

*EC4NR Agriculture Policy Note No. 8, The World Bank, Washington, DC  
November 1996*

# Land Reform and Private Farms in Armenia: 1996 Status

Zvi Lerman



## **Preface**

EC4NR is engaged in a process of updating the current developments in land reform and farm restructuring in four republics of the FSU region. The work is conducted under the management of Csaba Csaki, and the final status report to be published in the fall of 1996 will be based on farm surveys from Armenia, Georgia, Moldova, and Ukraine. The present publication is a component of the final report. It describes and analyzes the detailed results of a survey of farm households conducted in Armenia in April-June 1996. Detailed data on Armenian private farms, presenting the full richness of survey findings, are published to provide the World Bank and the Government of Armenia with unique information relevant for policy making and to support lending operations.

The survey was conceived and designed as a joint effort of the Government of Armenia and the World Bank (EC4NR). The survey was implemented through the World Bank Agricultural Reform Support Project in Yerevan under the direction of Levon Aghamian. The field work was organized and managed by two teams of Armenian experts under the leadership of Astghik Mirzakhanian and Parour Assatryan from the Armenian Board of Statistics and Henrik Mkrtchian and Bekour Chakhmakhchian from the Institute of Agricultural Economics in Yerevan. The survey instruments were prepared by local experts, based on specimens from previous World Bank farm surveys in other countries of the FSU. Data entry and programming were carried out at the Agricultural Reform Support Project in Yerevan under the guidance of Gurgen Azatian. On behalf of the World Bank, Karen Brooks, Csaba Csaki, and Zvi Lerman provided methodological advice and professional support; Amnon Golan and Mark Lundell were responsible for administrative coordination with the Government of Armenia. The survey was managed by Zvi Lerman, who also analyzed the data and wrote this report, incorporating inputs from the Armenian counterparts.



## Table of Contents

Preface .....	iii
Summary and Conclusions .....	vii
General Background .....	1
Survey Design .....	3
Demographic Profile of Farm Households .....	3
Family Income .....	8
Land Holdings and Land Tenure .....	8
Cooperation .....	12
Irrigation .....	13
Farm Production .....	14
Sale of Farm Products .....	19
Farm Resources and Purchased Inputs .....	22
Finance, Investment, and Credit .....	25
Social Sphere .....	29



## Summary and Conclusions

A survey of farm households was conducted in Armenia in April-June 1996. Encompassing 2,000 respondents in seven provinces spread over the country, the survey is a unique source of information about Armenian private farms in the post-independence period. This information is particularly valuable in view of the inadequacy of the traditional statistical system in the new economic environment. The main findings of the survey are summarized in this section.

- *Agriculture of Smallholders*  
The Soviet style collective and state farms were eliminated in 1991-1992, soon after the declaration of independence. Fully 70% of arable land and 80% of land under vineyards and orchards has been distributed to rural households. The remaining land is available for individual lease from the state land reserve. A typical farmer in Armenia manages 1.5 ha of land, most of it privately owned. About 15% of farmers augment their holdings by leasing an additional hectare of land from the state. Armenian farms rely on family labor, operating mostly with 2-3 workers. Household members work mainly part-time on the farm, augmenting the family income with off-farm employment in non-agricultural enterprises, services, and trade. Therefore, while farm production is an important source of household income, fully 50% of farm families derive more than half their total income from off-farm sources.
- *Combining Subsistence Farming with Commercial Sales*  
The farms are too small to specialize. These are generally mixed farms, but with an emphasis on crop production: livestock products account for only 30% of total output. The main crop products are wheat, barley, potatoes, vegetables, fruits, and grapes. Most farms grow two to five different crops. An average household has 1.5 cows and half a dozen chickens, so that milk and eggs are produced by most farms. Meat production is much less widespread among Armenian farms. Although farm products are largely used for family consumption, about one-third of the farm output is sold commercially. Commercial sales are quite common among Armenian farms, and three-quarters of farmers surveyed report some revenue from sale of farm products. Armenia clearly has not retreated into subsistence agriculture since independence.
- *Emergence of Private Sales Channels and Difficulties with Transport*  
The farmers sell directly to consumers in the local markets, and the traditional marketing channels are no longer of any importance for private agriculture. Farmers complain mainly about difficulties with transport and delivery of products to the market. Most farmers claim that they are dissatisfied with prices received for their products, although reported prices are adequate by world standards. Dissatisfaction with prices received may be due to the “scissors effect,” which results from prices of manufactured goods and inputs being high relative to farm product prices.

- *Armenian Private Farms are Profitable*  
Fairly high product prices and reasonable crop yields, which remain comparable to the long-run yields that characterized Armenian agriculture before independence, are responsible for the positive profitability of smallholder farms. Input costs absorb 40% of sales revenue, and the remainder provides a respectable contribution of 170,000 dram (\$425) to family labor, land, and capital.
- *Shortage of Machinery and Limited Use of Purchased Inputs*  
Only 10% of farms in the sample own farm machinery of any kind. There is one tractor or mini-tractor per 15 ha of land among the farms surveyed. On average 40% of farmers purchase some farm inputs, mainly from private individuals and definitely not from the traditional centralized channels. Availability of farm inputs is not a problem. The main complaint is about high prices.
- *Deteriorating Irrigation System*  
Irrigation is essential for the success of farming in the fertile, but dry valley districts. Irrigated area accounts for half the total farm size in these districts. All irrigation water supply is owned by the state, and farmers report that they do not receive water in sufficient quantities and when needed most. The majority of farmers describe the state of the irrigation network as poor, and report that no maintenance or repair work was carried out in their village last year.
- *No Access to Commercial Credit*  
Private farmers in Armenia have no access to commercial banks, and they borrow mainly from their relatives and friends. Borrowing is not negligible, and informal credit is the source for 25% of working capital requirements (40,000 dram or \$100). Half the farmers indicate that they will need credit for farm operations in the coming year, and the borrowing demand is estimated between 200,000 dram and 500,000 dram per farm (\$500-\$1250).
- *Need for Emphasis on Social Services*  
Despite the smallness of plots, high cost of farm inputs, and unavailability of commercial credit, Armenian farmers successfully combine subsistence agriculture with commercial sales. Markets are full of agricultural products, and private farms are generally profitable. Yet rural families are fairly pessimistic in their evaluation of their material situation and their prospects for the future. One of the possible reasons is the dramatic decline in the access of the rural population to social services, which were traditionally provided in each village by now-defunct collective and state farms. To facilitate economic recovery and revitalize the rural sector, the Government of Armenia should assign a high priority to rehabilitation of rural social services.



## General Background

1. In January 1991, almost a year before the dissolution of the Soviet Union, Armenia embarked on the first comprehensive land reform program of all of the Soviet republics. The program included distribution to the rural population of virtually all arable land traditionally cultivated by large-scale collective and state farms. In this way, Armenia decided to move promptly and directly to the logical conclusion of the Soviet reforms that began haltingly around 1986, when Mikhail Gorbachev, then Party Secretary for Agriculture, refocused the attention on the potential of small-scale household production. The most notable features of the Armenian land reform program have been its comprehensiveness and speed. While the reform process has not been free of imperfections, there is no question that it has far surpassed in its scope the efforts in other former Soviet republics, including the Baltic countries.
2. Land reform and privatization were mainly implemented by village-level committees formed by local councils. Land was allocated to all village families, and not exclusively to members and employees of collective and state farms. The plot size was determined by family size: families with three or fewer members received one allocation unit; those with four to six members, two units; and those with seven or more members, three units. The actual size of a land unit in each village was determined by dividing the land available for distribution in that village by the total number of family entitlements. On average, each family received two to four units of land. The physical location of individual units was then decided by lottery, and there was no attempt to ensure that families would get contiguous plots for their units.
3. Land available for distribution included arable land, land under orchards and vineyards, as well as hayland. Pastures were excluded from distribution, as the intention was to keep the pastures in state ownership, either for communal grazing or for leasing to individual farmers. About 25% of the land in each village was also excluded from distribution by creating a state-owned land reserve to allow for future expansion of the village and for the needs of new landless families. The reserve is under the management of the village council.
4. In principle, land received through the process of distribution was not free. The beneficiary had to pay the government a nominal price set at 70% of two years' "net profit." The price calculated according to Soviet accounting practices was very low, and it was often referred to as a "symbolic" price by officials involved in the process. The new owners took possession of standing crops in the field, and often the revenue from the sale of the crops covered the statutory price. Owners failing to pay for their land by July 1, 1993, could forfeit their land. However, few owners have lost their land because the nominal price was low and even these minimal payment requirements were not strictly enforced.
5. The process of land privatization in Armenia was largely completed by the end of 1993. As of 1996, some 300,000 farmers cultivate 69% of all arable land and 80% of land under orchards and vineyards (**Table 1**). The reserve land (including practically all pastures) is now beginning to be reactivated through leasing to the more efficient farmers in each area. Lease rights are provided by the local village committees for a maximum term of up to 10 years, based on

evaluation of applicants' business plans. The lease fee is equivalent to the land tax paid by the private farmers, and the lease rights are not transferrable. A recent decision also allows auctioning of reserve land. The National Cadastre Service estimated the starting price at US \$8,400 per ha for irrigated land, US\$2,500 per ha for non-irrigated land, and US\$17,200 per ha for orchards and vineyards. Currently, there is no legal limitation on the amount of land that one person can lease or buy. There is, however, a proposal before the Parliament to limit the upper size of farms (25-30 ha per family in the Ararat valley, 60 ha per family on the slopes and 120-130 ha per family in the mountains).

**Table 1. Land Distribution in Armenia: 1995 Status**

	Total, thou. ha	Reserve, thou. ha	Distributed	
			thou. ha	percent
Arable land	483.6	114.1	332.8	69%
Perennials	76.2	8.4	60.7	80%
Hayland	138.9	66.8	61.3	44%
Pastures	692.7	647.2	0.2	0%
All agricultural land	1391.4	836.5	455.0	33%

*Source:* Ministry of Agriculture and Food Industry, Yerevan.

6. The process of land distribution in 1992-1993 was separated from farm restructuring. In principle the members of a collective farm had the option of maintaining the previous structure. In practice, however, the members opted for individual farming, and most collective and state farms were dismantled in 1992 and 1993. Some state farms remain for specific purposes, such as seed production, animal breeding, experimental stations, etc. As of early 1996, there are 728 state farms engaged in research, education and extension that use a total of 29,600 ha of arable land.

7. The buildings, machinery, and livestock previously owned by large-scale collective and state farms were also sold at "symbolic" prices. About half of these assets were sold to newly formed collectives, with the idea of preserving the livestock herd intact. Such collectives were often organized by the former managers of farm enterprises, who had administrative access to the distribution of assets. Individual landowners also often established cooperative farms (so-called "collective peasant farms") with the intent of making use of large-scale assets of former farm enterprises and cultivating their small land allotments more efficiently. This experiment, however, did not catch on in Armenia, and the number of collective peasant farms has been steadily declining since its peak of 8,200 units in April 1992. As of early 1996, the agricultural sector in Armenia mainly consisted of 294,000 individual private farms, each holding on average 1.5 ha of land.

## Survey Design

8. The present report is based on a survey of 2,038 farm households conducted in April-June 1996 in seven provinces (“marzes”) covering 23 out of a total of 39 rural districts in Armenia (**Table 2**). Of the 23 districts surveyed, 15 districts are the site of the Irrigation Rehabilitation Project financed by a loan from the World Bank, and the other 8 districts were chosen for control purposes. The survey is designed to collect base-line information about farm households that will enable the Government of Armenia and the World Bank to assess the impact of the expected improvements in irrigation on private farm performance in a time-frame of three to five years. In addition to providing a basis for evaluation of the Irrigation Rehabilitation Project, the survey is a source of unique information about Armenian private farms in the post-independence period. This information is particularly valuable in view of the inadequacy of the traditional statistical system under the new conditions, when the agricultural sector no longer consists of organized large-scale farms with proper accounting systems and the focus of data collection must shift to scattered family farms.

9. The survey instruments included the following main modules: household profile; land resources and land tenure; irrigation; farm production; sale of farm products; purchase of farm inputs; farm labor; finances and credit; rural social aspects. The sampled farms constitute 0.6% of all farms in Armenia. The 23 districts in the sample account for 52% of agricultural land and 75% of irrigated land in Armenia. While the sample is representative for the seven provinces surveyed, no attempt has been made to ensure representativeness for the Republic of Armenia as a whole. Generalizations from survey findings to the entire country therefore must be made with caution.

**Table 2. Sample Structure**

Province (“marz”)	Number of respondents	Percent of respondents	Project districts	Control districts
Aragacotn	301	14.8	3	1
Ararat	464	22.8	3	0
Armavir	472	23.2	3	0
Kotaik	207	10.2	2	0
Lori	174	8.5	1	2
Shirak	229	11.2	3	2
Tavoosh	191	9.4	0	3
<b>Total</b>	<b>2038</b>	<b>100.0</b>	<b>15</b>	<b>8</b>

## Demographic Profile of Farm Households

10. The median family size in the sample was 5, with 70% of families in the range between three and six persons (**Table 3**). Nearly 15% of all family members were seniors aged 60 and older. Over 30% were children and youth under 18 years of age. Adults between the ages of 18

and 60 constituted 50% of the household population in the sample. The average age for adults was 35 and the average age for seniors (those over 60) was 68. Fully one-third of the seniors (4% of all household members) were in ages between 70 and 99. All age groups on the whole are equally divided between males and females.

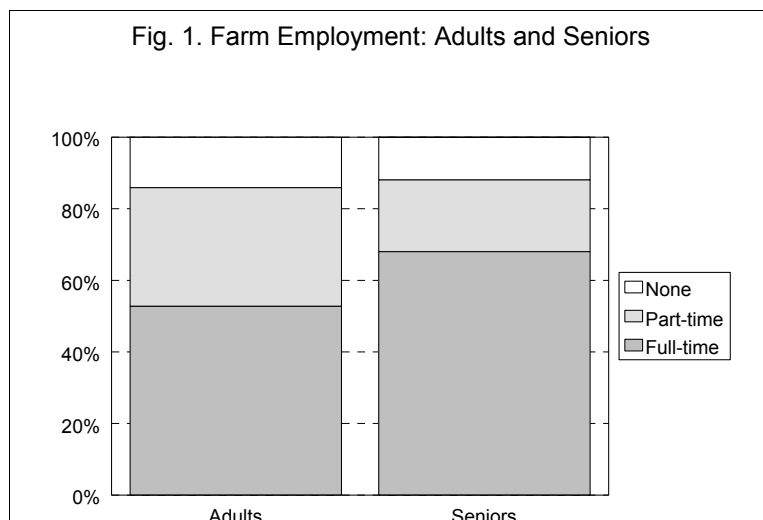
**Table 3. Family Size and Age Distribution of Household Members**

Number of persons in household	Percent of households	Age group	Percent of household members
1	5.7	Children (under 12)	23.2
2	10.6	Youth (between 12 and 18)	12.5
3	9.7	Adults (between 18 and 60)	51.1
4	20.0	Seniors (60 years and older)	13.2
5	23.0		
6	16.4		
7	8.3		
8 and more	6.3	Total household members	9,428

11. Senior household members aged 60 and older are pensioners, but by no means retired. Two-thirds of the senior age group report that they work full time on the farm and another 20% report part-time occupation on the farm (**Fig. 1**). Only 10% of seniors are truly retired, and do not work. Among adults in the normal working group (aged 18 to 60), only about one-half (53%) report that they are employed full time on the farm, while 33% work part time and 14% do not work at all on the farm. Children under 12 do not work, whereas among teenagers under 18 one-third are reported to work part-time on the farm, while the rest do not work.

12. *Armenian farmers are thus mainly part-time farmers, and many supplement the family income from off-farm work.*

About 20% of adults who work part-time on the farm are additionally employed in social services in the village (as teachers, medical workers, etc), and 12% report that they have an off-farm job outside agriculture and social services (**Table 4**). This usually means a job in industry, trade, or local administration. A substantial proportion of the part-time farmers, however, do not report any off-farm jobs: some of them are students (9%), some (mainly



women) are engaged in housekeeping (6%), but many report their situation as “unemployed” or “pensioners.”

Off-farm employment opportunities are particularly scarce for the older age group, where nearly 95% report no occupation other than part-time farming. It seems that the “hidden unemployment” of large-scale Soviet farm enterprises has been transformed into “revealed unemployment” of the rural population in independent Armenia.

**Table 4. Occupation of Family Members Employed Part Time on the Farm  
(percent of family members in each age group)**

	Adults (aged 18 to 60)	Seniors (over 60)
Off-farm occupations		
Social services	18	2
Non-agricultural job	12	2
Student	9	1
Housework	6	1
No supplementary off-farm occupation	55	94
<b>Total</b>	<b>100</b>	<b>100</b>

13. There are natural gender biases in off-farm occupations reported by the respondents. Women are mainly employed in housework and in village-level social services (70% of those working in these areas are women). Men, on the other hand, are the majority (60%) among those employed in non-agricultural occupations.

14. *Over 15% of adults in the sample (ages 18 to 60) have higher or uncompleted higher education (Table 5).* Another 70% have finished high school (technical or general), and only 10% finished 8 grades or less. Seniors (60 and older) are reported to have a much lower level of schooling: 50% finished 8 grades or less, 30% finished high school (technical or general), and only 7% have higher education. The illiteracy level is quite high among the seniors (10%). While there are no significant differences in the education level between men and women in the 18-to-60 age group in the sample, among seniors over 60 there is a definite tendency for men to be better educated than women (Table 5). The under-60 generation, contrary to their parents, clearly benefited from the Soviet education system, which during the decades after World War II was universal, completely gender-independent, and with generally free access to higher education.

15. *Rural families in Armenia live predominantly in a privately owned detached house (over 80% of respondents).* Only 15% of families live in apartments, most of which are also owned by the family. Council owned housing stock accounts for only 10% of apartments, or 3% of all cases. The housing stock is relatively old: 60% of respondents live in houses built more than 20 years ago and another 20% in houses built more than 10 years ago. The level of amenities appears to be satisfactory: over 80% of houses have running water, electricity, and access roads.

**Table 5. Education Level of Household Members**

	Adults (18-60)	Seniors (≥60)	Adults: males	Adults: females	Seniors: males	Senior: females
Higher/uncompleted higher	16.2	6.8	18.4	14.0	8.5	5.2
Technical secondary	32.0	12.2	32.7	31.3	16.2	8.2
General secondary	40.8	19.6	38.5	43.0	18.7	20.4
8 grades or less	9.6	51.2	9.2	9.9	49.9	52.5
Illiterate	0.4	9.6	0.3	0.5	5.7	13.3

16. *Rural mobility is very low: 90% of respondents have lived in the rural area since birth, and 80% of respondents have lived in the same village since birth.* In the past, prior to reform, fully 70% of respondents worked in their village, and only 10% worked in the neighboring district or in the nearby town.

17. Practically all farms in the sample characterize themselves as “peasant farms”, and less than 1% of respondents describe their farm as a “collective peasant farm” or some other organizational form. In accordance with this organizational definition, *80% of farms are single-family farms, and another 18% are farms constituted by two or three families.* The proportion of farms organized by four families or more is negligible. Multi-family farms are also described as “peasant farms” by the respondents, which suggests that they are in fact constituted by one extended family, probably parents and their married children’s families.

18. *Nearly 90% of the farms in the survey were created in 1991, immediately when the reform process began.* Another 10% were created in 1992. The creation of peasant farms in Armenia was thus an extremely concentrated and rapid process, which was completed practically within one year. Two-thirds of the farms are registered, and all registrations are reported to have occurred in 1991-1992, virtually simultaneously with the creation of the farms on newly distributed land.

19. *The typical head of farm is male (85% of respondents), 51 years old, with higher or secondary education, and works full time on the farm.* Most heads of farms have agricultural background, having previously worked in the local farm enterprise (70%), but around 20% worked previously in industry or construction. Not all farms are run by men, however: 14% of heads of farm are women. Their average age, at 62, is significantly higher than the age of male heads of farm, and their overall education level is somewhat lower. Like the men, they are also predominantly occupied on the farm.

20. *Prior to reform, the respondents mostly worked as unskilled or skilled employees of the local farm enterprise (Table 6).* Less than 40% of respondents were previously employed in non-agricultural activities, such as industry, village-level social services, and local administration. In most of these occupations the respondents also worked as rank employees, with about one-quarter holding managerial and specialist position. The few respondents who worked in local administration, on the other hand, held mainly managerial positions.

**Table 6. Former Occupation and Former Position of Respondents**

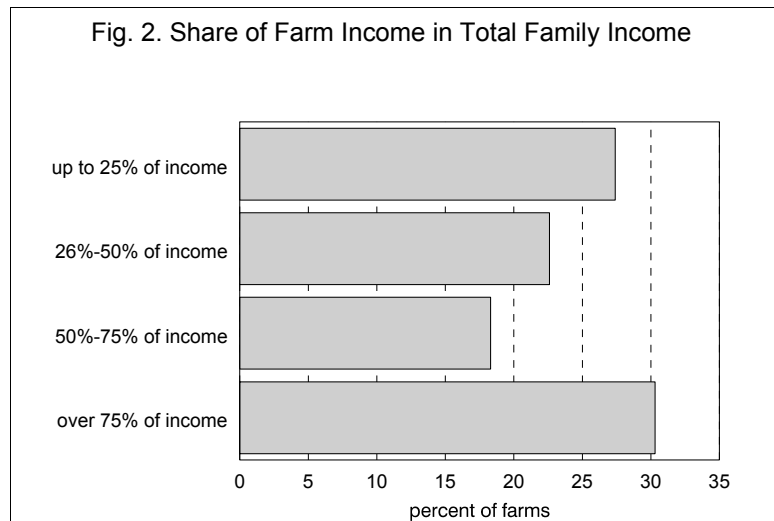
Former occupation former position	Percent of respondents	
	in the sample	in occupation category
Collective/state farm	63.8	
manager, chief specialist		10.1
middle-level specialist		17.1
skilled worker		21.1
unskilled worker		41.0
administrative staff		2.9
farm social services		4.2
Industry	17.3	
manager, chief specialist		6.8
middle-level specialist		20.7
skilled worker		33.0
unskilled worker		31.3
administrative staff		2.6
Rural social services	10.5	
manager		21.0
rank employee		74.8
Local administration	3.0	
manager		48.3
support staff		13.3
Other	5.4	

21. There is a fairly strong correlation between the respondent's occupation prior to reform and the present off-farm occupation. Thus, among part-time farmers who previously worked in the social sphere and are still active, more than one-half continue to hold off-farm jobs related to social services; and among those who previously worked in industry, construction, or local administration, one-third continue in non-agricultural off-farm jobs.

## Family Income

22. *The farm is an important, but not the sole, source of income for Armenian rural families. Some 30% of respondents report that they rely on the farm for most (over three-quarters) of family income (Fig. 2). Yet for 50% of respondents, the farm provides less than half the family income, and another 20% derive between half and three-quarters of family income from the farm. Transfers from family members working abroad are not a significant factor in household income: only 7% of respondents report that they receive financial assistance from family members working in Russia and other countries outside Armenia.*

23. *Despite substantial reliance on off-farm income, Armenian household farms are not entirely subsistence farms. Three-quarters of farms report some income from sales of farm products. An average household earned 200,000-300,000 dram (\$500-\$750) from product sales in 1995, and 10% of farms earned over 500,000 dram (\$1,250). Both production and sales in Armenia are heavily biased toward crop products, which account for over 60% of sales revenue and 70% of total production. Sale of livestock products accounts for less than 30% of revenue, and over 10% of sales income is derived from other activities.*



## Land Holdings and Land Tenure

24. *Armenian agriculture is an agriculture of smallholder farms. An average farm in the sample has 1.5 ha of land, of which 90% is privately owned, and the remainder is leased (Table 7). Half the farms report between 0.6 ha and 1.8 ha of land, and 10% have more than 3 ha (Fig. 3). There are hardly any farms larger than 7.5 ha in the sample. Farms in the irrigation-project districts are significantly smaller than farms in other districts (1.35 ha compared with 2.15 ha). This is an indication of higher population density and scarcity of good land in irrigation-dependent districts.*



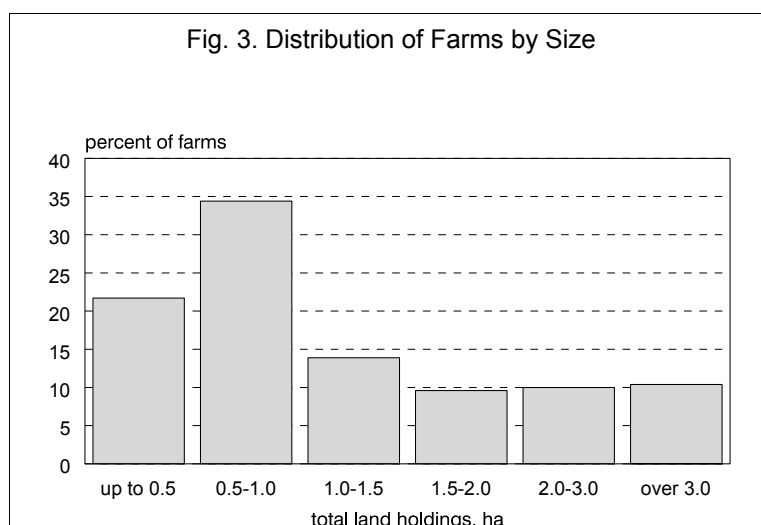
**Table 7. Size of Land Plots (ha)**

	Number of farms	Total land	Private land	Leased land
All sample	2038	1.49	1.36	0.13
Project districts	1644	1.34	1.25	0.09
Control districts	394	2.15	1.80	0.35

25. Armenian farmers on the whole appear to be satisfied with the amount of land they have. Only 30% of respondents express a desire for more land, while 60% explicitly state that they do not need more land. There is no relationship between the present holdings and the demand for more land. Two-thirds of those who wish to increase their holdings seek to obtain an additional 1 ha or 2 ha of land, thus effectively doubling their present plot, while 10% of respondents in this group would like to enlarge their

holdings by more than 5 ha. Since a substantial proportion of family members in the normal working age are engaged only part-time on the farm or do not farm at all, *family labor is clearly sufficient for much larger holdings*. The modest requests for additional land may indicate that off-farm occupations are on the whole more attractive than farming.

26. *The family land is divided on average into three parcels*: one plot is near the house, and it has been in the family all through the Soviet times; two additional plots are at the perimeter of the village, and have been received since 1991 in the process of land distribution. The land holdings are not excessively fragmented: for 80% of the households the total number of parcels ranges between two and four, so that the number of parcels at some distance from the house is between one and three. The average parcel size is around 0.5 ha regardless of the number of parcels in the family. This basically implies that families with a greater number of parcels are entitled to more land in total, which is consistent with the original legal principle of allocating one land unit to every three family members. The number of parcels is thus proportional to family size, and is not a measure of fragmentation in the usual sense of the word, which typically implies that parcels become smaller as their number increases.



**Table 8. Structure of Land**

	Percent of total land		
	All sample	Project districts	Control districts
Arable	72%	75%	64%
Orchards	8%	9%	7%
Grapes	7%	8%	3%
Hay meadows	11%	6%	22%
Pasture and other	2%	2%	4%

27. The structure of land in an average farm is shown in **Table 8**: 72% of average total holdings is arable land, 15% is under orchards and vineyards, and the remaining 13% is mostly hay meadows (with some pasture). Farms in the irrigation-dependent project districts are characterized by a significantly larger component of arable land than in the control districts, while farms in the control districts have a much greater proportion of hayland and pastures in their holdings.

28. *Leasing of land as a means of augmenting the farm is not an uncommon phenomenon in Armenia.* Fully 13% of respondents report that they lease land (around one hectare on average). The predominant source for leased land is the village council, which manages the state land reserve, and less than 5% of leased land originates from private sources. *Farms with leased land are significantly larger* than the rest: their size is almost double the size of farms that do not lease land (**Table 9**). The leased land component is responsible for most of the difference in farm size. Leased land is typically in one parcel: the average number of parcels in farms that lease land is four, compared to three in other farms.

**Table 9. Comparison of Farms With and Without Leased Land (ha)**

	Farms with leased land				Farms without leased land	
	Number	Total land	Private	Leased	Number	Total land
All sample	270	2.6	1.6	1.0	1718	1.3
Project	160	2.2	1.3	0.9	1440	1.2
Control	110	3.2	2.0	1.2	278	1.8

29. *The average lease term for respondents with leased land is just over three years, but nearly half the respondents report that they lease land for a term of only one year. One-third of the respondents lease land for a term of five or even 10 years, which is the current legal maximum. The remaining 20% of respondents report lease terms of two to four years. Because of the predominantly short-term nature of land leasing in Armenia, the highest frequency of lease transactions is observed in the last three years, 1994-1996. However, there are clear signs that leasing is an established form*

of land tenure in post-independence Armenia, as 15% of all current lease contracts were signed a few years back, between 1991-1993.

30. While leasing is fairly common, with 13% of respondents cultivating leased land, *transactions involving the buying and selling of land are reported by only 1% of respondents*, although such transactions have been legal in Armenia since 1991. Moreover, most of these transactions (23 out of a total of 28) occurred in the two provinces of Ararat and Armavir. A typical transaction involves parcels of 0.10-0.15 ha, which is only a portion of total family holdings, and is probably one of the peripheral parcels received at the village perimeter. The price of such a typical plot is reported at around 150,000 dram (\$400), or around 1.0 million dram (\$2500) per hectare (the difference between buying and selling prices is not statistically significant). These findings are consistent with the results of an earlier survey conducted in a different constituency of Armenian farmers, where the frequency of buy and sell transactions was about the same (around 1%) and the average price worked out at 1.1 million dram per hectare (about \$2750). The sample prices are very close to the starting auction prices recently set by the National Cadastre Service for non-irrigated land, and much lower than the starting prices set for irrigated land and land under orchards and vineyards. Unfortunately, there is no information in the survey to indicate what kind of land was bought and sold.

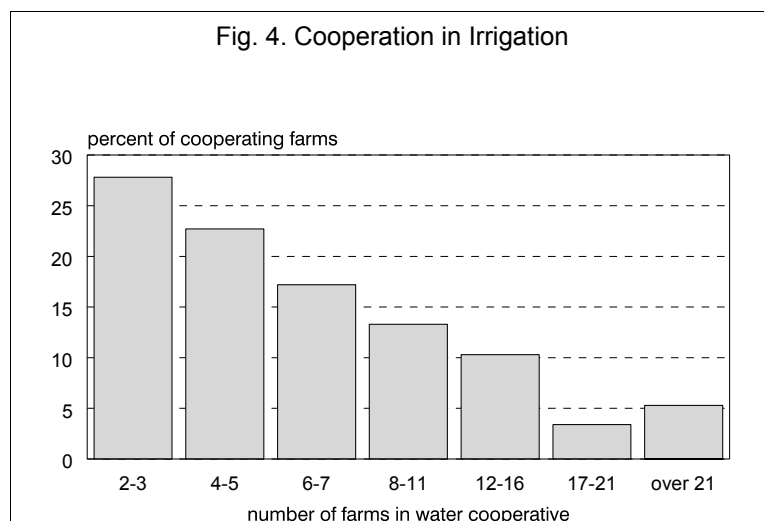
31. Although land was universally distributed to rural households back in 1992, *Armenia does not seem to have advanced much with distribution of ownership certificates to the population*. Less than 15% of respondents in the sample report that they have an official document certifying their ownership rights. Failure of authorities to prepare and issue land certificates is identified as the main reason for lack of ownership documents (55% of respondents). Only 20% of respondents admit that they do not have an ownership certificate because of their refusal to pay the required fee. Among those who do have an ownership certificate, more than two-thirds paid for it, and the reported payments fall in a compact range between 4000 dram and 6000 dram in most cases (\$10-\$15). The median payment is 5200 dram, or \$13. The majority of respondents would be willing to pay between 2000 dram and 7000 dram (with a median of 5000 dram, or \$12.5) for a land ownership certificate if it would allow them to freely sell any parcel of their land. These amounts are basically consistent with the actual payments reported by those very few who have actually paid for their land certificate. Yet even under this condition, 40% of respondents refuse to pay for ownership documents.

32. Over 80% of respondents paid land tax in 1995 (60% in full, 20% partially). The total tax amount ranged between 4000 dram and 12,000 dram, with median tax payment at 7000 dram (\$17). Lease payments are made mostly in cash, and range between 2000 dram and 7000 dram in most cases, with a median of 3700 dram (\$9). A very small proportion of lessees pay for leased land in kind, allocating between 10% and 40% of output for lease payments. The tax rate and the lease rate per hectare of land both work out at 7000-8000 dram (\$17-\$20). The reported tax and lease rates are equal because of the established legal practice in Armenia (and throughout most of the former Soviet Union) that limits the maximum lease payments to the land tax on the corresponding land holdings. This arrangement is logical when land is leased from the state (as it is indeed in Armenia). However, the linkage of lease payments to land tax is a serious constraint on markets for leasing of

land from private individuals, who will have to transfer all the lease revenue to the state in the form of land taxes on their land. Private landowners thus have no incentive to lease out their land, and this system may block one of the very important channels for farm size adjustment.

## Cooperation

33. *Armenian farmers tend to cooperate with their neighbors in various activities. The most prevalent form of cooperation is in irrigation: more than 60% of farmers with irrigated land report that they cooperate with other farmers for irrigation and water management. The number of farms in these informal “water cooperatives” ranges between two and 150. Most groups include a relatively small number of farms: the median number of cooperating farms is five, and three-quarters of respondents say that they cooperate in irrigation with no more than 10 farms (Fig. 4).*



**Table 10. Cooperation Among Farmers**

	% of respondents
Irrigation	63
Soil amelioration	72
Joint production	27
Consulting	24
Machinery pool	21
Marketing	19
Processing	12
Input supply	9
Mutual credit	6
Other joint activities	10
Membership in Agricultural Cooperative Bank	5
Membership in farmers' union	7

34. Cooperation is not restricted to irrigation, however (**Table 10**). Nearly 30% of respondents overall report that they cooperate with other farmers in a variety of activities. These activities include mainly cooperative production (27% of respondents), joint use of machinery and equipment (21%), and cooperative marketing of farm products (19%). One-quarter of respondents report that they cooperate with other farmers in consulting and extension services, while fully 70% cooperate with their neighbors in soil amelioration programs. The latter is not surprising, because of the close link between soil amelioration and irrigation.

35. Despite the clear signs of continuing and emergent cooperation in a wide range of farming activities, Armenian farmers do not participate in national or regional farmers' organizations. Only 7% of respondents report that they are members of the two national farmers' unions, and 93% firmly state that they are not members in any farmers' organization. The participation rate in the newly formed Agricultural Cooperative Bank of Armenia (ACBA) is also low at this stage (5% of respondents), mainly because of limited penetration of this new initiative in the initial phase of development.

## Irrigation

36. *In the irrigation-project districts, irrigated area in an average farm accounts for slightly more than half the total farm area: 0.7 ha out of 1.3 ha total farm size. In districts outside the irrigation project, the irrigated area is about one-tenth of farm area: 0.2 ha out of 2.1 ha total holdings.*

37. Most farmers receive their irrigation water from a canal or by gravity flow. Only 10% identify wells as their source of water. Practically all the farmers report that their irrigation water supply is owned by the state. Only about 1% of the farmers receive their water from a privately owned source.

38. The median number of waterings in 1995 was four for arable land and orchards, and three for vineyards and hay meadows. Fewer than 30% of farmers with irrigated land report that they receive water in sufficient quantities and when needed. Around 70% are dissatisfied with timing and quantities of irrigation. Over half the farmers report stoppages of water deliveries due to power failure: around 20% report that stoppages occur daily or more frequently than once a week; 35% report that stoppages occur less frequently than once a week or even once a month.

39. *Two-thirds of farmers are of the opinion that the village irrigation network does not receive sufficient quantities of water from the main canal. More than half the farmers indicate that no maintenance and repair works were carried out on the irrigation network in their village in 1995, and about the same percentage classify the state of the irrigation network as poor; only 5% of respondents regard the state of the irrigation network as good, and 40% classify it as satisfactory.*

40. Farmers mainly paid for water in cash, but 4% also report payments in kind. Total liability for water charges in 1995 was around 17,000 dram per farm, which works out on average at 24,000 dram (\$60) per hectare of irrigated land. The average payment rate was thus around 65%, i.e., 11,000 dram were actually paid out of total average liability of 17,000 dram. Around 20% of farmers report that water deliveries were stopped at least once in 1995 due to nonpayment. Most of these report that water was stopped one to three times.

## Farm Production

41. While most Armenian farmers are diversified producers, with both crop and livestock production, there is a definite tendency to emphasize crops at the expense of livestock. Thus, averaged over all producers, crops account for 70% of output and livestock products for 30% only. Virtually all farmers (97%) grow crops, but only 70% keep livestock. No farms specialize exclusively in livestock: farms with livestock also grow crops. On the other hand, close to one-third of farmers in the sample specialize in crops, and do not keep any livestock. *Two-thirds of the farms are diversified crop and livestock operations.* Lack of profitability is the main reason that farmers give for not keeping livestock (35% of respondents), although one-fifth cite shortage of feed as the reason and a similar proportion state that they simply “have no desire” to keep livestock.

### Crops

42. *Practically all farmers in the sample (97%) grow crops. Cereals are the main field crop, grown by 55% of respondents (Table 11).* Wheat is grown on 44% of farms, while barley ranks a distant second, with only 18% of farmers growing barley. Other cereals, such as corn, rye, oats, and spelt, are reported by a very small proportion of farmers. Garden crops, such as potatoes, vegetables, fruits, and grapes, are quite widespread among the farmers in the sample (30%-50% of respondents). In non-irrigated districts, corn and potatoes are grown by a higher percentage of farmers than in the irrigation-project districts. Other than that, the crop preferences are about the same in project and control districts. Farmers do not specialize: fully 80% of farms grow between two and five different crops, and only 15% grow a single crop.

**Table 11. Frequency of Crop Producers and Cropping Pattern**

	Percent of respondents producing each crop			Percent of land under each crop over all respondents		
	project districts	control districts	all sample	project districts	control districts	all sample
All cereals	51.4	68.4	54.7	47.4	48.2	47.6
Wheat	42.2	53.4	44.4	27.2	28.8	27.5
Barley	18.7	16.2	18.2	17.5	13.7	16.6
Corn	0.2	13.9	2.8	0.0	2.1	0.5
Potatoes	32.1	77.0	40.8	3.7	7.4	4.6
Vegetables	52.7	59.0	53.9	7.1	3.7	6.3
Fruits	38.2	36.5	37.9	10.1	6.6	9.3
Grapes	28.5	27.1	28.3	8.4	4.4	7.5
Hay and feed crops	29.8	35.2	30.8	20.4	27.8	22.1

43. *On an average farm, half the land is sown to cereals (mainly wheat and barley) and another 30% is under field crops (potatoes, vegetables, fruits, and grapes). Feed crops occupy a significant 22% of the cropped area.* The detailed cropping structure of an average farm in the sample is shown in **Table 11**. Farmers in irrigation-project districts allocate a higher proportion of

land to orchards and vineyards and relatively less land to hay, grasses, and other feed crops than farmers in control districts. This is consistent with the structure of farm land in the two groups of districts: hay meadows and pastures account for 26% of farm land in the control districts compared to 8% in the project districts, while orchards and vineyards represent 10% of land in the control districts compared to 17% in the project districts (see **Table 8** above).

**Table 12. Sown Area and Output by Crops per Producer Farm**

Crop	Number of producers	Sown area per farm, ha	Output per farm, kg	Percent of producers		
				reporting that production is profitable	planning to increase production	planning to keep production unchanged
All cereals	1114	1.06	1400	22%	16%	44%
Wheat	905	0.76	1250	27%	20%	50%
Barley	371	1.11	950	21%	21%	48%
Corn	58	0.21	850	38%	31%	35%
Potatoes	832	0.14	1300	61%	22%	56%
Vegetables	1099	0.14	1600	55%	17%	64%
Fruits	772	0.30	1300	48%	16%	62%
Grapes	576	0.32	1600	39%	19%	63%
Hay	628	0.84	3000	50%	16%	60%

44. The average area sown in different crops by respective producers and the 1995 output of each crop per producer is given in **Table 12**. The quantities in this table are interpretable as the average harvest that a farmer can expect once a decision is made to grow a particular crop on a corresponding plot of land.

45. *Farmers overwhelmingly report that they have no intention of reducing crop production in the future.* Around 20% of respondents actually indicate that they intend to increase production, and another 50%-60% intend to keep production at the current level (**Table 12**). The number of farmers intending to reduce production does not exceed 10% for any of the crops. There is no obvious relationship between plans for the future and perception of profitability of different crops. While cereals are judged profitable by a smaller proportion of producers than garden crops (**Table 12**), the percentage of farmers planning to increase production is about the same across all crop products.

46. Crop yields per hectare calculated from the survey present a mixed picture in comparison with long-range average yields for Armenia (**Table 13**). The sample yields for wheat, potatoes, and grapes are on the whole indistinguishable from the national averages. On the other hand, vegetables achieve substantially lower yields in the sample, while fruits and hay achieve higher yields in the sample. Since vegetables, fruits, and grasses for hay are composite categories, the difference in yields may be due to the fact that farms in the survey districts grow these crops in a mix which is substantially different from the overall national average. Yields calculated from the survey responses for wheat, barley, fruits, and grasses are higher in the project districts than in the

control districts (**Table 13**). The yields of other crops are not significantly different between the two groups of districts.

**Table 13. Mean Crop Yields**  
(ton/ha, for farmers reporting respective crops)

Crop	Project districts	Control districts	Entire sample	Country mean#
Wheat	2.5*	1.8	2.3	2.2
Barley	1.3*	1.0	1.3	1.9
Corn	3.5	4.2	4.2	NA
Potatoes	11.3	14.1	12.5	12.3
Vegetables	13.7	13.8	13.7	23.0
Fruits	6.8*	4.4	6.4	4.6
Grapes	6.5	7.6	6.7	6.9
Hay	6.7*	3.8	6.0	3.5

\* Yields significantly higher than in the other districts (at 10% level of significance).

# Averages for 1985-1993 based on official Armenian statistics.

47. Wheat yields per hectare in the sample farms are not much lower than the corresponding average yields in Canada and the US (2.5 ton per ha). Yet they are substantially less than in both eastern and western Europe, where wheat yields reach 4.5 ton per ha. Potato yields, at 12.5 ton per ha in the sample, are lower than in the US, Canada, and Europe, where they typically exceed 20 ton per ha. Grape yields are comparable to the wine-growing countries of East Central Europe (Hungary, Bulgaria, Romania), but abysmally low relative to the US and western Europe, where typical yields are between 12 and 18 ton of grapes per ha. Thus, while a general comparison to agriculture outside the FSU presents a mixed picture, the yields in Armenia are definitely lower than in western Europe.

### *Livestock*

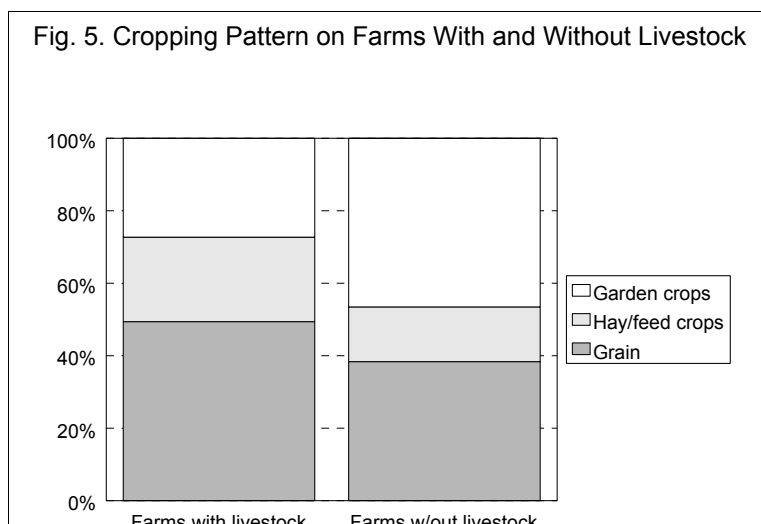
48. *Around 70% of respondents in the sample keep livestock, but animal products account for only 30% of the total value of production on these farms.* The livestock profile of an average household among those with any animals includes 1.5 cows, one young animal, 0.6 pigs, 2.8 sheep, and 6 chickens. All farmers with livestock also engage in crop production, and their cropping pattern emphasizes grain, grasses, and feed crops to a substantially greater extent than on farms without livestock (**Fig. 5**).

49. “Mixed” farms with both crops and livestock are on average double the size of farms that specialize in crops: the land endowment is 1.7 ha for mixed farms and 0.85 ha for farms without livestock. While there is no difference in areas under vineyards and orchards in farms of the two types, farms with livestock have more hay meadows and also more arable land (to satisfy the



additional requirements for feed grain). The additional endowment of “mixed” farms comes in the form of privately owned as well as leased land.

50. Cows and chickens are the main form of livestock on Armenian farms: over 60% of households keep cows and calves and nearly half the households have poultry. Cows and chickens provide a natural source of milk, meat, and eggs for home consumption and sale, which explains their popularity. Other animals are reported by a much smaller proportion of households (**Table 14**).



**Table 14. Frequency of Livestock Producers and Herd Size**

Livestock	Percent of farms with animals			Number of head per farm#		
	project districts	control districts	all sample	project districts	control districts	all sample
All cattle	60	76	63	2.8	3.7	3.0
Cows	57	76	61	1.6	2.1	1.7
Pigs	10	34	15	3.2	2.8	3.0
Sheep and goats	15	33	18	12.4	8.7	11.1
Chickens	45	54	46	9.6	8.9	9.4
Other fowl	3	3	3	6.1	15.3	7.7
Horses	3	9	4	7.6	4.8	6.3
Rabbits	1	1	1	7.6	5.0	6.9
Bee hives	1	1	1	23.5	13.3	19.3

# Average number of animals for a farm that keeps animals of the corresponding kind.

51. Number of animals and production of animal products per farm in each livestock category are summarized in **Tables 14** and **15**. Households with cows average 2200 kg of milk per year from their 1.7 cows. Households with cattle produce on average 140 kg of beef per year, which is about one-half of a young bull. This clearly indicates that *Armenian households keep dairy cattle, and beef is a minor byproduct*. Households with pigs produce 110 kg of pork per year, which is roughly equivalent to slaughtering one pig a year.

52. *Milk yields in the sample average 1,350 liters per cow per year, and 10% of respondents report yields of 2,000 liters and higher. These milk yields are lower than in Russia, where the average in recent years has been over 2,300 liters per cow per year, and far below the average in western countries, where milk yields are typically higher than 4,000 liters per cow per year.*

53. *Nearly 70% of farmers graze their animals, mostly on common pastures. Around 60% report using green fodder and hay as animal feed. Concentrated feed and grain are each used by 40% of farmers, mainly as feed for cows and chickens. More than one-third of the grain produced on farms with livestock is fed to the animals. Only 30% of respondents produce their own animal feed; fully 50% buy half their feed requirements, and 20% purchase almost all their feed from outside sources.*

**Table 15. Livestock Production**

Products	Percent of producers among all farms	Production, kg	Percent of producers		
			reporting that production is profitable	planning to increase production	planning to keep production unchanged
Milk	61%	2265	55%	33%	41%
Beef	26%	141	60%	30%	38%
Pork	14%	114	34%	17%	23%
Mutton	11%	94	62%	32%	41%
Wool	16%	85	39%	27%	43%
Eggs	47%	885	67%	49%	34%
Poultry meat	9%	54	56%	47%	32%
Honey	1%	150	78%	72%	11%

54. *Around 60% of producers in each product category report that livestock production is profitable (Table 15). The only exceptions are pork and, to a smaller degree, wool, which are viewed as profitable by fewer than 40% of respondents. Between 30% and 40% in each profitable product category indicate that they plan to increase livestock production and another 40% intend to keep production at the same level as the previous year. The percentage of farmers who plan to reduce livestock production is low, usually not more than 10% in each product category. The only exceptions are the two relatively unprofitable products, pork and wool. Fully 40% of farmers intend to reduce pork production in 1996. Wool production, however, will be reduced by only 15% of farmers, because the relatively low profitability of wool is offset by the higher profitability of mutton, which is derived from the same animals. Overall, the tendency to increase production is significantly more pronounced among farmers who regard livestock as profitable than among those who report that livestock is unprofitable: the proportion of farmers reporting that they plan to increase livestock production is 40%-60% in the "profitable" group versus 15%-25% in the "unprofitable" group. Yet even among farmers reporting that livestock is unprofitable not more than*

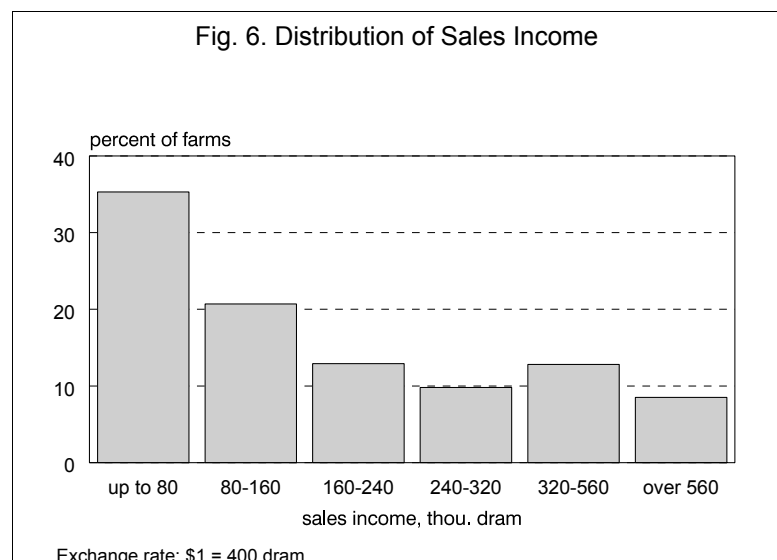
one quarter actually intend to reduce production (except for pork, where more than half the farmers in the “unprofitable” group plan to cut production). *The overall tendency is to keep the volume of livestock production unchanged or increase it.*

55. The view of livestock as profitable or unprofitable generally does not depend on the volume of production or the size of the herd, probably because the variability in livestock production volume and particularly the herd size is so small among the farms. It is only for beef, milk, and mutton that the percentage of farmers who regard these products as profitable clearly increases with the quantity produced.

## Sale of Farm Products

56. Despite the small size of the plots, Armenian farmers do not produce solely for family consumption. Overall, *around 70% of the output is consumed by the household and the remaining 30% is sold* (mainly for cash; the volume of barter transactions is small). The main “cash products” of Armenian households are grapes, fruits, vegetables, and meat, with 40%-50% of the output sold or bartered (**Table 16**). Grain, hay, potatoes, milk, wool, and especially eggs are predominantly consumed inside the household, although for these products also 10%-20% of the output is sold. Among the subset of producers actually reporting commercial sales or barter transactions, household consumption accounts for a smaller proportion of the output and a correspondingly higher proportion is sold and bartered. These “commercial” farms sell fully 60% of their overall output and consume the remaining 40% (**Table 16**).

57. *Crops account for 60% of sales income, while livestock products contribute 30% of the total.* The remaining 10% of sales is derived from other activities. The distribution of sales income by farms is shown in **Fig. 6**. The average sales income calculated over the subset of respondents reporting some sales in 1995 was 285,000 dram (\$710), with 50% of farmers reporting 1995 sales between 55,000 dram and 290,000 dram (\$140 and \$725). Median sales income was 135,000 dram (\$340) in 1995, and the average income was pushed up by 10% of respondents reporting sales revenues in excess of 500,000 dram (\$1250 and up).



**Table 16. Proportion of Output Consumed and Sold by Producers of Each Commodity**

Commodity	All producers				Producers reporting sales and barter			
	Percent of respondents in sample	Percent of output			Percent of respondents in sample	Percent of output		
		consumed	sold	bartered		consumed	sold	bartered
Grain	51.6	87.7	10.4	1.9	13.3	51.9	40.7	7.4
Potatoes	40.4	79.2	17.3	3.6	17.4	51.0	40.7	8.4
Vegetables	53.6	61.9	35.7	2.4	30.1	31.9	63.8	4.3
Grapes	26.0	53.1	42.3	4.6	16.6	26.6	66.3	7.2
Fruits	35.6	54.2	44.3	1.5	22.7	28.4	69.3	2.3
Hay	32.3	78.3	20.3	1.4	8.1	13.4	80.8	5.8
Meat	35.9	46.4	48.8	4.8	25.9	25.9	67.5	6.7
Milk	56.2	86.5	11.5	2.0	17.9	57.2	36.5	6.3
Eggs	42.8	93.9	4.8	1.3	6.4	56.4	34.5	9.1
Wool	15.1	79.4	8.8	11.8	3.9	21.3	33.7	45.0
<b>Average</b>		<b>72.1</b>	<b>24.4</b>	<b>3.5</b>		<b>36.4</b>	<b>53.4</b>	<b>10.2</b>

**Table 17. Main Marketing Channels (percent of commercial producers, excluding barter)**

Commodity	Farms with sales	State procurement	Market	Direct sales to consumers	Other*	Range of prices received, dram/kg
Grain	216	7.4	47.7	38.0	2.3	80-150
Potatoes	299	0.3	81.9	10.4	2.6	80-120
Vegetables	599	4.0	85.0	7.3	0.5	50-100
Grapes	319	26.0	56.1	14.1	1.6	50-200 (30 to state)
Fruits	457	5.5	83.4	9.0	0.0	50-150
Hay	154	1.3	9.1	81.2	3.2	15-30
Meat	485	0.6	65.4	24.5	5.1	700-1000
Milk	314	6.1	48.4	39.2	1.9	80-200
Eggs	97	0.0	41.2	52.6	1.0	40-50/10 pc
Wool	36	0.0	75.0	13.9	0.0	500-1000
<b>Average</b>		<b>5.1</b>	<b>59.3</b>	<b>29.0</b>	<b>1.8</b>	

\* Includes the traditional consumer coop network and new commercial firms.

58. *Traditional state procurement channels play a negligible role in farm product sales in 1995 (Table 17).* The only notable exception is grapes: 26% of producers sell grapes to state-affiliated channels, which are still the main link to the wineries. Other than grapes, *farm products are predominantly sold in town markets or directly to consumers on the farm and on the roadside.* Direct sales to consumers avoid the need to transport the products to the market, and are particularly important for hay, grain, milk, and eggs. The two former products are easily picked up by the buyer in the field, while the two latter products (and especially the perishable milk) are easily sold on the

farm or on the roadside. *Private wholesale traders still do not exist in Armenia*, as only a negligible percentage of respondents report sales to private trading firms. Thus, although private sales have virtually completely displaced state-affiliated channels (including the consumer coop network), these are mainly retail sales conducted by the members of the farmer's family: development of private wholesale channels is still a matter for the future.

**Table 18. Marketing Difficulties (percent of commercial producers, excluding barter)**

Commodity	Farms with sales	Late payment	Low prices	No buyer	No transport	Other	No problems
Grain	216	21.8	69.9	31.0	63.0	5.1	18.1
Potatoes	299	10.0	46.2	31.4	53.2	4.7	28.4
Vegetables	599	15.5	66.4	34.1	67.1	6.3	14.5
Grapes	319	46.7	70.8	36.4	55.2	11.6	9.1
Fruits	457	17.5	50.8	28.9	62.8	10.1	18.8
Hay	154	20.1	52.6	26.0	47.4	14.9	24.7
Meat	485	14.0	48.7	33.0	31.8	9.3	26.6
Milk	314	10.5	46.2	28.0	30.9	5.1	35.0
Eggs	97	9.3	35.1	18.6	24.7	6.2	49.5
Wool	36	11.1	41.7	52.8	25.0	2.8	25.0
<b>Average</b>		<b>17.7</b>	<b>52.8</b>	<b>32.0</b>	<b>46.1</b>	<b>7.6</b>	<b>25.0</b>

59. Recent prices received by farmers for sale of their products are shown in the last column in **Table 17**. At the prevailing exchange rate of 400 dram to \$1, grain fetches between \$200 and \$375 per ton, milk between \$200 and \$500 per ton, and meat between \$1750 and \$2500 per ton. Although these are basically retail prices, as Armenian farmers sell directly to the end user (see **Table 16**), *the prices received by farmers are quite high compared to world prices*. Grapes provide the only opportunity for assessing the differences between market retail prices and prices paid by state-owned wholesale enterprises. While market prices for grapes range between a low of \$125 per ton and a high of \$500, the prices received from the state are around \$75. For grain, milk, and fruits, all of which are sold by more than 5% of the farmers to state channels, *the prices paid by state-owned wholesalers are at the low end of the price range* shown. These prices are statistically significantly lower than the market prices for all commodities (except grain).

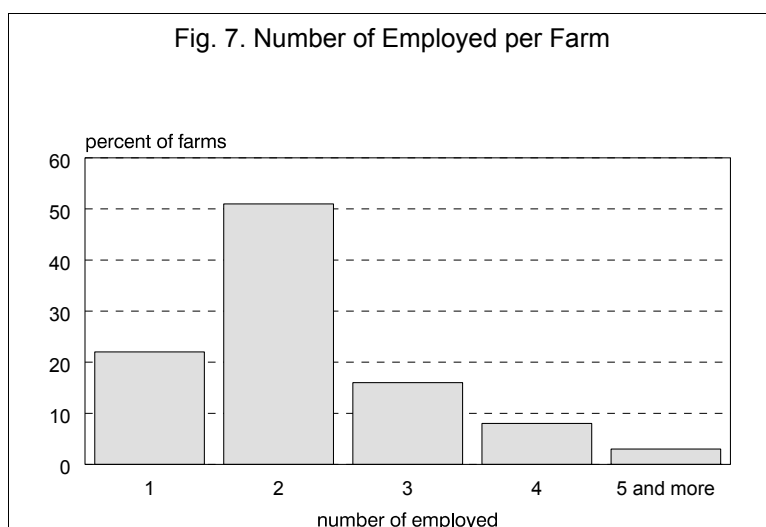
60. *Since most farmers sell for cash in the market or directly to the consumer, accounts receivable and collection do not constitute a serious problem (Table 18)*. Here again the only exception is grapes: these are sold by many producers to state procurement channels, which are notoriously slow to pay. Thus, nearly 50% of "commercial" grape producers complain of late payment for their product, while the frequency of complaints for other products is much lower (10%-20% of producers). On average half the "commercial" farmers make the standard complaint that the prices received for farm products are too low, although this complaint is not entirely consistent with the fairly high prices reported in **Table 17**.

61. Another important complaint focuses on difficulties with transport, which is a crucial factor when one of the family has to carry the produce to the market in town. Thus, *nearly half the farmers who sell their products (averaged over all commodities) report difficulties with transport and deliveries to the market.* Once the product has reached the market, it is not too difficult to sell it, as less than one-third of the farmers complain about difficulties in finding a buyer. Despite the various complaints reported by respondents, it is remarkable that fully 25% of “commercial” farmers (averaged across all commodities) do not report any problems with sales of farm products (see last column in **Table 18**).

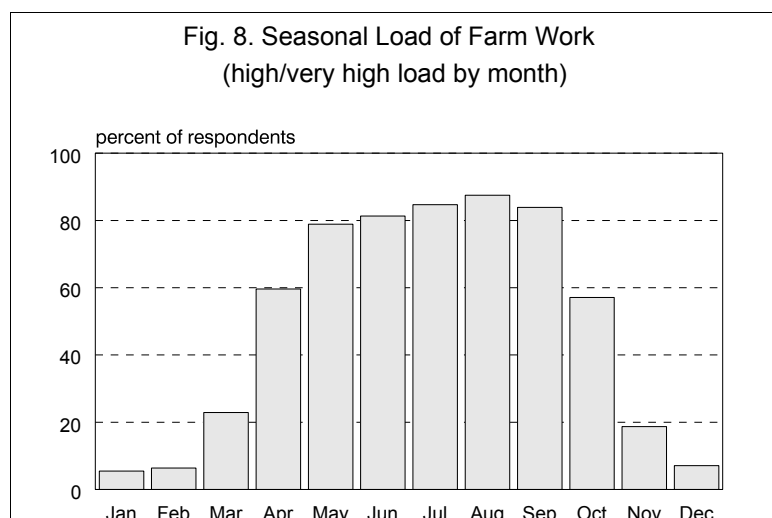
### Farm Resources and Purchased Inputs

62. Half the farms in the survey are operated by two workers. *For 88% of the farms, the labor force is between one and three (Fig. 7), with 2.3 the average number of employed per farm. Virtually all workers are family members, and less than 1% of farms employ hired labor (permanent or seasonal).* The work load on the farm has a pronounced seasonal pattern, with peak loads between April and October and a relative lull between November and March (**Fig. 8**). However, the peak load period is sufficiently long, so that 45% of the farmers have to devote between six and nine months to their farm and another 35% devote between nine and 12 months to farming (**Fig. 8**).

63. *Only 10% of farms in the sample own farm machinery or mechanical equipment of any kind.* Most of these farms have only one piece of equipment, which is generally a tractor (5% of farms) or a truck (3%). Less than 3% of farms report more than one piece of farm machinery. *There is one tractor or mini-tractor per 15 ha of land among the sample farms.*



64. Because they lack their own farm machinery, the farmers have to rely on mechanical field services from commercial sources. Such sources are apparently readily accessible, as *nearly 90% of farmers report using outside providers of mechanized services, who are predominantly identified as private operators of farm machinery*. Only 7% of farmers report using the machinery pool operated by the local council, and around 1% use state-organized service facilities (“Agroservice”, “Fertility”, etc.).



65. The farmers are not particularly satisfied with the service they receive from the various providers, whether private or state-affiliated. The overall dissatisfaction rate in the sample is around 70%, and high prices are the predominant reason for dissatisfaction (86% of dissatisfied users). A substantially smaller proportion of dissatisfied users (around one third) complain about service quality and timeliness. Payment for mechanized services, at 46,000 dram per year per farm on average, accounts for 45% of total farm production costs.

66. Despite the change to smallholder agriculture *Armenian farmers continue to use purchased inputs (Table 19)*. Over 70% of farmers purchase fertilizers and plant protection agents, over 50% resort to veterinary services and use veterinary drugs, and nearly 50% actually purchase equipment. Around 60% of respondents contract out for mechanical field works, which is a reflection of shortage of farm machinery among Armenian peasants. Averaged over all inputs and services covered in **Table 19**, however, less than half the respondents report that they purchase inputs.

67. *Private trade is the main source of supply for farmers who purchase inputs*. The traditional state-affiliated supply channels have completely lost their importance, and they retain a partial role only as suppliers of veterinary drugs and services and other chemicals (plant protection agents and fertilizers). Farmers themselves are not an active force in the market for farm supplies. Very few respondents purchase inputs from other farmers (**Table 19**), and consistent with that, very few report that they sell inputs to others. Thus, only 2% to 5% of respondents report that they sell seeds and seedlings, animal feed, and young animals to other farmers; 2.5% report that they provide mechanized field services to others; and 4% are active in consulting other farmers. The number of respondents reporting that they sell other inputs is negligible.

**Table 19. Sources of Purchased Farm Inputs (percent of respondents)**

	State-affiliated firms	Private individuals	Other farmers	Other sources	Respondents reporting purchase of the input
Seeds: cereals and legumes	1.7	37.9	3.1	10.1	51.2
Seeds: grasses	0.9	26.3	2.0	3.1	31.5
Seedlings	0.1	39.0	4.5	14.0	55.0
Planting material	0.2	26.6	2.0	4.7	32.9
Animal feed	0.6	44.2	3.4	5.3	50.7
Young animals	0.1	22.5	0.9	5.0	27.8
Manure	0.7	22.7	1.6	9.4	33.6
Fertilizers	4.6	71.7	1.2	0.9	76.6
Plant protection agents	6.6	65.4	0.7	1.4	72.3
Farm machinery	2.9	42.8	1.1	0.8	45.5
Repairs and maintenance	0.2	10.7	0.3	0.6	11.5
Spare parts	0.4	12.9	0.4	0.3	13.4
Fuel	0.3	46.1	0.3	0.3	46.6
Mechanized field works	3.1	57.9	1.0	0.7	61.2
Veterinary drugs	14.0	41.1	0.2	0.5	53.9
Veterinary services	17.1	36.2	0.2	0.5	52.8
Construction materials	1.8	27.0	0.3	1.0	29.4
Construction services	0.2	17.5	0.3	1.2	18.7
Consulting	1.2	11.7	1.7	1.9	16.0
<b>Average</b>	<b>3.0</b>	<b>34.7</b>	<b>1.3</b>	<b>3.2</b>	<b>41.1</b>

68. The proportion of farmers who purchase consulting services is quite low (**Table 19**). Again it is private experts who are the main providers of this service, and traditional state-affiliated agencies are not widely used. Cognizant of the importance of extension services for new farmers, the Government of Armenia has created a special extension service, “Agrogitaspurya”, which provides advice and consulting for a fee. Yet only 4.5% of respondents in the sample report that they used this service in the past, while nearly 40% indicate that they have never even heard about the service. Fewer than 20% of respondents are willing to pay for extension services, and 80% believe the service should be free.

69. *Farmers identify high prices as the main obstacle to purchase of farm inputs (around 50% of respondents; see **Table 20**). Availability does not appear to be a problem, and the relatively low rate of access of farmers to input markets thus cannot be attributed to shortages. Yet, on the whole, over 90% of respondents complain about some difficulties with input supply (**Table 20**). This is an indication of serious problems in the operation of input markets for small farmers in Armenia.*



**Table 20. Main Difficulties with Purchasing Farm Inputs (percent of respondents)**

	High prices	Not available	Other	No problems
Seeds: cereals and legumes	48.3	3.8	3.7	12.7
Seeds: grasses	44.7	3.6	4.0	6.8
Seedlings	38.8	1.6	3.4	22.8
Planting material	40.4	2.8	3.4	11.1
Animal feed	57.9	1.9	2.9	5.9
Young animals	47.2	1.9	3.5	5.2
Manure	44.7	3.4	4.5	10.6
Fertilizers	76.6	4.4	2.0	3.3
Plant protection agents	69.0	4.3	3.0	3.5
Farm machinery	55.6	2.3	3.0	3.0
Repairs and maintenance	41.1	1.1	5.0	1.5
Spare parts	41.4	1.5	4.5	1.7
Fuel	55.4	0.7	2.5	3.5
Mechanized field works	66.1	0.8	2.7	5.2
Veterinary drugs	56.0	2.3	2.0	8.0
Veterinary services	46.1	1.2	2.4	13.6
Construction materials	51.4	1.8	3.5	1.8
Consulting	26.4	0.9	7.3	13.6
<b>Average</b>	<b>50.4</b>	<b>2.2</b>	<b>3.5</b>	<b>7.4</b>

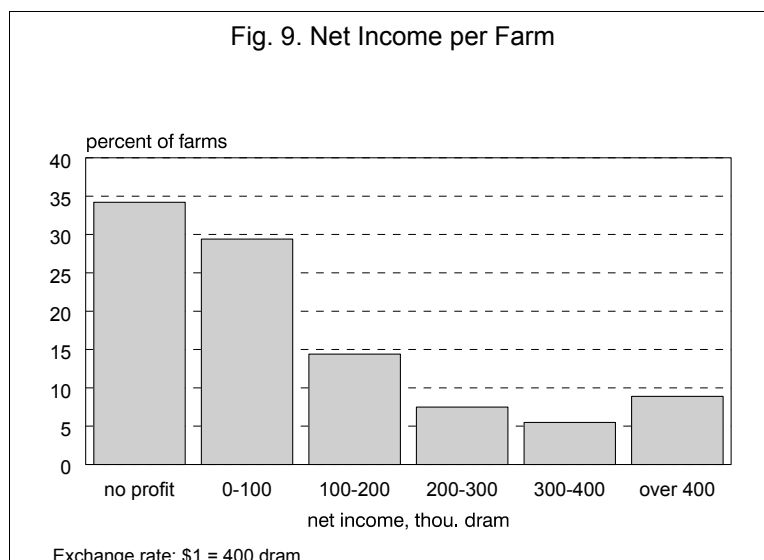
## Finance, Investment, and Credit

70. Farmers in the survey report production costs of 115,000 dram (\$290) in 1995. This amount represents mainly purchase of farm inputs. The reported investment in farm fixed assets in 1995 was minimal (13,000 dram, or less than \$35).

71. *The funds for production and farm investment* (a total of about 130,000 dram, or \$325) *came predominantly from own savings and informal credit provided by relatives and acquaintances.* Own savings represent 67% of all sources, and informal borrowing accounts for an additional 25%. Nothing was raised in the form of bank credit or received as support from government sources.

72. For three-quarters of farms in the sample that engage in some commercial sales, annual sales revenue in 1995 averaged 290,000 dram (\$725), and production costs (excluding charges for family labor and return to land and capital) were around 40% of sales. *An average household engaging in commercial sales of farm products thus had 170,000 dram (\$425) of net farm income in 1995, and 25% of households achieved above-average profits.* About 10% of respondents

report profits of 400,000 dram (\$1000) and higher, but at the other extreme one-third of farms report losses or zero profit based on revenue from commercial sales (**Fig. 9**). The profit calculated from the survey data is understated, because it is based on reported revenue from commercial sales and does not take into account the value of products consumed by the family. Since most of the output is used for domestic consumption, the farms in the sample are on the whole profitable.



73. Farms in the irrigation-project districts achieve higher sales revenue and higher profit than farms in the control districts (**Table 21**). Thus, the project districts with their higher irrigation levels appear to be more productive and profitable than other districts even before the completion of the Irrigation Rehabilitation Project. Mixed farms that keep livestock in addition to growing crops have a higher level of sales and higher profitability than farms specializing in crops. Livestock is thus a relatively important component in farm profitability in 1995.

**Table 21. Sales Revenue and Profit (thou. dram)\***

	All farms with sales	Project districts	Control districts	Farms with livestock	Farms without livestock
Number of farms	1522	1256	266	1131	391
Sales revenue	291	306	217	332	171
Production costs	123	124	116	139	77
Profit	168	182	101	193	94
Profit margin of sales	58%	59%	47%	58%	55%

\* Averages for farms reporting sales revenue (75% of the sample).

74. As expected, the volume of sales is significantly correlated with the amount of land and the number of head of livestock. The profit, however, does not show a significant correlation with these standard measures of farm size. Yet there is a very clear relationship between the volume of sales and the level of profit, on the one hand, and the number of persons employed on the farm, on the other hand. **Fig. 10** shows that *both the volume of sales and the profit increase with the increase of the farm labor force.*

75. The farmers' views of the future of farming are not buoyantly optimistic, as *only 10% of respondents anticipate that farm profitability will improve within the next 2-3 years.* Yet, on the

other hand, it is difficult to speak of clearcut pessimism among farmers, as respondents are divided in their view of future profitability of farms: while one-third expect the financial situation to become worse in the future, one-third expect farm profitability to remain unchanged or to improve, and the remaining one-third have no opinion on the subject.

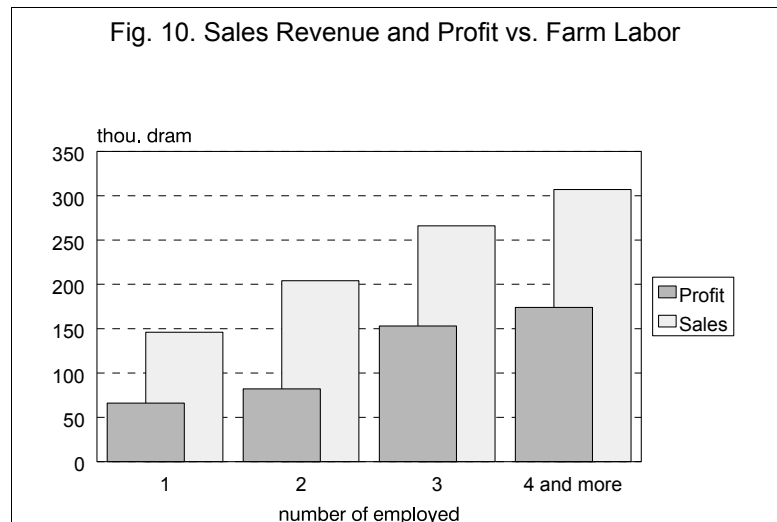
76. *One-quarter of respondents reported that they have outstanding debt in amounts ranging from 2,000 to 2 million*

*dram (\$5 to \$5,000). The median debt is 40,000 dram, or \$100, and 25% of respondents with debt report outstanding amounts of 100,000 dram and higher (\$250). None of this debt, however, is bank credit: only seven out of 2038 respondents report that they owe money to the banks (in amounts ranging from 16,000 dram to 420,000 dram). Commercial banks are not an accessible source of credit because of interest rates that are perceived as excessively high (28% of respondents) and also because of general rationing of commercial credit to small farmers (12% of respondents report that no credit is available even at high interest rates). Government credit is not available to peasant farms.*

77. *Respondents borrow mainly from relatives (40%) and from other private individuals (10%). Respondents also identify relatives and acquaintances as virtually the only potential source for future borrowing. This source, however, is less available for long-term investment loans: while 75% of respondents report that they will be able to obtain short-term loans from relatives, only 45% identify relatives as a potential source for long-term loans. In general, long-term credit for investment appears to be more of a problem than short-term borrowing: over 40% of respondents report that they have no source for long-term credit, compared to only 19% who have no source for short-term borrowing.*

78. *Cooperative credit is still undeveloped in Armenia. Nevertheless, 5% of respondents are already members of the recently formed Agricultural Cooperative Bank of Armenia (ACBA), and more than half the respondents have at least heard of this rural credit facility. Although 20% of respondents express interest in becoming members of ACBA, one-third have a negative opinion, probably because they are not familiar with this option. Considerable organizational and educational efforts are thus needed before ACBA will be established in rural communities.*

79. *Half the respondents report that they will need credit for farm operations next year, while the other half explicitly state that they do not require any credit for their farms. The median demand for credit is 200,000 dram (\$500), and 25% of respondents reporting demand for credit*



would like to borrow 500,000 dram (\$1250) and more (**Table 25**). These amounts are substantially higher than the levels of outstanding debt reported by the respondents. They are also high compared to the volume of sales achieved by the farms in 1995. Moreover, there is virtually no correlation between the expressed demand for credit and the level of sales or profit in 1995. It is therefore difficult to have much confidence in the amounts reported by farmers as a measure of the actual need for credit in rural Armenia. The farmers would like to borrow mainly for periods of 12 to 24 months, although 20% express a need to borrow for 3 to 10 years. For most farmers acceptable interest rates are between 0.5% and 2% per month.

80. In the absence of commercial borrowing from the banks, use of collateral is not an issue among Armenian farmers. More than two-thirds of respondents have no opinion as to whether land mortgage should be allowed or prohibited. Yet 60% firmly state that they would not mortgage their land, even if there were no other way to obtain credit, and only 25% are of the opinion that official title documents that could be offered as collateral would ease the credit difficulties.

**Table 22. Farmers' Demand for Credit in 1996**

	Number of respondents	Percent of all surveyed	Percent of those who expect to need credit
No credit required	1015	49.8	--
Expect to need credit	1023	50.2	100.0
up to 100,000 dram	307	15.1	30.0
100,000-250,000 dram	246	12.1	24.0
250,000-500,000 dram	245	12.0	23.9
500,000-1,000,000 dram	104	5.1	10.2
1,000,000-2,000,000 dram	46	2.3	4.5
over 2,000,000 dram	75	3.7	7.3

81. Although 75% of farms in the survey report revenue from commercial sales, only 10% carry accounts receivable. More than half the accounts receivable are peasant farms and other private individuals. The frequency of receivables from state procurement, processors, or commercial trading firms is negligible. All this is consistent with the observed pattern of marketing channels in Armenia: most sales are cash transactions in the nearby market or directly with the consumer, and there are very little sales to processors or wholesale firms. Moreover, since the survey was carried out in May-June, the state processors had already settled their accounts for last year's grapes, though possibly after a considerable delay, and no outstanding receivables are reported by those few who sell through state channels. The median amount owed by customers for product purchases is 20,000 dram (\$50), and one-quarter of farms with accounts receivable report amounts of 50,000 dram (\$125) and higher.

## Social Sphere

82. Prior to 1991, the rural population in Armenia, as in the rest of the Soviet Union, received all the social services through the local collective or state farm. Some social services and benefits were funded from the government budget, while others were financed directly from the operating revenues of the farm enterprise. Yet it was the local farm enterprise that acted as the actual provider of social services in the village.

**Table 23. Provision of Social Services to Farmer Households**

	Enjoyed in the past	Enjoy currently	Provider of service today (percent of respondents)
Salary adjustment for price increases	19	15	Government (18%)
Pension augmentation	14	28	Government (30%)
Children allowances	26	23	Government (25%)
Subsidized daycare	13	4	--
School subsidies	19	3	--
Student stipends	13	4	--
Help with housing construction and repairs	18	0	--
Heating fuel	20	1	--
Food products at subsidized prices	30	1	--
Help with purchase of manufactured goods	19	0	--
Subsidized community services	12	3	--
Provision of health care	50	26	Government (24%)
Subsidized vacation resorts	40	2	Labor union (1%)
Enterprise housing	7	1	--
Subsidized rent, utilities	16	10	Government (8%)
Transportation	23	2	--

83. Availability of rural social services today, compared with the pre-1991 period, is clearly dichotomized between services and benefits that are the responsibility of the government and those that were traditionally a “gift” from the farm enterprise to its members and employees. *All benefits previously financed by the farm enterprise have been wiped out (Table 23)*. Gone is the assistance with construction, house repairs, utilities, heating fuel, purchase of food and consumer goods at subsidized prices, vacations in enterprise-coordinated resorts, and transport. A significant proportion of respondents continue to enjoy only those social benefits that have always been financed by the government, and not necessarily by the local enterprise. These include salary and pension adjustment for price increases, children allowances, and medical care.

84. Although the government continues to provide a range of social services to the rural population, *more than half the respondents complain about difficulties with access to government-financed medical care (Table 24)*. Naturally, most respondents (over two-thirds) also complain about difficulties with access to transport, purchase of heating fuel, subsidized food, construction,

and house repairs, as all these services were traditionally provided by the farm enterprise and have been eliminated after 1991. There are no complaints about housing or house amenities, as 90% of rural households in Armenia have electricity, running water, and reasonable access roads.

**Table 24. Difficulties with Social Services for Farmer Households**

	Percent of respondents reporting	
	Difficulties	No difficulties
Daycare	18	46
Use of enterprise housing	12	45
Use of community services and subsidized utilities	19	42
Access to medical care	59	22
Access to transport	69	14
Construction and repairs	65	15
Heating fuel	72	12
Purchase of food	64	17
Other	47	17

85. The general situation of rural families is fairly difficult. *Nearly 70% of families report that their material situation has deteriorated during the last 2-3 years, with 40% reporting substantial deterioration (Table 25). At the other extreme, 11% report that their situation now is better than in the past and 18% indicate that there has been no change in their material situation. Nearly half the respondents complain that their income is insufficient even to buy food and another 45% report that they can only afford to purchase food and the basic necessities (Table 25). The proportion of respondents whose income is sufficient to purchase clothing in addition to food and the basic necessities is around 5%, and less than 1% admit being able to afford such luxuries as furniture, home appliances, or a car. This extremely negative evaluation of the standard of living was obtained in response to direct leading questions, and it is inconsistent with indirect (and thus perhaps more objective) assessment of farm profitability from data on production costs and sales revenues.*

**Table 25. Material Situation of Farmer Households (percent of respondents)**

How did the family's material situation change in last 2-3 yrs?		What can you afford today?	How will the family's material situation change in next 2-3 yrs?		
Much better	1.9	Not even food	47.5	Much better	2.5
Better	9.2	Food and bare subsistence needs	45.5	Better	15.8
Unchanged	17.7	Subsistence and basic clothing	5.8	Unchanged	27.4
Worse	30.2	Furniture and appliances	0.4	Worse	9.7
Much worse	38.6	Vehicles and luxury goods	0.3	Much worse	18.0
Undecided	2.5	No reply	0.3	Undecided	26.3

86. The grim realities of existence in rural Armenia today affect the respondents' perception of the future: less than one-fifth of respondents envisage some improvement in the

material situation of the family within the next two to three years, while nearly 30% of respondents do not anticipate any changes in the economic situation of their families and about the same proportion expect the conditions to deteriorate (**Table 25**). Thus, although there is little optimism among the rural population, the respondents' view of the future is not entirely pessimistic.