28.	not carded wool	1,00	-0,32	0,98	0,56
29.	cotton oil seed	0,79	0,67	0,42	0,81
30.	olive oil	-0,32	0,17	-,52	0,09
31.	vegetable oil	0,35	0,61	1,00	0,14
32.	animal fat/vegetable oil	0,67	0,41		0,69
33.	conversional sheepskin (woolly/woolless)	1,00			

**Table 16. Evaluation results with real export method index**

**Source: research of current and future comparative priorities of economy of Azerbaijan.**

**Baku, 2004. Research was conducted by the Ministry for Economic Development Economic Reforms Center**

Azerbaijan can also participate in the world market with a number of processed agricultural products. The processed products of the country such as fruit juice, cigarette, processed tobacco, processed animal leather, cotton piles, cleaned and combed cotton (contains the highest Balassa index– 332.3846), cotton oil and safflower oil are rather competitive products in the world market. For example, though the Balassa index for fruit juice and cigarette was less than 1.00 in 2000, this was more than 2.00 in 2002. Though provision of Azerbaijan with grain products seriously depends on imports, the country has a relatively comparative advantage in wheat export. It is no doubt that this should be evaluated as an advantage based on the development of grain processing industry in the country.

Meanwhile, this fact leads to put forward such a hypothesis that the country's current comparative advantage with regard to leather raw materials, seedless raw cotton and cocoon will bring about another comparative advantage with regard to the processing of these goods. That is, the development of processing industry in these fields will bring about the country's potential enjoyment with comparative advantages in these fields.

While only export indicators are used during calculation of comparative advantages through Balassa index, both export and import indicators are used during calculation of comparative advantages through Net Export Index method. The experience shows that the calculations by both indexes yield basically the same results. The data of the table including the results of calculations carried out through Net Export Index method once again confirms it. Thus, the evaluations show that the cotton, tobacco, tea, several fruits and vegetables produced in Azerbaijan and their processing enterprises, including some livestock products – wool, cocoon, leather raw materials and other products are still internationally competitive goods.

	irrigating plantation	not irrigating plantation	irrigating plantation	not irrigating plantation
	current practice	ideal practice	current practice	ideal practice
1. soft wheat	1,242	0,849	1,317	0,963

2. solid whet	1,154,	0,947	1,233	0,968
3. barley	1,477	1,105	1,512	1,168
4. potato	1,618	1,150		
5. maize	0,955	0,638	1,009	0,661
6. tomato	1,202	1,072	1,550	1,223
7. cabbage	0,431	0,230		
8. grape	0,593	0,364		
9. sunflower	0,825	0,475	1,180	0,534
10. bean	0,846	0,497	0,372	0,391
11. pea		0,821		
12. clover			0,285	0,241
13. apple	1,072	0,677		
14. tangerine	0,813	0,514	0,854	0,549
15. pomegranate	0,291	0,241	0,386	0,238
16. hazel-nut	0,619	0,174	0,703	0,223
17. olive	1,064	0,702	0,832	
18. olive	0,869	0,274		
19. rice	0,495	0,478		
20. sugar-beet		0,936		
21. tobacco	0,311	0,309	0,359	0,366
22. greet tea leaf	1,635	1,893		

**Table 17. Evaluation results with DRC method  
(on plant-raising products )**

**Source: policy frame document for agriculture, Azerbaijan Republic Assistance Agency for Private Sector's Development in Agriculture, Baku, February 2003**

It is to note that only competitive products could be defined through ACA Balassa principle method at present. Yet, due to certain market distortions, products that are not currently competitive but may become so under favourable market circumstances can not be identified through this method. Thus, it is also necessary to use the evaluation carried out by Internal Resource Use Coefficient (IRUC) method to define potential competitiveness opportunities. Evaluation of competitive advantages of Azerbaijan on agriculture and processing industry through IRUC was conducted within "Development and crediting of agriculture" project implemented by the Government of Azerbaijan together with the World Bank. The research carried out in 2002 by local and foreign consulting companies through involvement of local and international consultants produced quite interesting results (Policy framework paper for agriculture, the Assistance Agency for Private Sector Development in Agriculture of the Azerbaijan Republic, Baku, February 2003).

The competitiveness of agricultural products and processing industry was calculated both for existent and ideal situations. The ideal situation for agriculture, namely for farm holding is characterized as follows: i) amelioration problems were eliminated and the irrigation system of farm was completely restored, ii) sowing materials, fertilizers and pesticides with high conditioner are used, iii) the automated operations are implemented with new machinery and equipment in line with the technological process, iv) the farmer makes use of information-consultation services to accurately follow agrotechnical rules, manage farm and have access into the market. The ideal situation of processing industry of agriculture is characterized with indicators of up to date production technologies.

As is observable from the evaluation (table 5) of competitiveness of agricultural production of Azerbaijan conducted by IRUC method, the IRU coefficient for most plant-growing products is less

than 1. This shows that Azerbaijan have comparative advantages on plant-growing products in total. However, the IRU coefficient is more than 1 for wheat, barley and maize (both irrigated and not irrigated) in the circumstances of currently used technologies (these products are not competitive). Irrigated cotton, alfalfa, nuts, tea, and not-irrigated grapes are not competitive given the current productiveness level.

	plain		highland	
	current practice	ideal practice	current practice	ideal practice
1. cattle for slaughter	0,251	0,266	0,236	0,234
2. cattle for milk	0,232	0,170	0,276	0,135
3. sheep for slaughter	0,720	0,555	0,711	0,645
4. milk-woolly sheep-breeding	1,060	0,791	0,990	0,880
5. poultry for slaughter	0,718	0,449	0,718	0,449
6. poultry for ovary	1,380	0,589	1,380	0,589

**Table 18. Evaluation results with DRC emsali method (on animal produce)**

**Source: Policy frame document for agriculture, Azerbaijan Republic Assistance Agency for Private Sector's Development in Agriculture, Baku, February 2003**

The IRU coefficient is more than 1 only by barley, maize, cotton and tea production while the maximum productivity is achieved by fully obeying the required agrotechnical rules. The IRU coefficient calculated for an ideal situation by the rest agricultural products is less than 1. This shows that the potential competitiveness by the agricultural products in total is rather high. However, the studies reveal that the country is more competitive by the livestock. As is observable, particularly cattle-breeding is quite competitive at present both by milking and cattle-slaughtering. Yet, higher productivity could be achieved in milking.

Whereas the cattle-slaughtering of sheep-breeding is still competitive, the productivity is low in milking and wool production. Therefore, the comparative advantage of milking and wool production of sheep-breeding could be achieved only in an ideal working situation. The competitiveness of poultry is high only by cattle-slaughtering and there is enough potential to raise it in future. However, the comparative advantages by the egg production could be obtained only by achieving productivity in an ideal working situation.

The agricultural production is quite dependent on natural climatic conditions. The productivity of different agricultural products varies depending on natural economic regions of Azerbaijan with different features. Thus, it is impossible to accurately predict competitive advantages of agriculture only on the basis of average indicators by country. The competitiveness of agricultural products was evaluated also by districts in the research of the World Bank. The conducted studies show that the production of incompetent products in concrete regions can be more efficient according to the average indicator by the country.

It is important to determine the competitiveness of agricultural products in different regions by two reasons. First of all, the qualification of different regions on concrete products is proved to be more efficient scientifically. On the other hand, the agrarian policy targets of the government are defined more accurately on the basis of differentiation of this policy by regions. As was mentioned, there is a developed processing industry in the country which operates on the basis of local agricultural raw

materials. The studies show that Azerbaijan is also competitive by a number of processed agricultural products. The research results reveal that processing industry such as in beer, tobacco and flour, and alcoholic-vodka and milk (using milk powder) have the highest comparative advantage at present. The IRU coefficient fluctuates between 0,018 and 0,076, in other words the added value as a consequence of social prices is by 13-55 times more than the social value of internal resources used for production. Besides, olive oil, chicken-meat, fruit juice and milk processing on the basis of raw material are quite competitive ( $0,295 < IRUC < 0,387$ ). The added value in tomato pastes packaged with the current production facilities and meat-cutting does not pay off the social value of used internal resources ( $DRC > 1,183$ ).

All 24 products, except for maize oil, soy oil and cognac have comparative advantage in the ideal practice. It should be recorded as one of the risky cases for national livestock sector that if new plants are built or present enterprises operate in full capacity, the pasteurized milk, butter and cheese production are likely to become the most competitive spheres of processing industry by using the imported milk powder. The IRU coefficient changes between 0,047 and 0,060 during production of these products by using equipment in full capacity. These indicators are the highest comparative advantages together with filtertipped cigarettes ( $IRU = 0,057$ ). Besides the mentioned spheres, the added value emerged in the production of the confectionary, beer, flour, fermented tobacco, apple juice, meat processing, wine-making and production of chicken-meat is much more than the resources used. The studies on comparative advantages lead to assume that the mentioned spheres will become the leading sectors of the national processing industry in the near future. It is natural that the economic policy activities should first stimulated these sectors.

	real technology	ideal technology
1. milk (milk powder)	0.065	0.060
2. milk (natural raw material)		0.162
3. butter and cheese (milk powder)		0.047
4. butter and cheese (natural raw material)		0.302
5. meat processing (sausage)		0.163
6. meat chopping	1.376	0.247
7. chicken dressing	0.307	0.189
8. vodka	0.057	0.064
9. cognac alcohol		-0.481
10. wine stuff		0.773
11. bottled wine	0.667	0.173
12. beer	0.295	0.086
13. apple juice (with 70% concentrates)	0.790	0.123
14. apple juice (canned)	0.790	0.145
15. tomato paste (not canned)	1.044	0.334
16. tomato paste (canned)	0.028	0.143
17. tea		0.385
18. sunflower oil		0.667

19. bean oil		-0.351
20. olive oil	0.340	0.595
21. maize oil		-1.144
22. flour	0.035	0.115
23. floury confectionary (sponge-cake)		0.078
24. macaroni		0.242
25. fermented tobacco		0.078
26. filtered cigarettes	0.032	0.057
27. ginning	1.183	0.560

**Table 19. Evaluation results with DRC coefficient method  
(on processing industry productions)**

**Source: Policy frame document for agriculture, Azerbaijan Republic Assistance Agency for Private Sector's Development in Agriculture, Baku, February 2003**

### **Recomendations on WTO and agrarian regulations**

Comparing proposals towards state regulation development on agriculture with distribution of WTO, we can come to a result that they can be grouped proper to distribution, as shown below:

#### **“Yellow basket” events**

To give discount credits at the expense of state budget or with state maintenance to agriculture consumers;

To assist farmers in getting proper farm machinery, as well as car and equipments, fertilizers;

Grants for pedigree stock-breeding;

Grants for seed-farm;

Partial compensation for expenses made to attain mineral fertilizers and plants' chemical protection methods;

Partial compensation for expenses made to increase soil fertility;

Partial compensation of farm machinery, car and equipments' cost;

To give money form budget for repairing of land-reclamation systema and keeping up-to-date.

#### **“Green basket” events**

Strengthen agricultural researches carried out at the expense of state budget resources;

Development of personnel trainings on agricultural speciality in state educational institutions;

Improvement of control system of the state against pests and diseases;

Strengthening of building agricultural water supply and electricity settings, their preserving and improvement and other similiar structural services made by the state;

To insure producers incomes and strengthening of compensation system for losses caused by natural disasters;

To assist sale process of agricultural product, assistance to formation and development of information base about agricultural market situation and other information-consultation service systems;

Assistance through state investement programs to formation of effecient structure of agricultural production based on comparative priorities;

Direct and indirect assistance meeting goals of environment protection;

Assistance within implementing development programs in poorly developed regions.

#### **“Blue basket” events**

Assistance made for impact of withdrawing of cattle from commodity agricultural production circulation;

Assistance with the aim of increasing employment of population in non-agricultural sector.

Internal assistance policy events' volume required for the agricultural sector's sustainable development of the country is quite strong in compare with WTO's requirements. Thus, most of these assistance events (for instance, meeting credit need of agricultural sector, improvement of providing producers with production resources and other similar events.) are mainly included to "yellow basket" group. That is why, some opportunities for fitting proper policy events which are very mutual, with WTO's requirements for formation of competing capacity in agricultural sector in the country, should be considered. **First of all, it is possible and mutual to use proper mechanisms to involve in this private sector through proper stimulating events of the state, along with events included in "yellow basket" group supported directly at the expense of state budget resources.** For instance, along with direct (i.e. allocating resources from the budget) participation of the state in services of agricultural service, credit and other proper infrastructures, there was proposed proper proposal related with stimulating events that to be implemented by the state for involving in this activity private sector. Implementation of proper mechanisms involving private sector in development of financial-technical equipment of the agricultural sector may reduce state's "yellow basket" events responsibilities.

**Selection of approach related to volume of subsidiaries** allocated for agricultural sector when becoming member of WTO also **should be precisely determined.** Faithful decision should be made during new negotiations on "yellow basket" events either on allowed minimum level of volume of taken obligation or within the real subsidiary volume applied in fundamental period. From this standpoint, prognosis related to agricultural production's volume within short and mid-term period, considering efficient structure of this production, should be précised, based on this comparison of real subsidiary volume applied in fundamental period should be made.

If correlation of applying real subsidiary volume to the volume of agriculture production at perspective period is less than 10% then, naturally, it's more expedient to take obligation on allowed minimum level of "yellow basket" event. This view considers Azerbaijan entering to WTO with developing country status.

**One of the main goals should be achieving of right to implement events on "Special programs for developing countries" on internal assistance policy to agriculture of Azerbaijan** during the negotiations process with WTO.

Concrete arguments, related to volume of subsidiaries allocated for agricultural sector, that will be used by the government during negotiations with WTO, can be based on recommendations made by UNCTAD (UNCTAD/DITC/ TNCD/MISC.16, Geneva, 2001). As mentioned above, according to these recommendations, during negotiations countries may use following arguments, like necessity of support to producers in "Inconvenient regions", necessity of assistance to agricultural sector of improvement of "Unfavorable structure", necessity of support to "Producers with low income and poor manufacture". For that, proper grounds on each argument must be prepared. Arguments, related to necessity of assistance to agricultural sector for "Unfavorable structure" improvement, can be prepared based on this research work. As, it was well-grounded in research work that country's existing agricultural productions structure is not based on possessed current and future comparative priorities on agricultural production and is not efficient.

**Special development programs for producers of low income and poor manufacture resources can be worked out** and this can be another argument for more persuasiveness and foothold of subsidiary policy during negotiations of government with WTO. If the volume of state assistance (by the way this assistance increases every year) within the "yellow basket" events will grow with the purpose of improving life standard of poor agricultural producers and for development of regions, naturally, this assistance policy will not fit with requirements of WTO. That is why, during negotiations, the state along with total volume of subsidiaries on "yellow basket" events must present reports as well on "Improvement of unfavorable production structure", "Support to producers in inconvenient regions", "Support to producers with low income and poor production resources", and other similar programs.