

Eugene Ryazanov



ADDING VALUE IN AGRICULTURE

**How farmers, processors,
and traders in Kyrgyzstan can
set up a win-win situation in the
fruit and vegetable production
and processing sectors**



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can set up a win-win situation in the fruit and vegetable
production and processing sectors

Helvetas, Swiss Association for International Cooperation and ICCO, a Dutch Interchurch Organisation for Development Co-operation have supported the publishing of this booklet.



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Abbreviation

AMP	Average Market Price
BDS	Business Development Services
Helvetas	Swiss Association for International Cooperation
ICCO	Dutch Interchurch Organisation for Development Cooperation
KAMIS	Kyrgyz Agricultural Marketing Information System
KR	Kyrgyz Republic
LMD	Local Market Development Project, funded by Helvetas and ICCO
SDC	Swiss Development Co-operation
Seco	Swiss Secretariat for Economic Affairs
SME	Small and Medium-sized Enterprise
NGO	Non-government organisation
RAS	Rural Advisory Services
RMA	Rapid Market Appraisal
ROI	Return on Investments
TES Centre	Training and Extension Services Centre
VC	Value Chain
VCA	Value Chain Actor
VCS	Value Chain Supporter

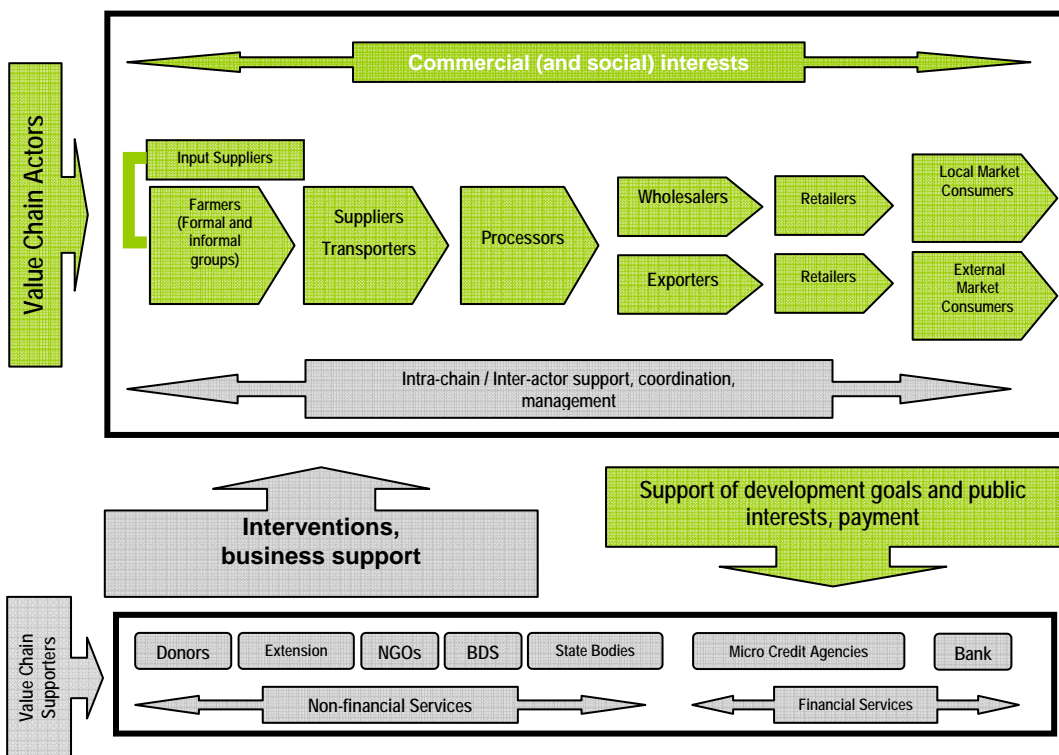
Summary

Support to explicit local market development began in Kyrgyzstan in 2005 and has resulted in a joint pilot project between Helvetas, Swiss Association for International Cooperation and ICCO, Dutch Interchurch Organisation for Development Cooperation and a range of local partners, including ICCO¹ partners. The pilot phase (2005) was positive and therefore a larger programme has been developed for the next three years (2006-2008), which will be implemented in four oblasts (districts) in Kyrgyzstan aiming to include at least ten value chains involving a target of 2,000 farmers. On the one hand the programme builds on many community based groups, such as self-help or agricultural groups, which have gone through some stages of empowerment regarding economic awareness, community based action, agricultural and saving and credit activities. Many members in these groups focus on agriculture and animal husbandry as their main source of income and are interested in and ready to link to markets. The LMD programme is building on the social capital established in these groups and in addition other groups can participate when they meet the conditions set by an economically oriented value chain. These two dimensions of maximum focus on poverty reduction and therefore on marginal and disadvantaged groups in society, such as resource poor farmers, ethnic minorities and women, and economically feasible value chains are present in the approach and programme. These dimensions also indicate the challenge faced because a balance must be struck between economic feasibility, which is crucial to any healthy product chain and the inclusion of those who are often deprived of a conducive environment and/or direct way of participating fairly in such economic initiatives. One of the key elements in meeting this challenge is to work with a range of actors including NGOs, with primarily a social mandate, to commercially oriented enterprises, such as processing and BDS companies. A feature of value chain development is also demand driven production and support to actors in the downstream part of the chain through for example, marketing promotion and stimulating systems to make market information available (Graph 1).

Another element is a strong facilitation or market broker role between actors in the chain. Trust is often a constraint and the facilitation role consists of bringing actors together throughout the season and the provision of concrete expertise in developing relations between actors. This also relates to value chain supporters through the local development of NGOs, advisory services and micro finance institutions. The development of new services, which are suitable for the value

¹ A range of actors is involved in developing the comprehensive local market development programme, including current ICCO partners (such as the Mehr Shavkat and NGO Shoola NGOs, Acted and the TES Centre) and a group of actors, which provide specific services on a contract basis but which are not considered partners in the programme.

chain actors, primarily producers and producer groups, and of value chain supporters such as specific micro finance products, is part of this support role in promoting an enabling environment. In recent years increased attention has been given to SME support from private companies that are interested in social enterprise development.



Graph 1: Relationships between Stakeholders in the Value Chain

It is the understanding of Helvetas and ICCO that the value chain approach should be further developed based on the practical project experience gained in Kyrgyzstan and capitalized and disseminated to other countries in which Helvetas and ICCO are using a similar strategy. In light of this a team of authors has decided to produce a booklet, which might be helpful for people working in supporting organisations (such as NGOs, extension and business development service providers, and credit institutions) and value chain actors (farmers, processors and traders).

The booklet aims to analyse added value at different stages of the chain and possible ways of cooperation and business development of all the actors and supporters involved and it can also be used as a reference for market information. The authors think that the main readers of the booklet are people involved in development cooperation working with agricultural producers, processors and traders. They also expect that some readers will not agree with

the given calculations (other costs or market prices in their region) but main idea of the booklet was to show possible ways of analysing the information available to development workers and their forthcoming activities focused on improving the situation of value chain actors. The booklet consists of three chapters.

The first chapter analyses added value in eight selected value chains related to crops grown in Kyrgyzstan, namely: early potatoes, late potatoes, wheat, raw fibre cotton, ginned cotton, oil and cake, tomatoes, cucumbers and cabbages. The selection of these crops was based on the experience of the authors and the desire to show that these crops have different levels of profitability, which is very important for value chain development, especially given limited resources at farm level. The selected crops represent cereals (wheat), technical crops (cotton) and vegetables (tomatoes, cucumbers and cabbage). Many farmers are growing wheat for domestic consumption. Wheat is not that profitable and the limited land resources (especially in the South of Kyrgyzstan, where each household has 0.4 – 0.7 ha of irrigated land) demand crops with a better gross margin, enabling farmers to earn higher incomes, to buy the needed volumes of wheat and even make some savings. Some farmers do not have the skills and knowledge to grow highly profitable vegetables and continue to grow cotton, like their neighbours. The profitability of some crops could be even higher if farmers could deliver earlier vegetables to fresh markets and the authors show the importance of market information for proper decision making in this regard.

The second chapter focuses on ways of increasing added value at different stages of the value chain: at farmer, processor and trader level. There are a few variations of value chains, e.g. Farmer – Processor – Trader – Local Market or Farmer – Trader – Fresh Market or Supermarkets. The authors did not consider fresh vegetables to external markets delivery chains because they have very small added value (and high transportation costs) and vegetables are highly perishable, although, it is well known that cherries from the South of Kyrgyzstan are exported to Russia. This is possible thanks to a farm gate price of 2 – 3 USD per kg.

The third chapter has some recommendations on effective approaches and possible tools for the development of value chain actors. The provided approaches and tools are those that have actually been used by the Local Market Development Project and its partners for several years in Kyrgyzstan. Some of them could be replicated in other countries of Central Asia or even in the Commonwealth of Independent States (former Soviet countries).

The author would like to thank the agronomists of the TES Centre, Kyrgyz Agricultural Marketing Information System, farmers, managers of the processing companies and trading agents for kindly providing accurate information, which has been used in various calculations of the profitability of businesses at different levels and wish them further successful development.

1. Added Value at Farmer Level

1.1. Agricultural Sector in Kyrgyzstan

Before starting to analyse added value at farmer level, it would be good to have an idea of what the agricultural sector in Kyrgyzstan and Kyrgyz farmers look like.

Agriculture is the single most important economic sector in the country, and its importance is the highest among all Central Asian states. 939,000 people were employed in agriculture (including forestry, fishery and hunting) in 2000 and 950,000 in 2003, equivalent to about 52% of the working population. The contribution of agriculture (including forestry, fishery and hunting) to GDP increased from 34.2% in 2000 to 36.6% in 2004². Among these activities, hunting, forestry and fisheries combined are insignificant and account for only about 0.1% of GDP. About 60% of the total value of agricultural production derives from the cash crop sector and the remaining 40% from the livestock sector. In 2004, agriculture accounted for about 11% of total exports worth about USD 81 million.

Of the total land area, 56.2% is classified as agricultural land and only 1.411 million ha or 7.3% as arable land, of which 1.072 million ha or three quarters is irrigated. Of the total agricultural land, 87% is pastures. On average, one ha of arable land feeds four people. As the total arable land has slightly decreased by about 2.8% from 1992 - 2002 and as the number of people working in agriculture has slightly increased, the pressure on the land has increased and the available land per capita has fallen. In 2002, per capita arable land was 1.16 ha, which was 25% below the 1995 and 53% below the 1990 levels. The most important agricultural area is the Fergana Valley, and the Chui and Talas Valleys in the north and the Alai in the south are much less important.

During the period of a centrally planned economy, almost the entire agricultural production came from either state (kolkhozes) or collective (sovkhozes) agricultural enterprises, which controlled more than 2,300 ha per unit and employed more than 1,100 workers each on average. Although these units could have reaped substantial economies of scale, they were mostly marked by low productivity and inefficient resource use. With the break up of the former Soviet Union and the privatisation of land, three types of agricultural production units have now emerged, comprising (i) households, (ii) private farms, and (iii) agricultural enterprises, the latter comprising in turn the remnants of the old collective units. Most of the kolkhozes and sovkhozes are to be found in the Northern parts of the country, in particular in Chui oblast, and

² EIU Country Profile 2005 Kyrgyz Republic, p. 43.

are engaged in growing grain, seeds and fodder. Some key output and productivity figures are shown in the table below.

Table 1: Main Characteristics of Farm Types (2002)³

Farming category	Households	Private farms	Agricultural enterprises
Number of units	881 713	251 526	1 326
Average area of arable land holdings in ha	0.1	3.8	222
Share of total arable land	5%	71%	13%
Share of employment in agriculture	35%	52%	13%
Share in agricultural value added	38%	59%	3%
Share of total agricultural output	55%	40%	5%
Agriculture added value in KGS per ha	119 028	17 201	2 923
Agriculture added value in KGS per worker	40 434	28 523	5 146

Development organizations and the Local Market Development project focus their activities on the poor rural population and mainly work with rural households and private farms. On average a rural household consists of 5 people, but in the South of Kyrgyzstan the average is 6. In almost all southern rural households there is (at least) one labour migrant working in Russia or Kazakhstan. Members of rural households run private farms. In the South of Kyrgyzstan the size of farms is also smaller than the average shown in the table above at 0.6 – 0.8 ha.

Land as a production resource is a very important issue for improving the wealth of rural people. Since 1964 the population of Kyrgyzstan has doubled, while land resources available for agricultural production have stayed the same⁴. Therefore, efficient use of available land resources is very important for poverty alleviation in rural areas.

1.2. Methodology used

The Added Value at farmer level is analysed in this chapter from three angles:

1. Analysis of production costs: this is very important for understanding the finance required by farmers to grow different crops. It is also important to know the breakdown of these costs (expenses for agricultural inputs and farm work), as this information is very often demanded either by micro-credit agencies financing farmers (farmers'

³ Source: World Bank, Agricultural Policy Update, 2004, p. 20

⁴ Kyrgyzstan is a mountainous country and only 7 % of the land is suitable for agricultural purposes.

- groups) and processing companies working with farmers. Analysis of production costs and their structure answers the question “How much do farmers need to grow the demanded product?” and “How much do farmers have to have to purchase inputs and pay for farm work?”
2. Analysis of profitability: All value chain actors aim to make profits, as profits are the driving force that makes agricultural producers grow crops. Of course, the size of profits (or losses) depends on the market price for the product and forecasts of possible output trends for play a very important role here. Forecasts can be based on an analysis of market prices for several years and changes in output of a certain product in the country last year. Although some people do not believe in statistics, this information can be useful for a drawing a picture of production countrywide.
 3. Analysis of efficient use of available resources: The question “What should a farmer grow?” would be better asked as, “What should a farmer grow based on the available resources?” When we talk about any business we usually take into consideration four types of resources: 1. Production (land and agricultural machines), 2. Raw materials (in the case of farmers it is agricultural inputs: seeds, fertilizers, chemicals, water, etc.), 3. Financial (cash, possibility of getting credit) and 4. Know how (knowledge and skills in growing a particular product). All resources cost money and time and their efficient combination and use makes a farm business profitable.

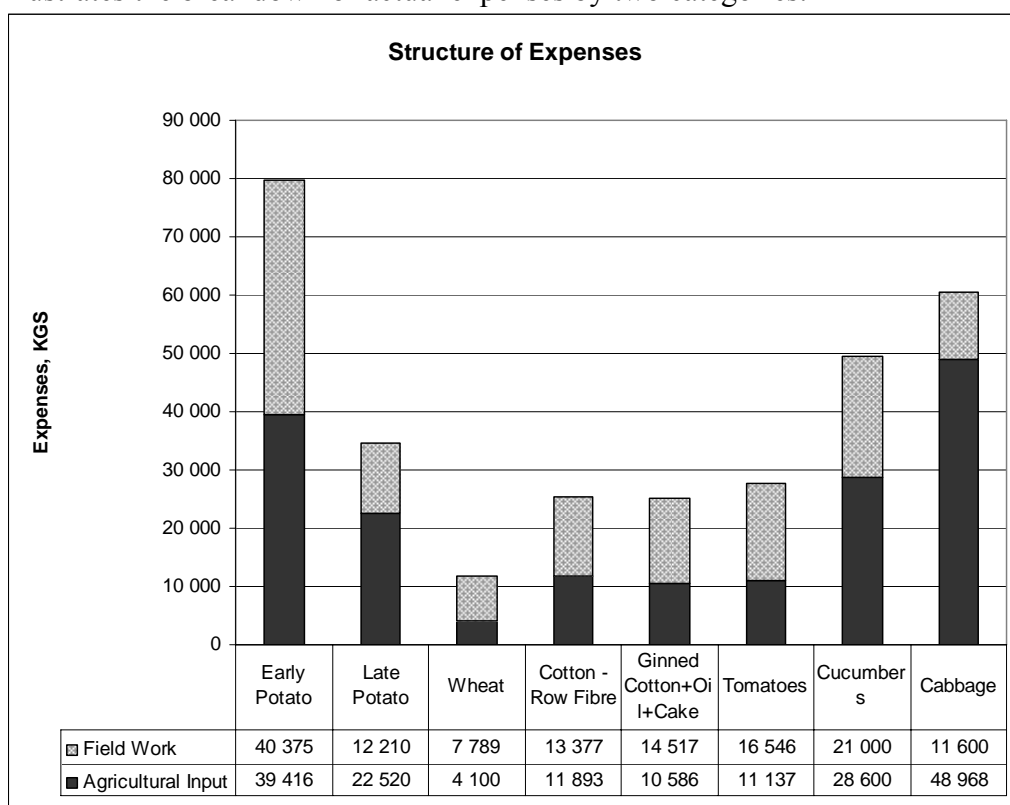
The authors talk about the above-mentioned analysis because they are quite unusual for agronomists who mainly focus on yield and development workers focus on the equity of negotiations between actors in the value chain. At the same time the authors do not neglect the importance of yield and fair deals but they want to draw the attention of readers to issues of economic and market laws, which actually define business ethics and development.

1.3. Analysis of Production Costs

In this booklet 8 different crops have been analysed: Potatoes (early and late), Wheat (from cereals), Raw fibre and Ginned Cotton (from technical crops) and Vegetables (Tomatoes, Cucumbers and Cabbages). The first two vegetables are the most demanded crops by fruit and vegetable processing companies and cabbage is not perishable, like tomatoes and cucumbers). All calculations of actual costs and income were averaged across several farms in each sample by product and based on 1 ha of land.

Profit is the difference between income and costs. In this booklet actual figures received from farmers⁵ in 2006 for the 8 selected crops have been used and actual income and profit in 2006 was compared with income and profit based on the average market price⁶.

The actual costs were divided in two categories: expenses for inputs (seeds, fertilizers, chemicals, plastic sheeting and water) and expenses for work (farm work, such as ploughing, seeding, etc. and expenses for external workers usually used for harvesting and weeding). It is important to know the expenses for inputs because most small agricultural producers apply for credits either to micro-credit agencies or to processing companies they work with and in some cases those credits are disbursed in two parts for inputs and farm work. Graph 2 illustrates the breakdown of actual expenses by two categories.



Graph 2: Structure of Costs for Agricultural Inputs and Field Work for different Crops

Early potatoes cost the most to grow at around 2,000 USD per ha, where 1/3rd of the costs are for seeds and 1/5th for fertilizers. Farm work accounts for

⁵ These farmers were supported by the TES Centre in the South of Kyrgyzstan

⁶ Average market price was calculated based on retail prices in Bishkek (capital of Kyrgyzstan) for the period 1999-2005. Monthly retail prices are collected by the Kyrgyz Agricultural Market Information System, KAMIS

almost half of all expenses (see table 2). The cheapest is wheat, around 300 USD per ha, where 1/3rd is for agricultural inputs. Most farmers continue to grow wheat for food security of the household and are able to make the necessary investment.

Cucumbers are the second most costly to grow because of expensive seeds, which account for almost 1/3rd of total expenses and fertilizers and chemicals another 1/3rd. Tomatoes and cabbages cost about the same as cotton. Late potatoes cost more than tomatoes, wheat and cotton and agricultural inputs account for 65 % of total growing costs.

Inputs for early cabbage account for the largest percentage of growing costs (81 %) because of expensive seeds, plastic sheeting and arches for hotbeds, but investments in metal arches (8,000 KGS) can be considered a one-off investment lasting several years.

Table 2: Expenses for Growing different Crops

	Seeds	Fertilizers	Chemicals	Other materials (e.g. plastic sheeting, water)	Total Input	% of Total Costs	Farm work	Labourer	Total Work	% of Total Costs	Total Costs
Early Potatoes	23 450	14 158	1 808	0	39 416	49%	33 208	7 167	40 375	51%	79 791
Late Potatoes	16 818	4 207	1 495	0	22 520	65%	11 664	546	12 210	35%	34 730
Wheat	1 689	2 411	0	0	4 100	34%	7 789	0	7 789	66%	11 889
Cotton - Raw Fibre	1 976	4 649	3 128	2 140	11 893	47%	9 733	3 644	13 377	53%	25 270
Ginned Cotton+ Oil+Cake	2 757	3 525	1 461	2 843	10 586	42%	10 779	3 738	14 517	58%	25 103
Tomatoes	2 273	4 955	2 545	1 364	11 137	40%	9 091	7 455	16 546	60%	27 683
Cucumbers	15 000	7 900	5 700	0	28 600	58%	21 000	0	21 000	42%	49 600
Early Cabbage	18 368	17 310	640	12 650	48 968	81%	11 600	0	11 600	19%	60 568

So, it is possible to state that wheat requires the lowest investment (around 300 USD per ha), followed by cotton (around 630 USD per ha). Vegetables and potatoes, especially early cabbage and potatoes, require the biggest investments, varying from 680 to 2 000 USD per ha. Not all farmers have or are able to get this amount of money from micro-credit agencies though, because growing vegetables on most private farms or households is labour intensive and small areas of land to grow vegetables and actually don't need this sum of money.

1.4. Profitability Analysis

1.4.1. Market price fluctuations

Profitability depends totally on market price fluctuations. For instance the price of potatoes in 2004 was very low and many farmers suffered big losses but in the last two years due to high demand in the Kazakh market (export) and the highest prices since 1999, potatoes are a very profitable crop.

The Kyrgyz Agricultural Marketing Information System⁷, a private company collects retail prices for agricultural produce in the markets in regional centres of Kyrgyzstan. The information about prices is published monthly in the Bazar Tamyry (Market Prices) bulletin and disseminated to subscribers (around 1,500 people and organisations). This is a very good source of information but for decision making it is not very helpful. When producers and potential buyers, either processing companies or traders, have to negotiate deals they need information about current prices and not next month, after the bulletin has been published. The Local Market Development project in conjunction with KAMIS and technical services provider Nikita Mobile Ltd introduced an SMS-based information service for 37 agricultural products (cereal, vegetables, berries, technical crops, meat and some staple foods such as flour and sugar in 2006. Now anybody can get information about products updated three-times a week by paying 0.15 USD per message

It is very important to consider market price fluctuations not only year round, but also over the long-term (see following chapters). Long-term analysis enables some assumptions to be made about price fluctuations in the forthcoming year. Of course, for making more reliable assumptions it is important to have information about crop volumes for several years. This information can be obtained from the National Statistics Committee of the Kyrgyz Republic. Opinions vary about the reliability of this statistical information but one author thinks that it is quite reliable from his experience⁸. Besides, the information can be obtained from reports on studies done in the country but you have to know where to find them.

Information about changes in crop volumes is shown in the table below. The author put information about more vegetables and fruit to show that overproduction of one crop can influence other crops. For instance, 2005 was a bad year for tomatoes in Batken oblast (see graph 3, although, total the crop in the country was the greatest in the last 5 years) due to climatic conditions and prices were high. Vegetable processing companies in this region bought more cucumbers from farmers than had been planned and contracted. The same

⁷ See their website www.prices.kg

⁸ Eugene Ryazanov wrote a study on seed potato production in Kyrgyzstan in 2000 based on information from 383 farmers and compared it with the statistics. The difference was not more than 10 %.

applied to the production of juices when companies didn't have enough apricots it could buy more apples and grapes to balance its production volumes.

Table 3: Major Agricultural Products (2001-2005, mt)⁹

	Commodity/ Year	2001	2002	2003	2004	2005	Change 2001-2005	Change 2003-2005
1	Cereals (total)	1,794.6	1,712.2	1,633.4	1,708.9	1,631.6	-9%	0%
2	Wheat	1,190.5	1,162.6	1,013.7	998.2	953.0	-20%	-6%
3	Barley	139.9	149.3	197.9	233.4	223.0	59%	13%
4	Maize	442.8	373.6	398.5	452.9	432.0	-2%	8%
5	Rice	16.6	20.8	18.3	18.3	18.0	8%	-2%
6	Potatoes	1,168.4	1,244.0	1,308.2	1,362.5	1,141.0	-2%	-13%
7	Cabbages	165.5	101.6	143.7	155.0	112.5	-32%	-22%
8	Cucumbers and Gherkins	112.5	64.8	125.6	136.0	55.0	-51%	-56%
9	Sugar beet	286.6	521.5	812.2	642.4	289.1	1%	-64%
10	Tomatoes	149.2	84.4	104.0	113.0	167.0	12%	61%
11	Carrots	83.5	42.2	85.3	88.0	126.0	51%	48%
12	Beans green	3.1	5.0	5.0	5.5	5.5	77%	10%
13	Fruit excl. melons (total)	188.5	167.7	153.7	190.9	160.4	-15%	4%
14	Watermelons	57.8	26.1	50.2	55.0	90.0	56%	79%
15	Grapes	27.4	15.0	11.7	14.6	15.0	-45%	28%
16	Apples	111.0	104.0	100.0	123.0	100.0	-10%	0%
17	Apricots	14.5	15.0	12.4	15.4	15.0	3%	21%
18	Walnuts	3.0	3.0	2.0	2.0	2.0	-33%	0%
19	Pears	9.0	9.3	8.0	10.0	5.0	-44%	-38%
20	Peaches	1.5	2.4	2.8	3.5	3.0	100%	7%

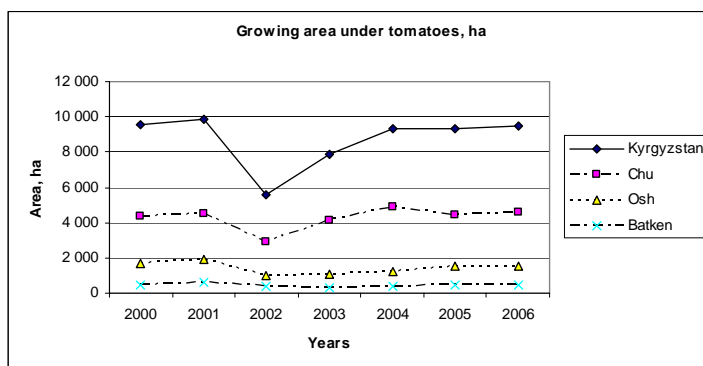
Note: For ease of comparison, more significant negative changes have been left justified; more significant positive changes have been shaded.

Of course, this analysis can be done in greater depth, where growing area (thousand ha) and even yields (ton/ha) can be analyzed, see graphs below¹⁰ for tomatoes as an example. Analysis of statistical information from different angles enables some assumptions to be made for providing recommendations by extension services to agricultural producers who usually do not have access to this information. Unfortunately, neither the Ministry of Agriculture of Kyrgyzstan, nor any private consulting company analyses agricultural output in the country and disseminates it through the mass media, although, the authors think that extension services, such as the Rural Advisory Service or TES Centre could do such an analysis in the future and publish it in its own newspapers and

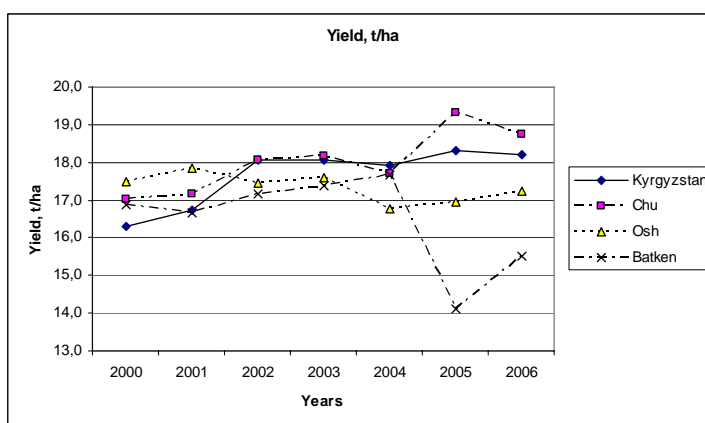
⁹ Expanding Finance in Rural Areas. Kyrgyzstan and Tajikistan. FAO, EBRD. Report series # 11, August 2006

¹⁰ It is not possible to explain the decrease in tomato growing area in 2002.

booklets. An external consultant mandated by the extension services could do this analysis.



Graph 3: Changes in Growing Area for Tomatoes 2000-2006, ha



Graph 4: Changes in Yield for Tomatoes 2000-2006, t/ha

So, after getting some general information about yields of different agricultural crops in the country and observing their trends a detailed analysis of market price fluctuations can be made. In this booklet the authors consider market price fluctuations for 8 selected crops. Information about the USD/KGS exchange and inflation rates might be useful for some readers, who want to make a deeper analysis of real market price fluctuations.

Table 4: Annual Inflation and Exchange Rates 2000-2006

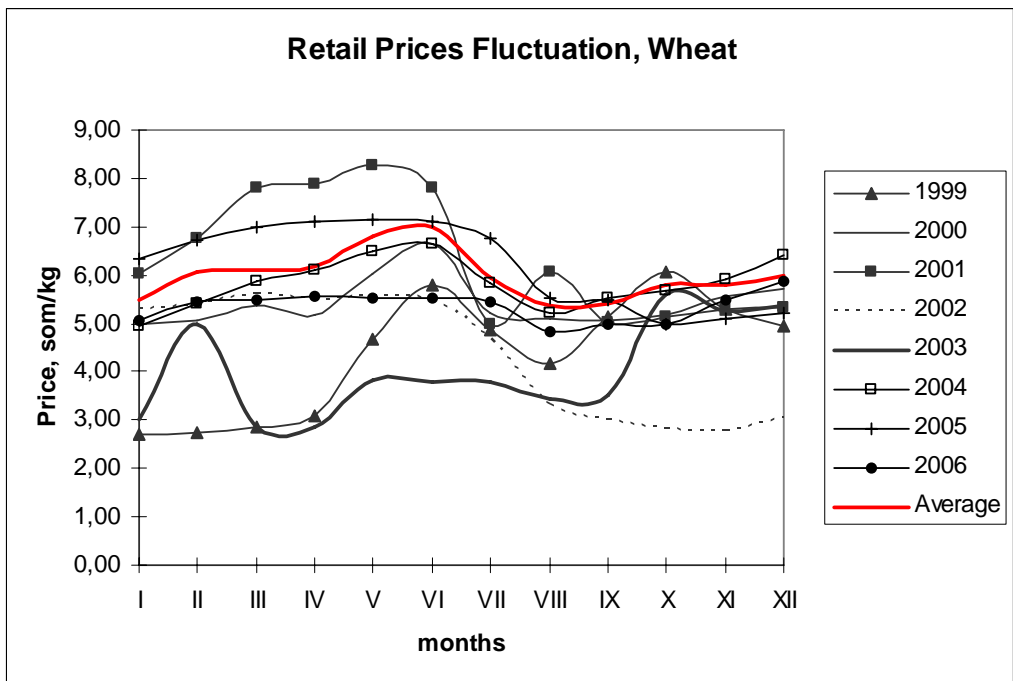
	2000	2001	2002	2003	2004	2005	2006
Annual inflation rate in %	9.6	3.7	2.0	3.1	4.1	4.3	5.6
End of year exchange rate USD-KGS	48.3	47.7	46.1	44.2	41.6	41.3	38.12

Source: NSC of the Kyrgyz Republic

1.4.2. Wheat

It should be stressed that all the graphs shown below show retail prices for the Bishkek (the capital of Kyrgyzstan) market for the period 1999-2006 taken from KAMIS.

Wheat is the main cereal crop in the country with an annual crop of around 1 million t, although output has fallen by 20 % since 1999. The average price graph for the 8 years looks almost horizontal with a small “hill” before the harvest of winter wheat in June and an ensuing “hollow” in summer months (graph 5). The highest price was in 2001 and the lowest in 2002 and 2003, which can be explained by the overproduction of wheat after the good season of 2001. Taking into consideration that the exchange rate USD/KGS has fallen by almost 20 % during this time and most agricultural inputs (fuel, seeds, fertilizers, chemicals, etc.) are imported, it is possible to say that real prices have fallen for wheat.



Graph 5: Market Price Fluctuations for Wheat, 1999-2006, KGS

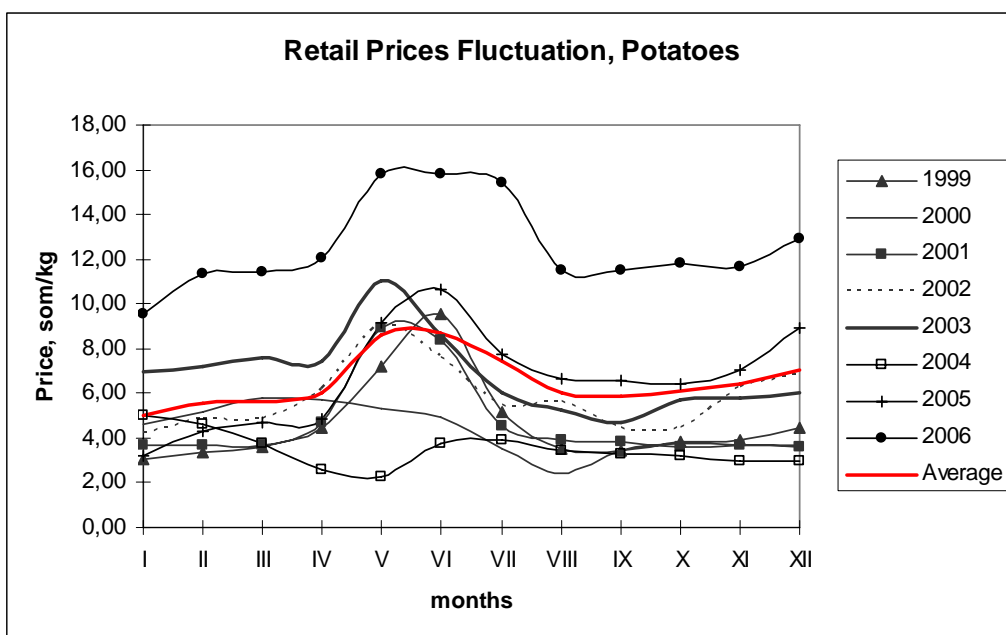
Nevertheless, wheat is the main crop for rural households' consumption and they continue to grow it for food security.

1.4.3. Potatoes

Among people in rural areas potatoes are called "second bread" and are mainly grown for food security. The NSC data on average per capita potato

consumption in Kyrgyzstan does not vary greatly from the survey¹¹ done in 2001. So in the survey's data this figure was 109 kg per capita, and the NSC showed 97 kg per capita. Having recalculated the consumption of potatoes countrywide it is possible to say, that for internal consumption about 470 - 505 thousand tons per annum are necessary and actual production is double that at 1.2 million tons. It is interesting to note output has almost quadrupled since the collapse of the Soviet Union in 1991 when potatoes were imported into Kyrgyzstan.

In the last two years there has been a big demand for potatoes in the Kazakh market, which has led higher prices in the local market. Prices were high in winter 2002 – spring 2003 after which many farmers grew potatoes, which led to a price collapse till the beginning of 2005.



Graph 6: Market Price Fluctuations for Potatoes 1999-2006, KGS

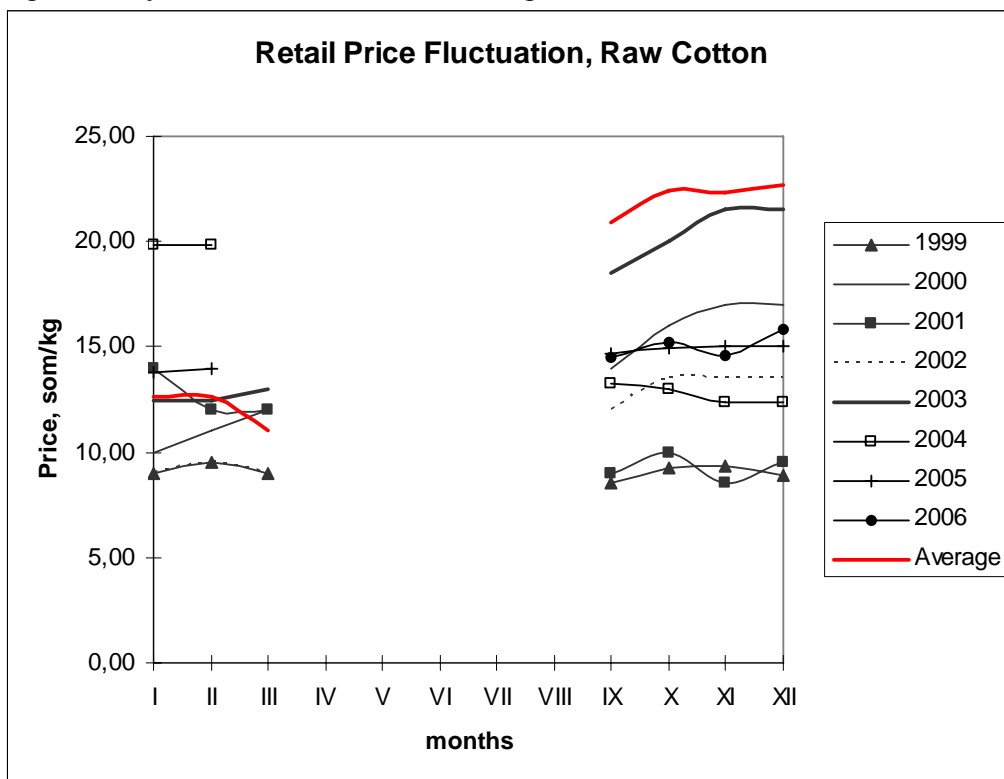
Annual price fluctuations show a horizontal price line with a “hill” in April – July before the appearance of bulk early potatoes at the fresh market.

1.4.4. Cotton sold as raw fibre

Cotton is the main export and is mainly produced in the Fergana Valley in two oblasts of Kyrgyzstan – Jalalabat and Osh. According to the NSC, annual production in recent years has been around 120,000 tons of which more than 100,000 tons are grown by private farms. Cotton has always been the most

¹¹ Seed potato production in Kyrgyzstan. Eugene Ryazanov, Bishkek, 2001

marketable crop in Kyrgyzstan and is grown primarily to be exported unprocessed since the countries' cotton-ginning companies have very limited capacity to process cotton in the harvesting season. Also, it should be noted that cotton in Kyrgyzstan is mostly traded at FOB prices. Kyrgyz cotton is listed on the Liverpool Exchange as Index A and essentially priced the same as Uzbek cotton. The price for Kyrgyz cotton may vary $\pm 5\%$ depending on the quality. Large-scale farms have a greater comparative advantage in producing cotton than medium-scale farms. The advantage of large-scale farms is partially explained by differences in labour and capital intensiveness.

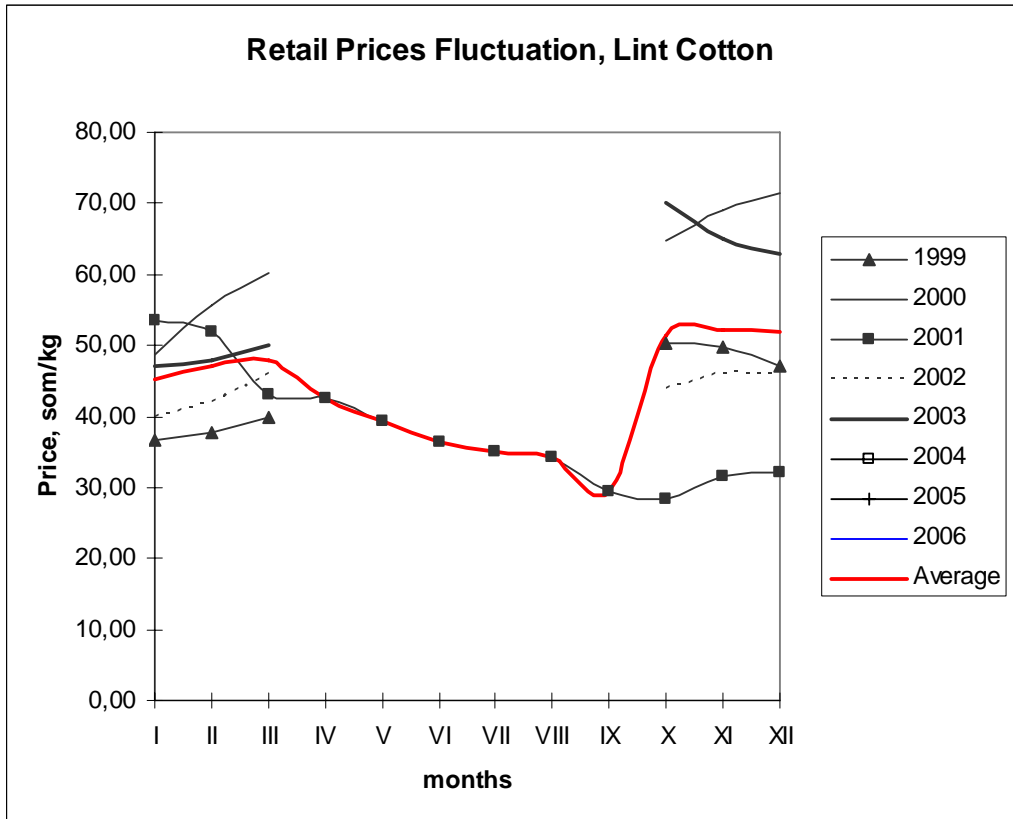


Graph 7: Market Price Fluctuations for raw Cotton Fibre 1999-2006, KGS

Usually farmers sell better quality cotton in autumn and winter and than poorer quality the next spring and the difference in price can be up to one third. Besides, there is a general trend of price increases and manipulation from year to year. For instance, in 1999 the price was the lowest and the following year – 2000 it was 60 % higher, then again in 2001 the price was quite similar to that of 1999 rose again in 2002. The highest price in 2003 led to a 60 % fall in 2004.

1.4.5. Lint cotton

Annual production of lint cotton is around 45,000¹² tons worth about 42 million USD. All lint cotton is exported by Kyrgyz ginneries and joint ventures. The price fluctuations for lint cotton directly reflect the raw fibre cotton situation with the same rises and falls in prices.



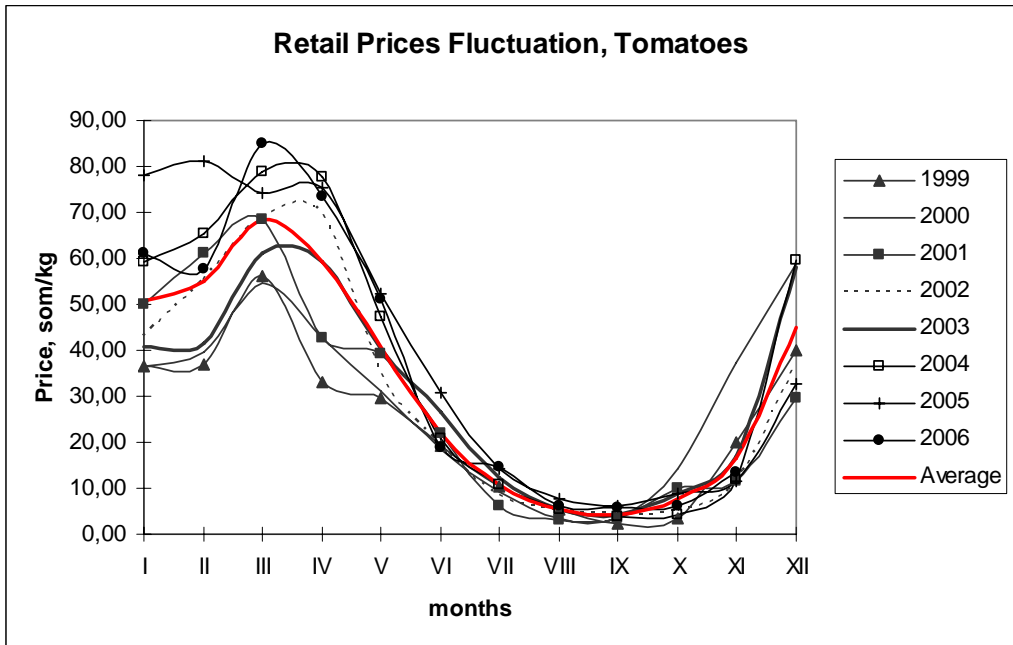
Graph 8: Market Price Fluctuations for Lint Cotton, 1999-2006, KGS

1.4.6. Tomatoes

Although, tomato output has increased by almost 60 % in the last 5 years it remains more the less the same volume as 7 years ago (see table 3, graphs 3 and 4). Tomatoes are very perishable and require additional expenses for boxes for transportation and temperature-controlled storage. There is at least a 25-fold difference between the prices for tomatoes grew in open soil in summer and in glasshouses in spring. Although greenhouses require large investments, they enable tomatoes to be sold for 5 months a year at around 1 USD/kg. Prices for

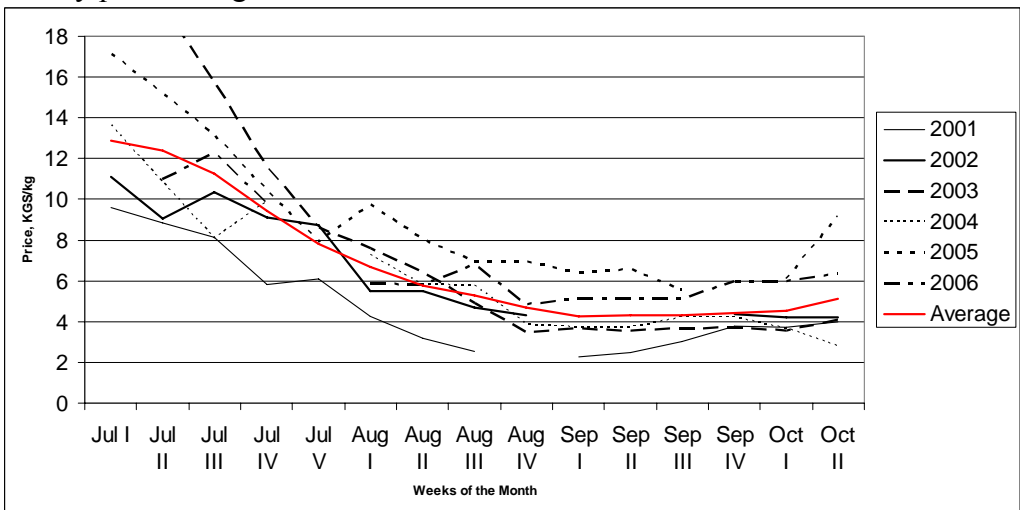
¹² Source: <http://www.fao.org/es/ess/toptrade/trade.asp> accessed in May 2006.

tomatoes grown in the open are low and even those which are used for tomato paste are priced at around 1.2 – 1.5 KGS/kg (~0,04 USD/kg).



Graph 9: Market Price Fluctuations for Tomatoes, 1999-2006, KGS

Price fluctuations during summer time are not visible and Graph 10 illustrates weekly price changes.



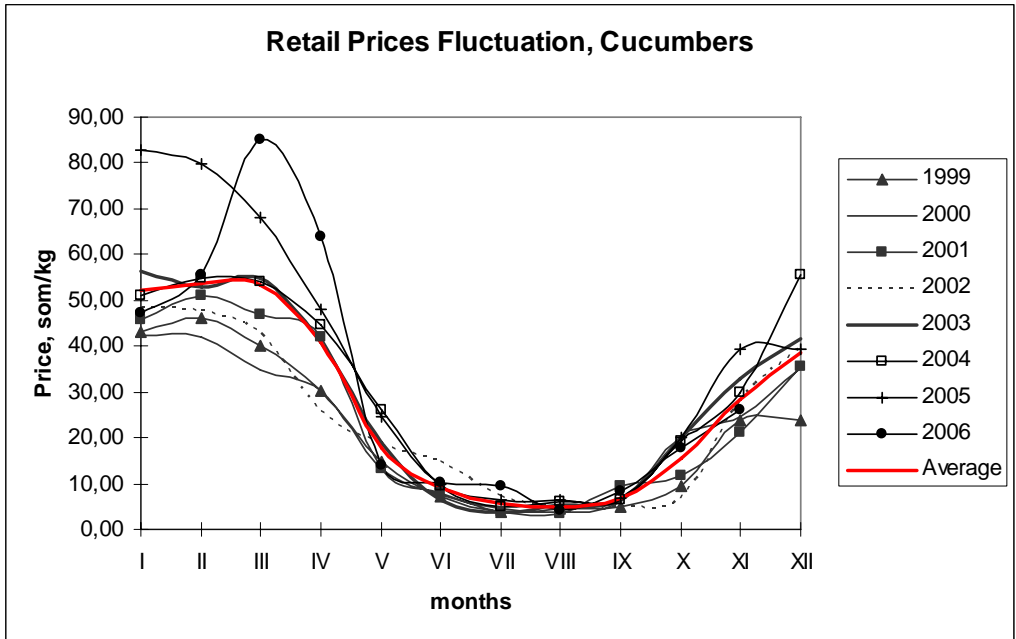
10: Weekly Market Price Fluctuations for Tomatoes, 2001-2006, KGS

It is fair to say that from the second half of August till the second half of October retail price fluctuations from year to year are +/- 20 % and can even be described by a mathematical equation related to time and probability. The

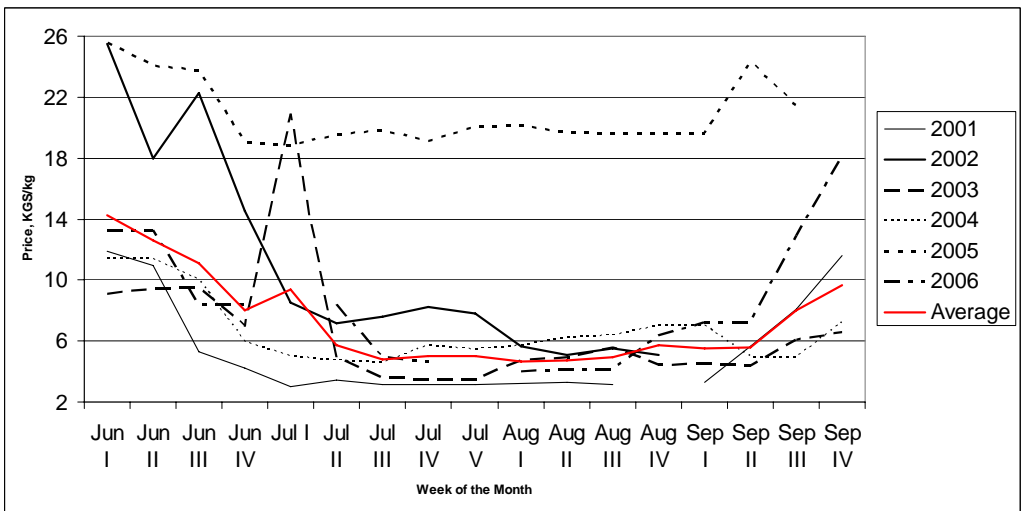
authors think that agricultural economic and mathematical analysis could be one of the specific features of extension services.

1.4.7. Cucumbers for the fresh market

The trend of cucumber output in Kyrgyzstan is the opposite of that for tomatoes.



Graph 11: Market Price Fluctuations for Cucumbers, 1999-2006, KGS



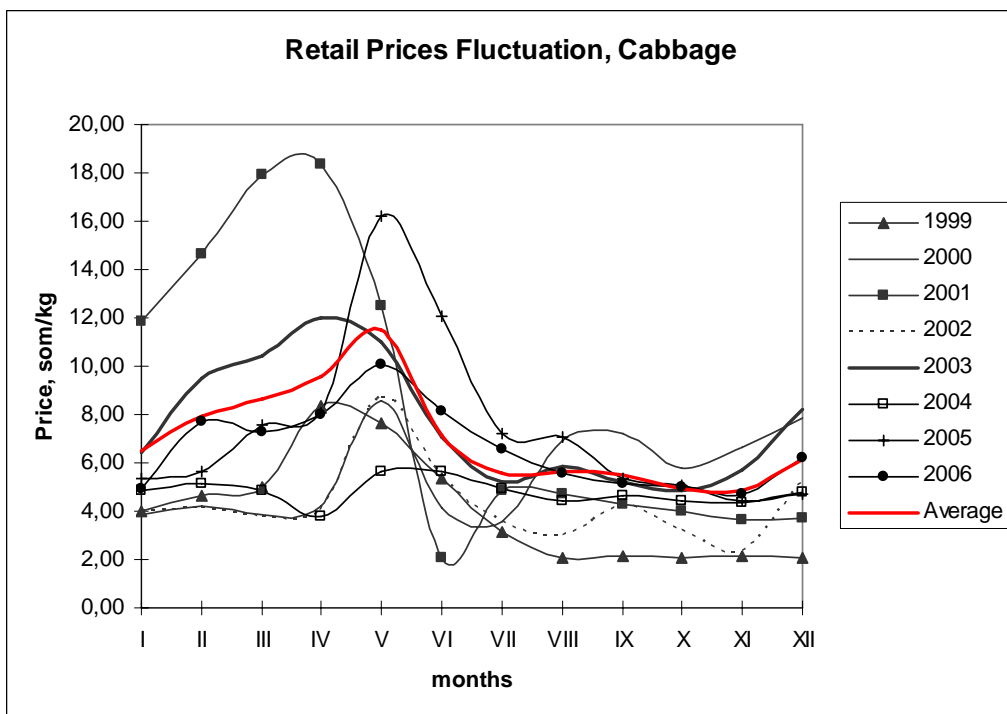
Graph 12: Weekly Market Price Fluctuations for Cucumbers, 2001-2006, KGS

In the last 6 years total output of cucumbers has fallen by 50 % (see table 3). The average annual retail price fluctuation varies from 5 to 55 KGS/kg, an 11-fold difference. The shape of the price fluctuation curve is quite similar to tomatoes with high “slopes” in spring and winter and a "deep hole" in summer. Graph 12 shows weekly price fluctuations for cucumbers in Chui oblast where 2005 was an unusual year with prices five times higher than in other years.

Cucumbers are a good crop for a second harvest after winter wheat because of their three-month growing period and there has been an unsatisfied demand by processing companies for several years for pickle and gherkin size cucumbers. It is very important to note that prices offered by processing companies are between 5 and 7 KGS/kg and are higher than retail prices.

1.4.8. Cabbage

Production of cabbage in the last five years has fallen by 33 % (see table 3). Cabbage can be stored for more than 100 days, which explains the higher prices in winter – spring and then the sharp fall at the beginning of summer when the first early cabbage appears in the market (graph 13). Price fluctuations from year to year repeat the usual “farmers' disease”, of a low price in 2002 followed by a higher one in 2003 and again by a low price in 2004 and a higher one in 2005.



Graph 13: Market Price Fluctuations for Cabbage, 1999-2006, KGS

1.4.9. Profitability of Analysed Crops

Information received from farmers supported by the TES Centre in 2006, using the same expenses analysed in chapter 1.3 has been used to analyse profitability.

Nevertheless, it is important to compare actual profit in 2006 with the profit based on the average (retail) market price (AMP) for the medium-term (1999-2006), which shows the difference and possible fluctuations in profits for agricultural producers. Table 5 shows actual profit and profit based on the AMP and Graph 14 illustrates this difference. Prices for tomatoes, cucumbers and cabbage were calculated as wholesale (40 % less than retail) because they are perishable goods and farmers have to sell them quickly either at a wholesale market or deliver them to processing companies.

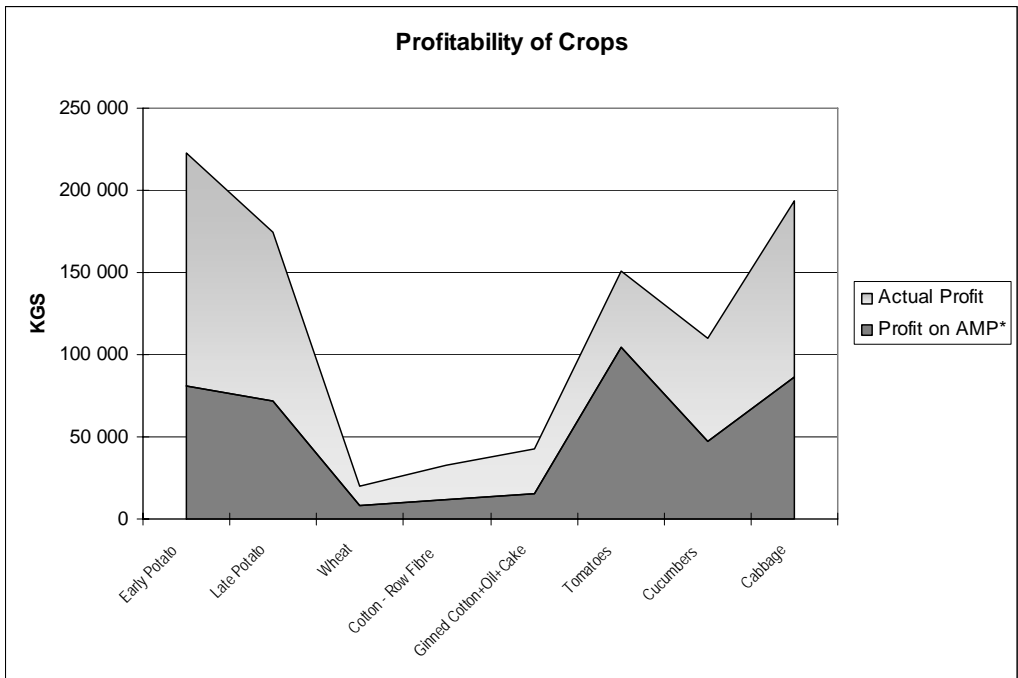
Table 5: Actual Profit and Profit based on AMP

Crop	Actual Profit	Profit on AMP*	AMP	Comments
Early Potatoes	141 839	80 840	7.91	Wholesale price for May - July
Late Potatoes	102 108	72 042	5.54	
Wheat	11 492	8 196	5.24	
Cotton - Raw Fibre	20 545	11 809	13.20	
Ginned Cotton+Oil+Cake	27 137	15 511	42.00	
Tomatoes	46 191	104 689	4.06	Average wholesale prices for July - October
Cucumbers	62 668	47 326	3.82	Average wholesale prices for June - September
Cabbage	107 432	86 072	3.67	Wholesale Price

In general 2006 year was a good year for farmers because actual profit for the 8 analysed crops was higher than the profit based on AMP. Actual profit for early potatoes was the biggest and this shows that the reaction of some farmers to market demand was successful and that profits were almost three times costs. This fact shows that potatoes (early and late) are very profitable and it explains the quadrupled volume of potatoes grown in Kyrgyzstan since 1991. Wheat generates the smallest profit especially in the medium term, although, it is almost as profitable as cotton. Actual profit for cotton in 2006 was more than double that based on AMP.

Early cabbage can be considered as innovative for agricultural producers. From one side growing requires essential investments (~ 1,500 USD/ha) but the market price is usually quite high because of the small number of producers and high demand in spring for fresh vegetables.

Vegetables definitely are highly profitable over the long-term. Low profits on cucumbers could be explained by a lack of know how among Kyrgyz farmers on how to grow them and as a consequence yields are low (25.4 t/ha) when yields could be doubled.

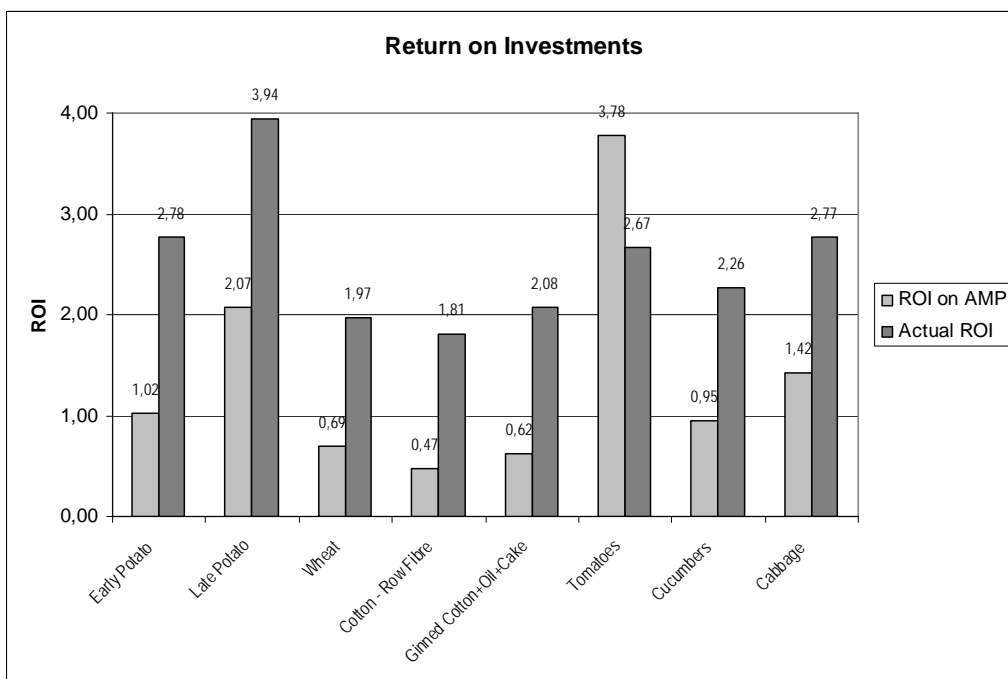


Graph 14: Profitability of different Crops

1.5. Analysis of Efficient Use of Farmers' Resources

An analysis of profitability defines the crops bringing farmers higher incomes and profits but it is not enough to really improve the living standards of agricultural producers. There are other factors that influence this, such as access to water and finance, land area, labour required and climatic risk in a mountainous country like Kyrgyzstan. In this chapter production resources – financial resources, land and labour - for the eight listed crops will be analysed. The Local Market Development project works in the fruit and vegetable processing and dairy sectors. It was decided to work in these sectors based on the amount and period for getting returns on resources invested in farming. In the case of crops, returns on investment take several months (4 for cucumbers and up to 9 for winter wheat) and their value varies from 12,000 (wheat) to 80,000 KGS (early potatoes) per ha (see table 2). Most rural households in the South of Kyrgyzstan do not have one ha of land and thus the initial investments are low. In the case of livestock breeding returns on investments take two years from inseminating cattle and rearing pigs. Besides, the farmer has to make other investments in fodder, stabling and veterinarian services. There are also scales of economy in the livestock business, which should be taken into consideration. Overall, they are higher than for crop growing and most rural households are not able to run livestock businesses efficiently.

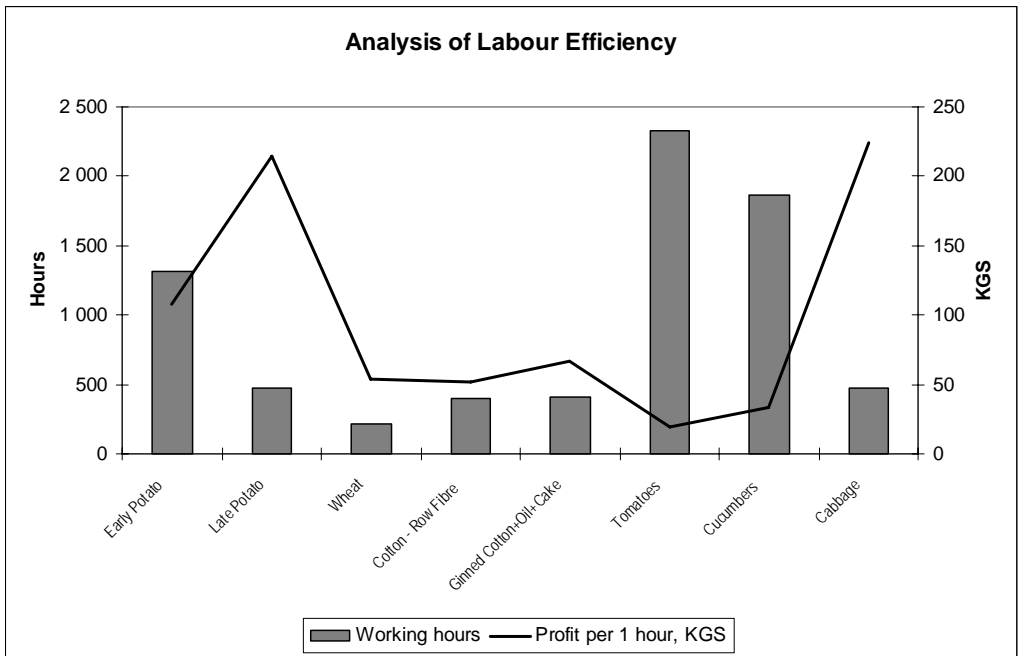
So, analysis of the returns on investment for the eight selected crops gives some idea about the efficient use of available financial resources by farmers. This analysis is based on actual income received by farmers in 2006 and was done as a comparison with returns on investments based on the average market price for the period 1999-2006 (Graph 15). This difference can show possible variations for farmers.



Graph 15: Returns on Investments for analysed Crops

Returns on investments mean how much money is recouped for each unit of money invested. For all crops, except tomatoes, investments in 2006 were 2-4 times greater than investments based on AMP. In general 2006 was good for TES Centre farmers because they used financial resources very efficiently. Another production resource is labour. Table 3 showed expenses for farm work and labourers. The difference between those two columns is that farm work includes all expenses borne by farmers (private farm or household) for all types of fieldwork, such as ploughing, weeding, watering, etc. Labourer costs are those paid by farmers for employing external workers. It is important to note, that in 2006 the price of external labour increased substantially everywhere in Kyrgyzstan and farmers and processing companies faced the problem of attracting cheap seasonal workers.

It is well known that vegetables are labour intensive crops and wheat isn't. What is important is not only to know how much time farmers actually spent on growing the analysed crops but also to know how much they got per working hour.



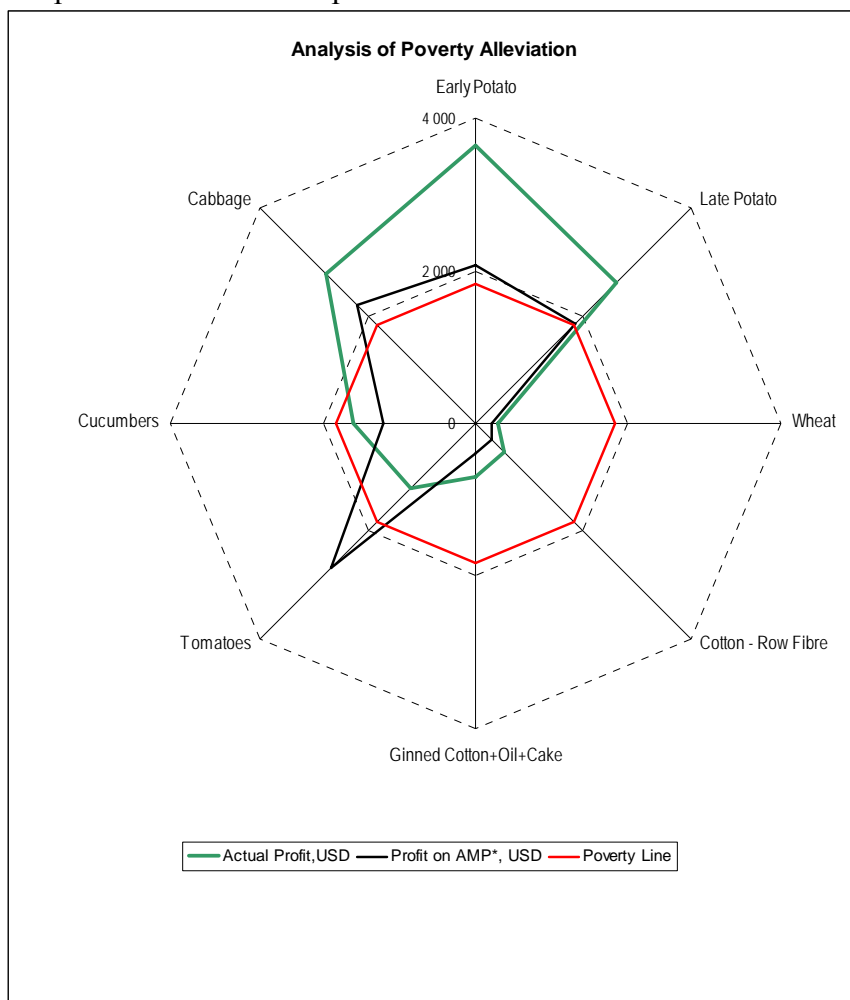
Graph 16: Labour Efficiency for analysed Crops

Graph 16 shows the difference in working hours and profit per working hour earned by TES Centre farmers in 2006. Working hours and profit per hour were based on one ha as in all previous analyses. There are some doubts about the reliability of the hours quoted because some farmers did not keep proper records. Nevertheless, the main idea of this analysis is to show readers how it can be done in the future and that timekeeping is very important for farmers themselves. Late potatoes and cabbage yield high profits per hour (around 200 KGS or 5 USD) with the same working hours as cotton. Although, profit per hour for tomatoes and cucumbers is the lowest among the analysed crops, net profit in their cases are much bigger than profits for wheat and cotton (see graph 14). This analysis enables the efficient use of available labour resources on farms to be defined.

The last crucial resource is land, which as a production resource plays an important role in household income. Agriculture, like any other business has economies of scale and the question of how much land a single farm (or household) needs to have is important for the purpose of development. Any development activities are focused on poverty alleviation and besides different indicators of poverty there is one, which describes precisely the economic situation of people – the poverty line¹³. If we take into consideration that the average rural family in Kyrgyzstan consists of 5 people (in the South of Kyrgyzstan it will be 6 people) the household poverty line will be based on

¹³ The per capita poverty line is 1USD per day

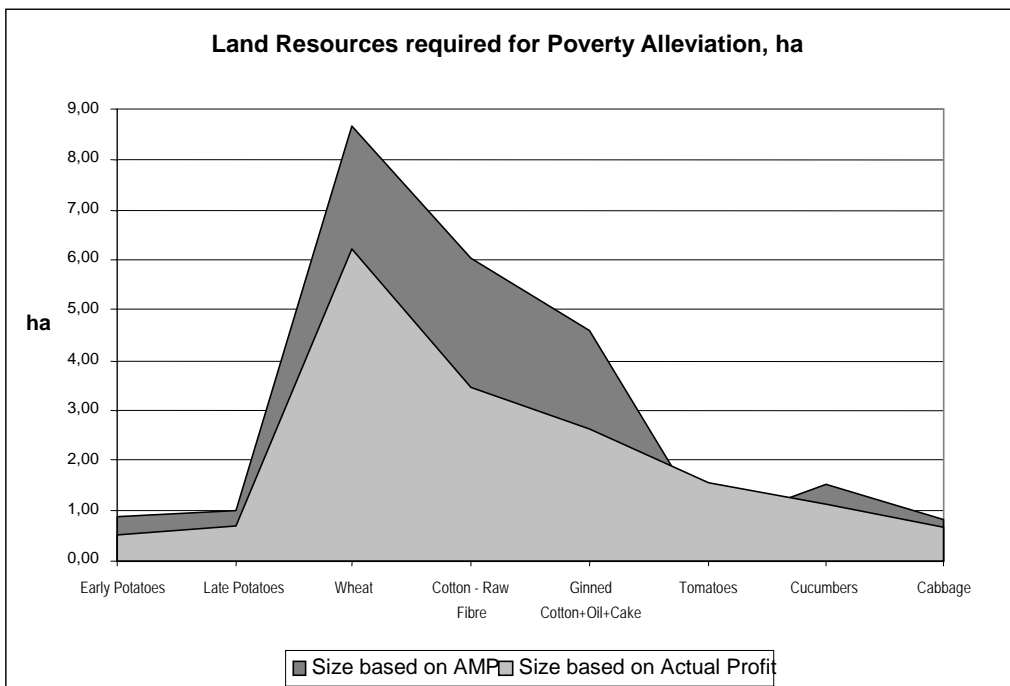
1,825 USD a year (365 USD per annum). The next graph illustrates actual profit and profit based on AMP per ha of land.



Graph 17: Profit for different Crops Compared to the Poverty Line

Thus, if we assume that a farmer (rural household) has only one source of income and one ha of land, then cabbage and early and late potatoes earned him a profit above the poverty line and if we take into consideration the profit based on AMP, tomatoes are added to this list.

Of course, another question emerges: How much land does a farmer need to earn a profit above the poverty line? A simple calculation shows it in the next graph.



Graph 18: Land Resources required for Poverty Alleviation

The two “mountains” show land resources required to make a profit above the poverty line. The highest “mountain” is based on AMP and the “lowest” on actual profit received by farmers in 2006. The difference in “height” between wheat and cotton is essential. The lowest differences are between potatoes, tomatoes and cabbage. Nevertheless, even for profitable products as potatoes and vegetables the area of land required to get above the poverty line varies between 0.5 – 1.5 ha depending on whether or not it is a good year, cotton needs 2.6 – 6.3 ha and wheat 6.2 – 8.7 ha of land.

1.6. Reducing Risks at Farmer Level

There are several ways of reducing economic risk at farmer level.

Getting reliable information about market prices and trends of planned crops: information about market prices is available from the Kyrgyz Agricultural Market Information System (www.prices.kg) and through the SMS service provided by this company.

Getting qualified agricultural input, training and consultancy from local service providers: there are many agricultural input suppliers in Kyrgyzstan, most of whom are united in the Association of Agro-businessmen of Kyrgyzstan (AAK,

www.aak.org.kg). The Local Market Development project together with local partners annually updates and publishes a booklet about local companies offering agricultural inputs, training and advisory and other types of business services. This is available in hard copy or can be downloaded booklet from the Internet (www.helvetas.kg). In 2007 a similar booklet will be published for the first time for Tajikistan. The project also intends to introduce an Agricultural Marketing Information System soon that will make a a lot of information for agricultural business available via the Internet, WAP and SMS on mobile phones.

Integration of farmers in formal (cooperatives) or informal groups (by interest): Farmers' associations enable them to buy agricultural advisory services, training and inputs, organise proper crop rotation based on the land and water resources of the group and empower them in price negotiations with potential buyers. The process of formalising relationships between members of the group takes time before people trust each other. Group members should have a clear understanding that there will be administrative costs when the group is officially registered as a cooperative, salaries for at least a cooperative manager and book-keeper. Some other expenses, such as transportation and communications should be paid from the cooperative's income.

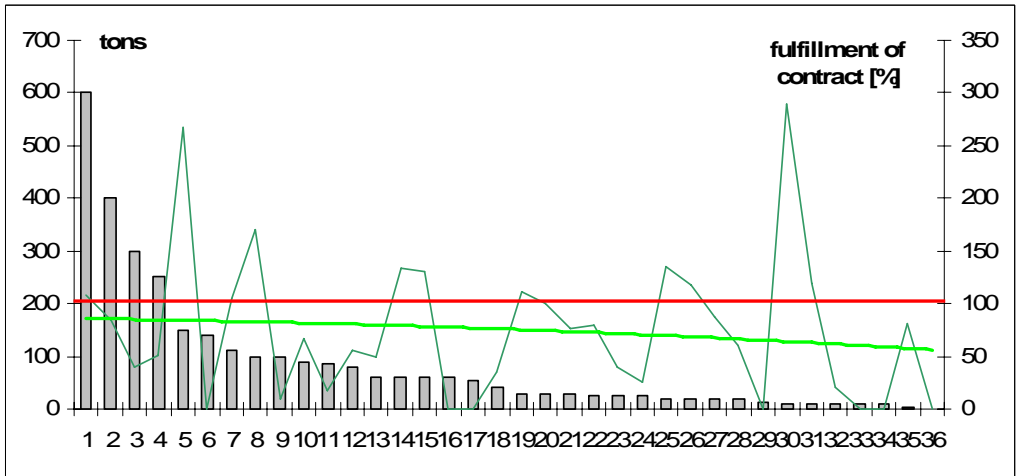
Signing contracts with processing and trading companies/agents: It is important to note that a contract has to have 4 main points¹⁴:

1. Price for a product of the required quality. A specification can be described in an annex to the contract. It is important to avoid any possible misunderstanding about delivery;
2. Delivered volume in tons (or kg) for different quality product;
3. Which party and on what conditions provides transport and packaging for delivered products and at what time. Time of delivery can be agreed later by both sides and set out in a Delivery Schedule, which can be another annex to the contract;
4. Time of payment to farmers for delivered products. This could be done either immediately or on a two-weekly or monthly basis. In the event of delayed payment there should be some sort of written ledger showing the volume of a product of a certain quality at a certain time. An authorised person has to sign for receipt of the product. This ledger can be considered as a kind of bill for delayed payment.

A contract certainly plays an important role in building trustful and long-term relationships between two parties, the experience of the Local Market Development project in Kyrgyzstan should be taken into consideration: the more entrepreneurial farmers' groups with bigger resources (graph 19) are better

¹⁴ For detail description of a role of the contract in building relationship between two parties, please, see the booklet "Value Chain Management and Poverty Alleviation in Rural Areas: Project Experience of Kyrgyzstan", C. Arndt, K. Cormier and E. Ryazanov. Kyrgyzstan, 2005

at contract fulfillment because they are not able to sell large volumes of perishable produce, especially vegetables, in the fresh market.

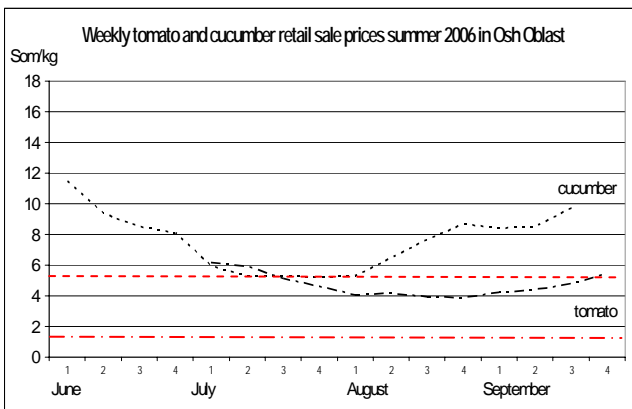


Legend: Grey bars: number and volume of contracts
 Dark green line: fulfillment of contracts in %
 Light green line: tendency line of fulfillment of contracts
 Red line: 100%

Comment: out of 36 contracts, 12 farmers were able to deliver more than foreseen, in one case the agreement was met 100% and in 23 cases the processor accepted less than the volume agreed in the contract.

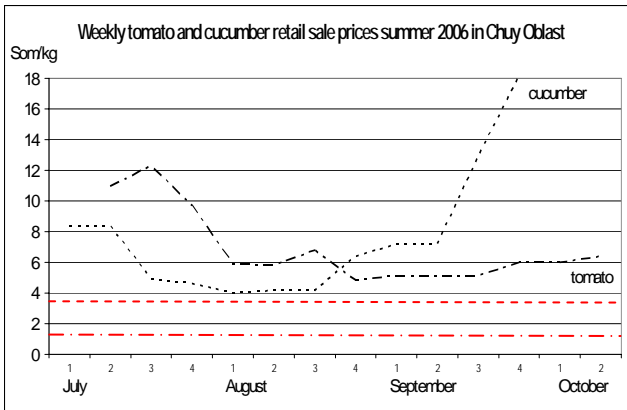
Graph 19: Fulfilment of Contracts by Farmers' Groups involved in LMD Project Activities
 The fulfillment of contracts by farmers (36 farmers' groups consisting of 365 farmers and 113 families) involved in the LMD project in 2006 was 79%. The total delivered volume of vegetables and fruit for processing to 7 companies was 2,598 tons. 49 % of farmers' groups have already signed contracts with processing companies for 2007, the second and third year.

In Chui Oblast farmers concluded contracts for the delivery of tomatoes at an average price of 1.58 Som/kg and 3.45 som/kg for cucumbers. In Osh Oblast 1.27 Som (tomatoes) and cucumbers between 5 and 6 Som/ kg



Graph 20: Weekly Retail Sale Prices of Tomatoes and Cucumbers in Osh and Chui Oblasts, 2006

Graph 20 gives an idea of the price dynamics during the tomato and cucumber season and the level of prices agreed in the contracts (red dotted lines). It should be noted that the Kyrgyz Agricultural Market Information system shows retail prices in the bazaars - farmers deliver whole sale and in some cases farm gate. In addition, most of the



tomatoes are processed into paste, i.e. shape and ripening are of lesser importance than for retail sale. Considering farm gate - retail margins of 1.5 – 2 Som, the price agreed in the contract is still lower than the market price. In the case of TES- farmer and CoT groups, market price of cucumbers fell to a low of 1

Som/ kg, whereas the agreed price was twice as much. In this particular case, the processing companies reduced the receiving period, the number of reception points and insisted consequently on agreed quality standards (size, shape, ripeness of cucumbers), which led to a low fulfilment of contracts.

Reducing farmers' risk can also be achieved by growing two crops but where there are limited land resources the economic scale can be low and production could be inefficient. In this case it is possible to grow highly profitable produce (for instance, cucumbers¹⁵) after harvesting winter wheat in June.

1.7. Findings and Recommendations

So, some findings about added value at farmer level can be made:

Rural households in Kyrgyzstan account for 55 % of total agricultural outputs and private farms 40 %. Agricultural added value per ha in rural households was 119,028 KGS or 40,434 KGS per worker and on private farms 40,434 and 28,523 KGS respectively;

Growing different crops requires different financial resources. Wheat requires the lowest investments (around 300 USD per ha) and cotton followed by wheat (around 630 USD per ha). Vegetables and potatoes, especially early cabbage and potatoes, require the biggest investment, varying from 680 to 2,000 USD per ha;

For most agricultural products the shape of annual price fluctuations is virtually repeated from year to year but at another level, depending on the price the previous year. If the price last year was low there is a high probability that this year it will be higher;

¹⁵ Cucumbers have a short vegetation period of around 3 months.

Most agricultural producers, processors, traders, input suppliers and extension workers do not have access to reliable market information. There is no special newspaper or magazine in the country analysing agriculture and making production forecasts for next year;

Potatoes and vegetables are much more profitable than wheat and cotton and give greater medium-term returns on investments. Potatoes and cabbage yield greater profit per working hour than wheat, cotton, tomatoes and cucumbers. If we assume that a rural household has one source of income – land of one ha, then potatoes, cabbage and tomatoes give a profit above the poverty line in the long-term. For profitable produce like potatoes and vegetables the area of land required to be above the poverty line varies between 0.5 – 1.5 ha depending on whether or not it is a good year, cotton requires 2.6 – 6.3 ha and wheat 6.2 – 8.7 ha of land. For most farms especially in the South of Kyrgyzstan, the income from agriculture is not high enough to take people over the poverty line due to limited production resources.

Farmers' groups with larger resources are better able to fulfil contracts for two reasons: they are usually the more entrepreneurial groups and they are not able to sell large volumes of perishable produce in the fresh market in a short period of time.

Although some recommendations can appear to be general, the authors would like to mention them for extension workers, NGO and other development organisations working with farmers. They are:

Encourage farmers to form associations of (in)formal groups by interest for the rational use of available production resources, purchasing certified agricultural inputs and getting professional support and market information, and empowering them when bargaining with potential buyers;

Use available information about market prices and market trends as well as information about providers of financial and non-financial services in the country;

Use long-term contracts with potential buyers and try to develop long-term and trustful relationships with service providers;

Grow more labour intensive crops in farmers' groups with limited production resources, such as vegetables and potatoes instead of cereals and cotton as they require substantial areas of land.

2. Ways of Increasing Added Value along the Value Chain

2.1. Fruit and Vegetable Processing Sector in Kyrgyzstan

The fruit and vegetable processing industry is relatively important for the country, but underdeveloped. The total domestic market demand for processed fruit and vegetables alone is estimated at about KGS 1 billion¹⁶. Most of this demand comes from the urban population, in particular Bishkek.

The total number of fruit and vegetable processing companies working is around¹⁷ 30. In general, many processors are using old and obsolete machinery, have poor or unattractive packaging and labelling, offer poorly designed products and often sell unbranded and generic products and compete on price and not on quality. Management is often not very qualified and often lacks marketing skills. Companies that have survived the collapse of the former Soviet Union and the break up of traditional markets appear to be very fragile and operate in small volatile markets with narrow margins. Many of the larger privatised Soviet era enterprises have excess under-utilized production capacity and still assume that their major problem is low levels of output.

Recently, foreign companies and private entrepreneurs have made investments in drying vegetables and producing tomato paste. These companies have better management, good knowledge of marketing opportunities and conditions and access to finance.

Where enterprises compete more on price than on quality, their margins are mostly very small, and they are unable to generate sufficient profits to finance new investments into machinery, product design, packaging and marketing. As their profit margins are low and the risks rather high, they appear unattractive to banks.

With the disappearance of the centrally controlled economy in the early 1990s, the system of vertical integration and industrial coordination of farmers and processors in production chains also disappeared. The change in the economic system and the economic crisis also led to the destruction of the infrastructure for collecting, paying for and processing produce. Processors are now forced to collect produce from many small-scale producers, leading to increased production costs. Furthermore, the changes led to a decline in mutual understanding and confidence between producers and processors, and also in the enforceability of contract farming agreements.

¹⁶ Study of the Bishkek market for the consumption of processed fruit and vegetables. Marketing company M-Vector and the Support to Private Initiatives project, Helvetas/SDC. 2003. www.helvetas.kg

¹⁷ Each year 2-4 fruit and vegetable processing companies do not work due to lack of financial resources, changes of ownership, etc.

In many of these cases, finance is apparently the main 'entry point' for arrangements. Most farmers do not have the cash needed to pay for inputs (fertilizer, seeds and chemicals) and services (tractors, storage and transport), or at least prefer to use their scarce funds for other purposes. The primary concern for the processors is to get the quantities and qualities needed and the timeliness of delivery and the prices paid are of secondary importance. However, contract farming arrangements seem to have a positive impact on the production costs of processors, who find it quite cumbersome and expensive to secure adequate supplies through the open market or bazaars. Where confidence exists between the contractual parties, the amount of money available to pre-finance these operations and recover their costs upon delivery or through the processing activities is the most important limiting factor.

Processors also need a combination of credit facilities, including short- and medium-term loans and overdraft facilities. However, banks seem to regard overdraft facilities with flexible payments as a comparatively high risk and are not prepared to grant such facilities. In other cases, the product development of and operational guidelines for overdrafts are still inadequate.

2.2. Increasing value at processor level

There are several ways of increasing value at processing company level but all of them can be grouped into three. The first includes ways focused on the efficient use of available resources such as equipment, raw material, financial and human (personnel) resources. Although the efficient use of human resources is assumed to consist of improved knowledge and skills of staff, this group is covered separately in the booklet. The third way focuses on strengthening cooperation between processing companies and up-stream and down-stream actors in the value chain.

2.2.1. Efficient Use of Available Resources

Actually a processing company like any other business uses four types of resources to make a profit by producing either products for end users (pickled vegetables or juices) or semi-finished products (tomato paste and fruit puree). The four types of resources required are equipment, raw materials, financial and human resources. The efficient use of human resources will be discussed in chapter 2.2.2, Improving Knowledge and Skills.

Most probably financial resources are most important for processing companies. Financial resources are either operational or investment capital. Operational capital can be used to buy other resources such as equipment, raw

materials and labour. In addition, most Kyrgyz fruit and vegetable processing companies lack financial means for long-term investments in new equipment and technology. The situation with limited financial resources is a vicious cycle. The company does not have money to buy raw materials for production and sale and finally has limited income for the next production cycle. It is obvious in many cases that companies have to take out loans for further development but managers often lack experience in credit management and some are scared to borrow any money. There are managers who take out loans but are unable to submit the required collateral to a credit organisation (outdated assets with low market value) but this is a reality of the business environment in the country. In most cases the actual problem is not the collateral but the lack of vision, be it only a mid-term perspective of company development, the lack of a business plan for the next year or a realistic cash flow calculation.

It would be incorrect to say that there are no credit resources available for processing purposes, as there are. For instance, the Kyrgyz Agricultural Financial Corporation offers loans with quite good credit conditions and several companies use them annually. A lack of planning the proper use of financial resources in processing companies and timely application to credit organisations are the main reasons for the lack of money in processors' pockets at the beginning of summer when the working season starts.

Raw materials - another resource - play a significant role in the efficient use of a processing company's capacity. A study carried out in 2003¹⁸ revealed that on average around 34 % of production costs go on raw materials. Where a processing company spends one third of its financial means on raw materials, quality is very important. Quality of processed goods in Kyrgyz conditions first of all means homogeneity of agricultural produce because most farmers have small areas of land under a certain crop and thus output is very small¹⁹. As a result of this the processing company has to deal with hundreds of farmers or with dozens of farmers' groups. The importance of contractual relationships between processors and farmers will be discussed below in chapter 2.2.3.

The Local Market Development project has achieved some results in improving the quality of raw materials delivered to processing companies. For instance in the course of two years it was possible to organise the cultivation of only one variety of cucumbers (Dutch Ajax) for the production of pickled cucumbers for all five companies producing this product. It was achieved thanks to annual planning workshops conducted by the project for all value chain actors and

¹⁸ Analysis of Fruit and Vegetable Processing Industry in Kyrgyzstan. Financial Company Senty 2003

¹⁹ From LMD project experience the average volume delivered to processing companies was around 7 tons per farmer, though this varies from 0.3 to 90 t in different groups (see graph 19)

supporters. The mechanism is simple. Processing companies tell farmers how many cucumbers they will need, farmers negotiate with the processor about how much they can produce and how much they will be able to deliver to the company (delivered volume varies from 20 % up 100 % and depends on a farmer's personal decision). When the total output is known, the farmers talk to the input supply company participating in the workshop, asking if it can supply in time. Usually the seed supplier gives wholesale discounts. Supporting organisations working with farmers participate in the workshop as well and are kept informed about the negotiations between the two parties. As a consequence, extension service providers have, together with farmers, elaborated technical cards for growing cucumbers, which are the basis for credit applications to farmer micro-credit institutions. A few processing companies have provided seeds to those reliable farmers who do not have access to micro-credit organisations.

The efficient use of processing equipment means increased working time during the year. Most processing companies work from three to seven months a year and there are a few, which work almost 11 months a year. This short working time leads to a high share of fixed costs compared to the total costs of the company and as consequence, a high price for the final product, thus a loss of competitiveness in local and external markets. The annual working time can be prolonged through diversifying into other products. By so doing, a company can start producing jams and compotes (strawberry, cherry) in spring, continue with pickled cucumbers, tomatoes, tomato paste and different salads till the end of autumn. Some salads can even be produced at the beginning of winter and juices made from apples and carrots, which can be stored for a hundred days. A few companies make fruit puree in summer and autumn, pack it in aseptic containers and make juices in winter and spring. Of course, the diversification of products to increase working time should be based on market demand and not only on the availability of raw materials. A few examples of the profitability of different products are given in chapter 2.2.4.

Efficient use of available resources means not only how they are spent but also how each additional som returns additional profit. Reasoning in such a way implies a big potential, which is almost unused at the moment. We are talking here about modern packaging including European standard jars (twist-off lids) and well designed labels with bar codes. Processors very often neglect this final stage of production though additional resources in new packaging result in a bigger return on investment after sales.

In 2003, the Support to Private Initiatives Project (SDC/ Helvetas, 2001-2004) began developing a new brand name, Taste of the Sun, the main idea of which

was for members of the Association of Fruit and Vegetable Processing Enterprises²⁰ to produce different products in order to:

- increase the volume of products up to the level accepted by trading companies in Kyrgyzstan and outside.
- have common management of brand development.

The Association, in cooperation with the project and business service providers (marketing company, designer, etc.), conducted a Study of the Bishkek Market, analysing the consumption of processed fruit and vegetable products (juices, pickled vegetables and mushrooms, salads, jams, etc. - in total 14 products). Based on the Market Study, the Taste of the Sun trademark was launched and the association is the owner of the brand. Besides, the Association also became a member of the European Association of Digital Identification and obtained bar codes for its members. In 2004, four companies started producing products under the common trademark Taste of the Sun, achieving a turnover of 8 million soms (~ 180 000 USD). In 2006 seven companies, members of the Association, produced products worth around 15 million soms (~ 320,000 USD) under this trademark. Professionally designed labels (tasted in focus groups of buyers) with bar codes on old style jars made the products much more attractive (see picture 1).



Picture 1: Even in old style jars products with well-designed labels look much more attractive

The Association of Fruit and Vegetable Processing Enterprises has a brand manager, who regularly analyses sales of products under the brand name in Narodnyi supermarkets in Bishkek This is very important for monitoring of sales and knowing buyers preferences. The companies, which are selling products under Taste of the Sun, pay 1 % of sales to the Association for brand management.

²⁰ See www.afve.org

2.2.2. Improving Knowledge and Skills

The Analysis of the Fruit and Vegetable Processing Industry, carried out in 2003 among 28 processing companies, showed that 80 % of top managers have higher education with a background in engineering (46 %), economics (14 %) and agriculture (7 %). Although most top managers had received various types of training it is still possible to say that their management is focused more on the production side with less attention to marketing.

One of the main problems of processing enterprises defined by different consultants is the lack of professional managers and management of the companies. There are a few managers who know their weaknesses and try to improve their own knowledge and skills, be it on short training courses conducted by local business service providers or on training programmes on business management lasting up to 3 months. Such programmes are offered for instance by the Japanese Centre in Bishkek (funded by JICA, Japan International Cooperation Agency).

14 local consulting companies offer different types of training on management, marketing, accounting and business planning in Kyrgyzstan. Detailed information about these companies can be found in the booklet, Business Consultancy in the Kyrgyz Republic (2006 issue, page 10) published by the Local Market Development Project. This booklet can be downloaded from the website of the project, www.helvetas.kg.

2.2.3. Strengthening Cooperation with Value Chain Actors

Cooperation among Value Chain Actors plays an important role in increasing value at any level. The experience of the Local Market Development project shows that the processing company plays the role of the engine²¹ of the chain in different ways:

- The processing company has contracts with farmers' groups for the delivery of raw materials and contracts with trading companies for selling its products on the internal and external markets. There are a few companies in Kyrgyzstan (e.g. Kun-Tuu and Dessert), which have long-term contracts with up-stream and down-stream actors of the chain. Contracts with farmers secure, within certain limits, the delivery of raw materials to the company. At the same time farmers have the guarantee of selling part of their harvest to the processing company;
- Contracts between processing companies and farmers' groups should include fixed prices, concrete specifications of delivered products, volume

²¹ The engine of the chain means being the main actor, which actually defines the long-term strategy and relationships between actors in the chain

and time of delivery, provision of transport and packaging, time and form of payment. Without these main conditions is not possible to call contracts valid;

- The processing company provides loans for agricultural inputs to farmers/ farmers' groups with soft conditions (low interest rate, repayment in kind – raw material for processing) and these can be defined in the contract between the two parties. There are a few companies, which have done so for several years and have good experience and trustful reliable relationships with up-stream actors in the chain (e.g. Kirbi and Monada);
- The processing company invests money in marketing the end products (not only through a trading company) and elaborates a marketing strategy for the company including an annual marketing plan. Some companies provide finance for marketing purposes (e.g. Kooppromservice and Kirbi). The project has not yet met any company that has a marketing strategy and a plan on paper yet. This is a big obstacle to efficient marketing support;
- Ideally the processing company should have long- term relationships with extension services. Demand for extension services should come from the processor-producer's side and not from the donor's side. Although extension services are heavily supported by donors in Kyrgyzstan, at the moment there are some companies cooperating with them on growing new varieties, increasing yields increase and improving quality (e.g. Agroplast, Kirbi and Monada).

Of course, another actor in the chain can be the engine, but in any case, its contribution to value chain development and long-term relationships will vary from the above-mentioned points. What, definitely should not happen is that support organisations take over the role of the engine. The supporters should play a facilitation role and focus their activities on value chain development and not on getting a certain share of the business. In this case the supporters lose the trust of the other actors in the chain and become part of them, having their own interest.

2.2.4. Examples of Semi-Processed and Finished Products

Different products have different profit margins and are in different demand in different markets. In general, a company can have either a costly marketing strategy to promote a product with a high margin (e.g. Coke Cola) in different markets or selling different products with different margins and limited demand in local markets (e.g. local groceries) without any promotion. Of course, these are two extreme sides of a marketing strategy. Most processing companies have something in between or a combination of different marketing efforts for different products. Here two products are considered as examples offering different margins of profit and demand.

Tomato paste is a worldwide commodity with a world price depending on percentage of solids: 0.60 USD per kg (24 KGS) 30 % concentrate - 0.80 USD (32 KGS) kg for 36 % (these prices are ex-factory). The demand for tomato paste in Kyrgyzstan is very limited with only a few small producers of tomato ketchup, which annually process around 150 t of tomato paste.

Most Kyrgyz processing companies can produce 30% concentrate tomato paste and thus the price is 24 KGS/ kg. To produce 1 kg of tomato paste at least 8 kg of fresh tomatoes have to be processed (most tomato varieties currently grown have a 3-4 % solids content). The processing company pays 10.8 KGS for the raw material to produce 1 kg of tomato paste: the purchasing price from farmers is 1-20 KGS/kg (which makes most of them unhappy) plus at least 0-15 KGS/kg transport costs to the processing company within 15 km. Tomato paste production is a process, which requires a lot of energy and its production costs depend a lot on the type of energy (electricity, coal, fuel oil) at an average cost of 2-3 KGS/ kg. Although labour is quite cheap in rural areas, the company has to pay specialists (technologist, mechanics, etc) year round otherwise they will migrate to the capital or to Russia to work. The more tomato paste produced in a season the lower the labour cost percentage. For a volume of 100 t of tomato paste labour costs are another 3 KGS/kg. Plus packaging: some companies pack in 9 kg cans, other in aseptic containers costing another 1-2 KGS. Therefore, all production costs excluding equipment depreciation are around 18.8 KGS/kg. If the processor sells the tomato paste in Kyrgyzstan VAT increases costs by 20 % to around 22.6 KGS/ kg. Exporting tomato paste with 0 % VAT looks more profitable but Kyrgyz producers have to pay 10 % VAT in Russia and transportation costs depending on the type of transport – road or rail and distance to delivery point.

Therefore, tomato paste is a product where the profit level depends directly on the scale of production. One important feature of Kyrgyzstan is that due to limited land area, especially in the South, most farmers are only ready to deliver on average 5 t of tomatoes for tomato paste production because prices are lower than in the fresh market. The production of 500 t of tomato paste requires 4,000 t of tomatoes or dealing with around 800 farmers at a distance of not more than 15 km from the factory! For many processing companies this is unrealistic.

Another product is pickled cucumbers - a finished product for final consumption. Consumption in the local market averages six jars of pickled cucumbers to one jar of pickled tomatoes. The Numen Service trading company that has specialised in sales of processed fruit and vegetables in Kyrgyzstan for many years has assessed the demand for pickled cucumbers at around 400,000 jars a year. The price at the local market for a jar of pickled cucumbers depends on the packaging and varies between 30 KGS per litre old style jar to 36 KGS per 0.9 l twist-off jar (European standard). Packaging plays an important role in sales because buyers decide about purchases visually and usually well-packed products sell better. Of course, a buyer will be “addicted” to this product in the

future if she/he likes the taste of it. Packaging at the decision-making stage plays the same role as the shape, colour and size of cucumbers in a jar. Table 6 shows the difference in profitability of pickled cucumbers in different packaging. The production costs and prices are real and have been taken from processing and trading companies.

Table 6: Changes of Profitability Depending on Packaging

Production Costs	Old Style packaging, 1 L	Twist-off packaging, 0.9 L
Raw material: cucumbers, spices	4.08	4.08
Packaging (glass jars, lid, label, glue)	9.25	9.75
Electricity and water	3.70	3.70
Production losses 2%	0.40	0.40
Marketing	0.30	0.30
Overhead charges (labour, depreciation, etc.)	0.50	0.50
Sub-total:	18.23	19.73
VAT @ 20 %	3.65	3.95
Total:	21.88	23.68
Price in shops/ supermarkets	30.00	36.00
Wholesaler and shop/ supermarket mark up 20%	6.00	7.20
Profit of processing company per jar in KGS	2.12	5.12
Profitability, %	9.7	21.6

This example shows the importance of packaging for food products where a company investing an extra 05 KGS in each jar of pickled cucumbers, gets 3 KGS additional profit. Actually the profitability has doubled in this case.

Improving the packaging of finished products is definitely a way of adding value at the processor's level. A twist-off jar with a modern label and a bar code is not a "symbol of buyer's satisfaction" but a source of higher profitability for a processing company.



Picture 2: Modern packaging

2.3. Increasing value at traders' level

There are only a few trading companies specialising in sales of fresh and processed fruit and vegetables in Kyrgyzstan. It is very important to consider specialised companies with experience in this field because this segment of the food market is quite different from other segments and requires experience and knowledge to compete with the huge volumes of products imported into Kyrgyzstan from around the world.

There are several reasons why only a few trading companies exist or are involved in marketing fresh and processed fruit and vegetables, the main one is low profitability in comparison with for example, selling drinks or clothes. Another reason is the low volume of sold products in physical and financial terms in the local market. The Bishkek market for processed fruit and vegetables is worth around 25 million USD a year²² and includes five main categories: 1 Juices, 2 Pickled vegetables, Tomato ketchup and Tomato paste, 3 Jams and compotes, 4 Dried fruit and vegetables and 5 Mushrooms. Juices account for almost half of the market and most of them are imported and sold in tetra packs (or made from concentrates). Pickled vegetables, tomato ketchups and paste, jams and compotes represent around 40 % of the market. The presence of Kyrgyz products in the Bishkek market was only 0.5 million USD at the beginning of 2004. There is a great potential for Kyrgyz processors even in the local market but one of the factors limiting their development is the lack of trading companies.

Another reason for the small number of traders is the interest rate on loans provided by credit institutions, which is almost 1.5 times higher than for processing companies or twice as much for agricultural producers. Trading companies do not usually have suitable collateral (such as premises or equipment) because most of their financial assets are in goods. Actually, development projects and the government do not pay attention to these actors in the value chain, considering them as “drones” that harvest the results of “hard workers” such as producers and processors. As long as the number of specialised trading companies in Kyrgyzstan is limited, development of the fruit and vegetable processing sector will be quite difficult.

Nevertheless, there are some opportunities for trading companies to increase their worth, namely by:

1. Establishing reliable contracts with processing companies,
2. Paying more attention to loading, transportation and insurance (especially for exported products),

²² A Study of the Bishkek Market for Processed Fruit and Vegetables. Support to Private Initiatives project, Helvetas/SDC and M-Vector marketing company. March 2004.

3. Sharing costs with processing companies to promote products in the local market.

2.3.1. Reliable contracts with processing companies

The mind set and market awareness among local managers, farmers, intermediaries, and producers are still far removed from the market and tend to be short-term, aiming at quick benefits. Some processing companies have agreements with trading companies and despite the agreements the conditions are very often violated and threaten the whole marketing process; timely delivery to shops and supermarkets, quality or final price. Only a few processing companies are willing to co-operate on a long-term basis and invest in marketing.

Reliable contracts are most critical for the trading companies and are the weakest link in the existing value chains supported by LMD project at the moment. The main objectives to be reached are:

- a) Reasonable and stable prices of processed products;
- b) High and sustainable quality from year to year;
- c) Requested volume to be supplied within a limited period of time.

2.3.2. Loading, transportation and insurance

Processed products can be transported till temperatures fall to 3-4 Celsius degree below 0 and this limits delivery periods in unprotected lorries and wagons (usually outside of Kyrgyzstan, the railways accept these products till 15th October). Therefore, they have to be transported in refrigerated lorries or wagons to ensure a temperature of not more than 4 C below zero. Soft-sided lorries can be used in warm times of the year, however, moisture contact (rain etc.) has to be considered and avoided. Rail transport is profitable, which is good for Kyrgyzstan, but presents difficulties for exporting to Europe due to different gauge tracks.

Apart from the above-mentioned, no manual labour is used to load/ unload in Europe and forklift trucks are available at each warehouse or terminal, but they handle only standardised pallets. Cargo can be sent without pallets, but this will involve a cost of not less than 1,000 Euro for manual loading.

Trading companies with experience in exporting processed products recommend insuring the cargo against force majeure. Several companies provide such services in Kyrgyzstan. When selecting, one has to be assured of the sustainability and reliability; will the company be able to pay in the event of a claim? It is not really possible to trust a company, capitalised at 100,000 Euro that agrees to insure your cargo for 30,000 Euros. Only those with their own capital of ten and more times the value of your cargo should be used.

2.3.3. Marketing products in the local market

“Before you spend 1,000,000 dollars on production and 300,000 on advertising invest at least 10,000 USD in marketing and – You will not lose your money”

Unknown author

Marketing locally produced products is the weakest point in value chains supported by the LMD project. There is a kind of battle between processing and trading companies as to who should invest money in the marketing of products. The answer is clear – both sides, this is their business.

The project supports the Association of Fruit and Vegetable Processing Enterprises, which is the owner of Taste of the Sun trademark. One example of the LMD support is the Directory of Kyrgyz Fruit and Vegetable Processing Companies, which is updated and published annually. The Directory contains general information about Kyrgyzstan, the Fruit and Vegetable Processing Industry and detailed information about processing companies: address, phone numbers, name of manager, list of products, their volume and prices. The 2007 issue contains information about 27 companies. Depending on their willingness, non-members of the Association are also listed in the Directory. The Association also cooperates with the Regional Trade Development Programme of the International Trading Centre/ seco and the Chui Regional Development Project, which is financed by the Asian Development Bank. The cooperation consists of sending Association members to exhibitions in Kyrgyzstan and beyond, publishing promotional material and conducting promotion campaigns. The Association won the Gold Medal at the last Bishkek 2006 trade fair for products under the Taste of the Sun label. This shows that the trademark has become recognised and appreciated by local buyers.

The Association has a Quality Control Committee and a Brand Manager. The Committee issues permits for a member to produce products under the trademark based on their quality. The brand manager is responsible for monitoring sales in the shops and supermarkets of Bishkek, collecting information about production plans of members, planning and implementing joint activities, market analysis and disseminating information among members of the Association. Unfortunately only a few Kyrgyz processing companies can boast the same marketing activities.

2.3.4. Negotiations with potential buyers: features and precautions

The sales market is always critical for any business especially export ones such as Russia and Kazakhstan with their special requirements for higher quality and processing standards. In other words, quality and proper handling, which is sometimes forgotten, becomes the highest priority in order to succeed abroad and needs to be guaranteed all the time.

Any foreign company is totally concerned with its partner's specific business experience, related details, and on-going activities in the field of the proposed co-operation. Initially neither side trusts the other and to build trust takes time. That should be clear when negotiations start, once the potential partners first look at each other, by doing their best to get as much information as possible. When discussing co-operation agreements, payment conditions, and supplies, one has to be careful. European companies prefer long-term co-operation to short-term. Large profits shouldn't be expected in the first season and, especially, after the first deal. The best strategy is little by little, but steadily. The main lesson learnt so far is that local partner suppliers do not clearly understand quality and processing requirements and they must be informed about Russian and Kazakh agricultural quality, packaging and transportation standards. Kyrgyz enterprises need to know more about co-operation with foreign companies that pay most attention to payment conditions and supply routes and other high added value agricultural products have to be promoted. And of course, mechanization and new technologies could reduce operational expenses, increase production volume and shorten the growing period. All that would cut costs, making Kyrgyz products more competitive domestically and abroad.

2.4. Conclusions

The fruit and vegetables processing sector in the Kyrgyz Republic is rather small, compared to some neighbouring countries, such as Uzbekistan or Kazakhstan. It mainly serves the domestic market, and to a much lesser degree the sub-regional markets (Russia and Kazakhstan) for semi-processed and finished products. Processors often serve small market niches, as they do not have the raw material basis and production capacity (required new packaging, for instance tetra and aseptic packaging) to serve larger markets in particular in Russia, or lack the organizational skills and finances to increase output.

Production is mostly scattered and dispersed over a large area or several oblasts. The rather shallow domestic markets do not permit large-scale investments in machinery and equipment to reach higher levels of economies of scale. This applies to both the farmers as providers of raw materials and to agro-processing companies. Within the foreseeable future, Kyrgyzstan does not appear to be able to deliver the weekly wagonloads demanded by central Russia, the Ural or Siberian regions. Instead, its future seems to lie more in supplying smaller to medium-sized market segments with above average to high quality products, which are produced and processed according to international quality and hygiene standards.

As regards agro-processing, it is very difficult to make general statements, as the situation varies greatly from one company. However, the processing of juices, vegetables, pickles, fruits and berries, and many others seems to have good potential for expansion and exports. However, the key issue and constraint for most of the semi-processed or fully processed products is marketing. These features require that processing companies and development organizations should put more emphasis on analysing markets rather than on the production side only.

3. Tested Approaches and Tools confirming their Applicability in Kyrgyzstan

3.1. Effective approaches for developing added value

The approaches proposed in this booklet should not be considered as a dogma for developing added value because they are based on project experiences in Kyrgyzstan. Even though the business environment in other countries is different, the above-mentioned approaches could be replicated in other countries, if they are adapted to local conditions. It is important to say that the LMD project applies several approaches at the same time, such as:

Sub-sector focus: The agricultural processing sector has more than 10 sub-sectors in most countries and all of them have their own markets with different requirements. Development of any market requires large financial resources and time, which projects rarely have as they focus more on initiating changes in a country, its business environment or society.

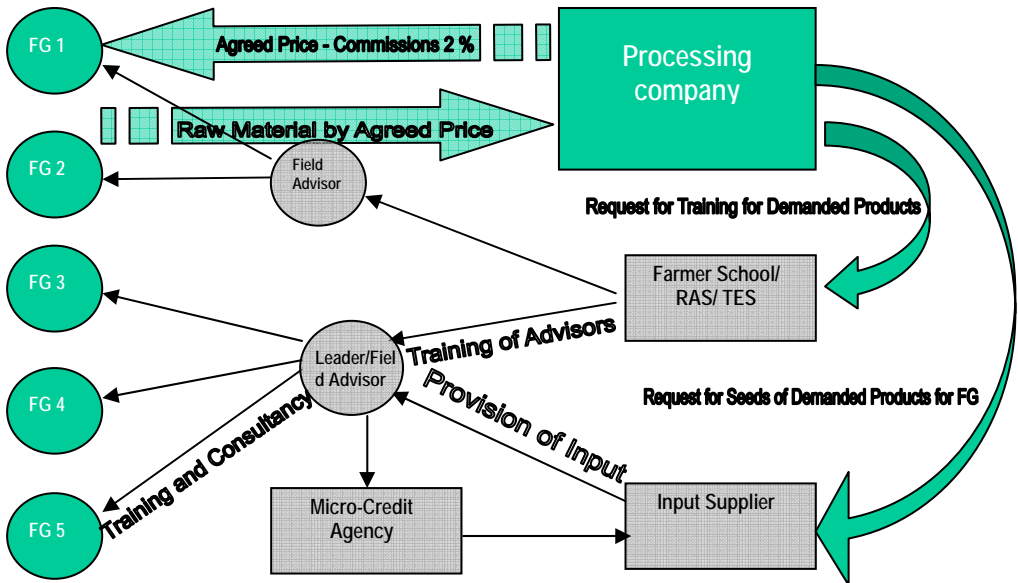
Facilitation: There are different understandings of this term in development cooperation. The project understands facilitation as a process of initiating something involving interested parties, their capacity building for further development and full delegation of responsibilities to them in the mid-term.

Work along a value chain: A project that supports the development of value chains ideally pays equal attention to all actors in the chain. Efficient projects concentrate on the process of market development and the interaction between value chain actors, rather than orienting them only on production.

Participatory multi stakeholder planning, implementation and monitoring: At the beginning of the booklet the involvement of all actors and supporters of a value chain in common planning, implementation and monitoring was mentioned. Actually, actors in the value chain have to find common interests and elaborate a plan for their business development for a certain perspective. Supporting organisations are involved in developing the businesses of value chain actors and their main task is improving the situation in a chain and not temporarily replacing one of the value chain actors. Participatory planning, implementation and monitoring encourage all parties to be open and fundamentally contribute to trust building between actors and supporters. One more important issue is that the planning of common activities should be done at the right time, e.g. planning activities in a vegetable processing chain should be done a few months before planting starts in the fields, since the input supplying company has to deliver the required seeds based on the demand of producers who have to negotiate tentative volumes with processors in advance.

Provision of complex non-financial and financial services: agricultural inputs, micro-credits, extension services. A complex non-financial and financial services scheme proposed by the TES Centre in 2005 showed its effectiveness

and practicality and it was expanded to work with other agricultural producers. Actually this scheme means embedded services where agricultural producers get all necessary input and financial resources at the beginning of the growing season and repay them upon delivery of the contracted volume to the processing company.



Graph 21: Provision of complex non-financial and financial services

The leader of the farmers' group (or field advisor) makes a contract with processing companies on behalf of the group. Based on the contract the field advisor, in collaboration with extension services, elaborates a technical card for producing the contracted volume and calculates the financial resources needed for inputs and fieldwork. Then, the field advisor applies to Micro-Credit Agency on behalf of the group to get a loan based on mutual responsibility. After approving an application the Micro-Credit Agency pays the money for the requested inputs directly to the selected inputs supply company and part of the credit for fieldwork directly to members of the group. The inputs supplier delivers the requested seeds, fertilizers and chemicals to the field advisor on time who then distributes them among members of the group. At harvest time the group delivers the contracted volume to the processing company, gets its money and repays the loan to the Micro-Credit Agency.

The field advisor also gets paid for his/her work from the processing company for the delivered volume and quality, from extension services for training given to farmers, from farmers for his/her services and from the micro-credit agency for monitoring repayment (it reduces the transport costs of the agency in monitoring remote farms). There have been some cases where processing companies have started to pay directly to inputs supply companies and extension services to support reliable farmers' groups with whom they work.

This process is at an initial stage and the LMD project is facilitating the expansion of this work to other chains.

3.2. Practical Tools for Develop Value Chains

Some tools for developing value chains, which have been proved in accordance with the above-mentioned approaches can recommended here, namely:

Planning Workshops with Value Chain Actors and Supporters: The workshop has to be conducted before the growing season starts and define at least activities for the next few months. It is important that all involved parties have the same information base and responsibilities and that their contribution to the common work is defined. At the workshop, working groups consisting of decision makers from the actors and supporters of each value chain should be elected.

Regular (at least monthly) Meetings of Working Groups: Regular meetings are necessary to monitor planned activities, discuss obstacles and difficulties among actors and supporters of the value chain and deciding how to overcome them. It is better to arrange a set date/day and place for the meeting, for instance the last Tuesday of the month, as this makes it easier to arrange and disciplines members of the group in their reporting and contributions.

Provision of Reliable Market Information for Decision Making to Value Chains Actors and Supporters: Reliable information is important for making proper decisions and avoids speculation between actors, e.g. when producers tell processors about higher market prices and vice versa. Both parties usually accept information supplied by a supporting organisation, which is not directly involved in the actors' business. Such a supporting organisation is the Kyrgyz Agricultural Market Information System, providing market information about 37 agricultural products via SMS. Supporters should also conduct market research from time to time to define market trends and distribute the report among all involved parties (free of charge if they are financed by a donor funded project).

Experience Exchange Tours and Workshops: These enable experience to be exchanged between actors and supporters and initiate new ideas for further development of value chains.

Platform for Agriculture Chain Development is another event for information and experience exchange between value chain actors and supporters. In contrast to experience exchange tours and workshops, the Platform has regular meetings with topics for discussions defined in advance by the participants. The meetings can be held every other month and last half a day, which is enough time to discuss two subjects. It is also important to set a date/day (e.g. last Friday of the second month), time (from 9:00 to 12:00) and place of the meeting. Nevertheless, all interest parties should be informed about

the agenda of next meeting in advance (at least 1-2 weeks). Participation in the Platform meetings is not obligatory and they should be open to any person or organisation interested in the agenda.