



Study and Analysis of the Legume Crop Market in Armenia

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Summary: In mountainous and sub-mountainous zones of the Republic of Armenia farmers mainly grow beans, chickpeas, and peas. In addition there are very small crop areas (mainly homestead lands) of faba bean, soybean, mung bean, and grass pea. The village population does not know much about the cultivation of these plants. The data show that in 2007-2009 the specific weight of legume in overall cropland was approximately 94%, and about the 96% of the gross harvest. Local production needs appropriate marketing strategy. The research of local market showed that more attention should be paid to the consumption of goods produced by the farmer households, as well as to offer them to various consumer groups.

Key words: legume crops, market study, variety testing

Introduction

The family of legumes (*Fabaceae*) includes many plants of vital importance to humans which are cultivated for very different purposes from the earliest times. Common bean (*Phaseolus vulgaris* L.), soybean (*Glycine max* (L.) Merr.), grass pea (*Lathyrus sativus* L.), chickpea (*Cicer arietinum* L.), mung bean (*Vigna radiata* L.), cowpea (*Vigna unguiculata* L.), pea (*Pisum sativum* L.) and faba bean (*Vicia faba* L.) are among the most important grain legume crops (Singh & Rachie 1985, Almeida et al. 1994). The most popular legume crops in Armenia are bean, chickpea, pea and lentil. These crops are of high agronomic importance. The nitrogen fixing symbiotic bacteria that live in nodules of the legume plant root fix atmospheric nitrogen in the ground. They enrich soil with about 40-100 kg ha⁻¹ nitrogen annually, which is equal to 10-20 t of manure. Thus, these plants are considered the best preceding crops for almost all other field crops (Sarukhanyan 2003, Sarukhanyan 2010). Both green pods and grains of legumes contain

large quantities of proteins, carbohydrates, minerals and vitamins. They are storable and have good taste qualities (Peet 1996).

In the Republic of Armenia (RA), large quantity production of bean varieties for both fresh (vegetable varieties) and dry grain consumption has been developed. However, only bean production sector currently satisfies the domestic market demand for legumes. As to the other legume crops, though Armenia has favourable nature and climatic conditions to develop its domestic production, the main part of them is imported from other countries (Gyulkhasyan 2002).

In mountainous and sub-mountainous zones of RA farmers mainly grow beans, chickpeas, and peas. In addition there are very small crop areas (mainly homestead lands) of faba bean, soybean, mung bean, and grass pea. These crops are mainly sowed in spring, though the climatic conditions of the Ararat Valley make it possible to cultivate some legumes (bean, pea, and soybean) also in summer (direct drilling), which allows to manage the land more effectively (Matevosyan & Gyulkhasyan 2000, Melikyan 2005, Sarukhanyan 2010).

Legume crops occupy about 90 million ha worldwide. In particular, large areas of farmland in China, India, Pakistan and some other countries are used for production of legume crops. Currently, in RA legumes are grown on more than 3,000 ha. When combined with the application of effective farming techniques, growing highly productive varieties makes it

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possible to ensure large quantity production of high-quality crops and to secure the domestic demand for legumes.

However, the recent studies have shown that the bean fields make approximately the 96% of all legume fields in RA and the rest are peas, chickpeas and a very small quantity of lentil (Tab. 1). There is a serious problem here: having favourable conditions for legume cultivation, RA almost fully imports the most part of traditional and non-traditional (considered such) legumes such as peas, chickpeas, lentils, broad beans, soya and cowpea. This is why the Green Lane NGO, from its first day pays serious attention to this issue by uniting a number of scientists concerned in legume crops research, and tries to find solutions both independently and with the support of local and international organizations.

In the result of our projects, meetings and research it turned out that the village population does not know much about the cultivation of these plants. This is why the “Legume Crops” book was published this year with the support of GL-TTP (Grain Legume-Transfer Technology Platform) and Green Lane NGO. The book describes the botanical and biological characteristics, cultivation technology, the organic ways of disease and pest control, and the nutritious and medicinal characteristics. It also gives useful advice and recipes for legume dishes (Sarukhanyan 2010). Since 2004, many projects have been done and many scientific and public articles have been published.

The Legume Market Research and Analysis

The research of legume local market has been implemented on the basis of data initial and secondary gathering. The sources of initial data included the population, the large stores (shops)

in regional centres, and a number of stores in Yerevan, agricultural markets and fairs.

The main data for market research have been obtained through the abovementioned sources. The interviews were meant to define the species and quantities of consumed legumes in RA, their wholesale and retail prices, the appropriateness of packaging and the selection of selling places.

According to the results of the research, data obtained from the interviews are as follow.

- Farmers involved in legume cultivation are not much aware of legume production technologies.
- There is no packaged bean of local production in the market. The price of imported packaged beans is considerably higher than the price of the unpackaged beans of local production.
- The average price of green beans ranged between 300-400 AMD (0.8-1.1 USD) in the country in 2009-2010, and the price of grain beans fluctuated between 800-1000 AMD (2.2-2.7 USD).
- The summary of poll data showed that the average demand for legume per month, therefore the sales volume in October-April three times exceeds the demand in May-September.
- The retail sellers of beans and the population prefer to obtain high quality beans of local production; besides this, the majority of them (82%) prefer the packaged ones.
- 6% of those preferring the packaged beans give preference to 300 g packages, 40% to 500 g, 43% to 1000 g and 10% to packages of other sizes.
- 57% of the surveyed prefer doing shopping in shops, 35% in markets and 8% in fairs.

It is worth mentioning that the studies showed that practically there are no tinned and frozen beans of local production at the Armenian market.

The sources of secondary data included those of the National Statistical Service of the RA, the Ministry of Agriculture of the RA, the State Customs Committee under the RA Government

Table 1. Harvested area, yield and production of legumes in the Republic of Armenia in 2007-2009

Crop	Harvested area (ha)			Yield (t ha ⁻¹)			Production (t)		
	2007	2008	2009	2007	2008	2009	2007	2008	2009
Dry pea	31	59	71	2.52	2.11	1.75	78.0	124.5	124.3
Dry bean	1886	2083	1952	2.62	2.83	2.84	4950.6	5903.4	5549.4
Lentil	20	7	5	1.40	1.50	1.06	25.2	10.5	5.3
Chickpea	29	35	32	1.65	1.49	1.61	47.9	52.1	51.6
Other legumes	23	24	25	2.68	3.34	2.10	61.6	80.1	52.5
Total	1989	2208	2085	2.60	2.78	2.77	5163.3	6170.6	5783.1

(currently the RA State Revenue Committee), “Agro-Business Development Center” SCJS, and other data sources.

The data (Tab. 2) show that in 2007-2009 the specific weight of legume in overall cropland was approximately 94%, and about the 96% of the gross harvest (Yearbook of Armenia 2009, Avetisyan 2010). According to the data of the RA National Statistical Service, 3067.2 tons of beans were produced in Armenia in 2001, whereas in 2009 these figures increased and made 5549.4 tons. According to the data of the State Customs Committee assigned to the RA Government, 1687.2 tons of legumes were imported into the country from 1997 to 2001, and about 450 t in 2008. About 73% of the imported product belongs to NGOs. According to the mentioned source in 2001-2004 legume was primarily imported from the USA and was mainly distributed among the population for charity purposes, and currently is imported by large supermarkets. It is worth mentioning that the specific weight of beans in the imported legume volume is about 10%. The market studies show that there is high demand for the locally produced beans. According to the RA National Statistical Service data the specific weight of beans is high in the volume of the annual consumption of legume per capita. So, the RA population has mostly consumed beans among legumes and it has made about 49%.

The national producers are small and medium farmer households, who mainly sell their products at agricultural markets – mostly without packaging. Market research shows that there is no packaging of locally produced legumes, and the quality of existing products is much lower than it is at the international market. Mainly individual citizens and several companies are

involved in packaging, yet it does not correspond to international standards. Particularly it does not have proper diversification, cleanness, required grain dryness for packaging and thus for long-term storage. The name of the product, its weight, production and expiration (storage) dates are not mentioned on the packages, nor the name and address of the producer. Local production needs appropriate marketing strategy.

Until 2004 there was an almost stable level of legume average price in the country. Especially in the last years (2008-2010) the noticeable price increase is mainly connected with the increase of demand in legumes among the population – as a substitute to meat products, which are getting more and more expensive every year (as a source of digestible proteins, carbohydrates, mineral matters and vitamins).

The consumption of food and non-food products increases with the stabilization of the economy and with the rise of profit per person. Consequently the production of goods, based on local raw materials becomes one of the rapidly developing branches of national economy. The demand in quality food contributes to consumer products’ local production. The research of local market showed that more attention should be paid to the consumption of goods produced by the farmer households, as well as to offer them to the following main consumer groups: 1) consumers is the population of the RA, 2) consumers at the restaurants and places of public food in the RA, and 3) international organizations for which the local legumes are the species which have good taste and get prepared rapidly. The consumers of these groups should be introduced to the recipes and usefulness of traditional dishes, as well as to wholesale centres in the RA and abroad.

Table 2. National food balance of legume crops in the Republic of Armenia in 2004-2008 (1,000 t)

	Opening stocks	Production	Import	Total supply	Food consumption	Waste	Seeds	Export	Closing stock	Utilization	Self-sufficiency ratio (%)	Consumption per capita		
												kg year ⁻¹	g day ⁻¹	kcal day ⁻¹
2004	0.9	5.2	3.0	9.1	7.6	0.4	0.2	0.0	0.9	9.1	63.4	2.5	6.9	21.9
2005	0.9	4.4	3.1	8.4	7.0	0.4	0.2	0.0	0.8	8.4	58.7	2.3	6.4	20.2
2006	0.8	4.0	4.2	9.0	7.5	0.4	0.2	0.0	0.9	9.0	48.8	2.5	6.8	21.7
2007	0.9	5.2	4.8	10.9	7.1	0.5	0.2	0.0	3.1	10.9	52.0	2.4	6.5	20.4
2008	3.1	6.2	4.5	13.8	9.5	0.6	0.2	0.0	3.5	13.8	57.9	3.2	8.7	27.5

Conclusion and Suggestions

Based on the research implemented in 2005-2009 for the legume market development and production expansion in the Republic of Armenia we have come to the following conclusion:

- There is a lack of legumes with high fertility in the country, mainly beans are being cultivated.
- The farmers and consumers should be taught about the significance and usefulness of not only beans, but also of other legumes (organizing round tables and TV-radio programs, publishing articles in high-edition newspapers, etc.)
- The legume cultivation technology is on a rather low level.
- Experimental fields should be found in different regions of the country, where advanced technologies used abroad for legume cultivation will be implemented; this will be an example for nearby farmer households.
- The population doesn't give much importance to the usefulness of legumes.
- Large masses of population should be informed of the useful and nutritional characteristics of legumes through organization of seminars (trainings) and distribution of informative papers.
- Most part of farming households does not fully realize the importance of crop rotation and especially the importance of legumes in crop rotation. The farmers only count the profits of the current year.
- It is necessary to calculate the economic effectiveness of crop rotation, and based on these figures persuade the farmers that those crop rotation schemes are effective, where at least two fields are occupied by legumes.
- Legumes of local production are almost absent in big supermarkets.
- Activities should be held to foster the cooperation between the farmers cultivating legumes and the management of supermarkets and have the major part of their product consumed through them, which will contribute to expanding legume cultivation areas, thus adding to farmers' income.

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