



FAO/GFAR

SUMMARY REPORT

**Regional Workshop on Post-Harvest
In
Central Asia and the Caucasus**

Almaty, Kazakhstan

20-22 February 2002

**National Academic Centre of Agrarian Research
Republic of Kazakhstan**

Central Asia and the Caucasus

The Region

The Central Asia and Caucasus (CAC) Region (Figure 1) covers an area of 4.2 million sq. km, and has a total population of 73 million (Table 1). Approximately 70 % of the land area of that region can be classified as agricultural land. All countries of the region are currently in transition from centrally organized economies toward market economies.

Agriculture is of paramount importance in the region. Crops grown in each of the various countries are summarised in Table 2.



Figure 1: Central Asia and the Caucasus Region

Table 1. General Characteristics of Countries of Central Asia and the Caucasus

| Country | Territory, 000 sq.km | Population, million (at the beginning of 2001) | Population density, persons/sq.km |
|---------------------|----------------------|--|--------------------------------------|
| Central Asia | | | |
| Kazakhstan | 2724.9 | 14.9 | 5.4 |
| Kyrgyzstan | 199.9 | 4.9 | 24.5 |
| Tajikistan | 143.1 | 6.1 | 42.6 |
| Uzbekistan | 447.4 | 24.9 | 55.7 |
| Caucasus | | | |
| Azerbaijan | 86.6 | 8.1 | 93.5 |
| Armenia | 30.0 | 3.8 | 126.7 |
| Georgia | 69.7 | 8.1 | 116.2 |

Table 2. Main categories of crops grown in Countries of Central Asia

| | |
|------------|---|
| Kazakhstan | Grain (wheat), potatoes, vegetables; in the south: cotton, grapes, horticulture, rice, tobacco. |
| Kyrgyzstan | Industrial crops (sugar beet, cotton plants, tobacco), potatoes, vegetables. |
| Tajikistan | Cotton plants, grapes, fruits, vegetables, melons, lemons. |
| Uzbekistan | Cotton plants, fruits, grapes, vegetables and melons. |
| Azerbaijan | Industrial crops (cotton plants, tobacco), grapes, fruits (citrus crops). |
| Armenia | Grapes, fruits, tobacco, sugar beet, geranium and vegetables. |
| Georgia | Fruits (citrus crops), grapes, tea, vegetables, edible oils. |

The CAC Agricultural Research Forum

The CAC Agricultural Research Forum consists of two sub-Regions:

- Central Asia: Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan;
- Caucasus: Armenia, Azerbaijan and Georgia.

Status of Agriculture and Processing in the Region

1. The agricultural sector (production and processing), is the main supplier of food and raw materials for internal markets, and provides a significant source of export earnings, thereby contributing substantially to economic growth in the region. Despite its significant economic contribution, the sector is plagued with a number of problems.
2. The region has a large and diverse resource base with a highly qualified labour force.
3. Most agricultural products reach the consumer's table in an unprocessed state. During the privatization process, many large-scale processing plants - fruit and vegetable plants, mills, wineries, fat and oil processing plants and other factories- were either destroyed or restructured. The small workshops which replaced them were unable to guarantee the necessary volume and quality of production, resulting in decreased output of processed products, decreased employment, and a reduction of added value. Most agricultural products consequently reach the consumer's table in an unprocessed state.
4. Positive agricultural production trends are evident in all countries of the region. During the 1999-2000 period, agricultural production in Tajikistan showed a 12 % increase, while that in Kyrgyzstan showed a 4.5 % increase. A 59.8 % increase occurred in Kazakhstan during the 1999-2001 period. Growth of this nature provides a favourable basis for development of the post-harvest sector. The food industry is also showing remarkable growth. Growth in that sector showed a 7 % increase in Kazakhstan in 2001 compared to 1999.
5. Decreased state support and price disparities between agricultural and industrial products in all countries have resulted in reduced investments and have impacted negatively on the industrial potential of those countries.
6. Lack of infrastructural development and coordination among countries of the region, has made the shift to inter-regional and world markets difficult. The sector is consequently dominated by numerous mediators, very high prices and poor consumer demand.

Changes in the agricultural production systems and poor orientation toward food self-sufficiency have resulted, in some cases, in considerable increases in food costs. This phenomenon can be clearly observed in the case of grain production whereby countries of the Central Asia Region, with the exception of Kazakhstan, have increased their grain production to meet internal demand. At the same time, Kazakhstan, which has the capacity to produce grain at the lowest cost, has reduced its production by half, with losses for the commodity market.

7. Crisis within the agricultural sector and processing industry is the consequence of a steep reduction of the resource base. The provision of techniques, technologies and equipment has been reduced and these facilities have begun to deteriorate.
- Equipment is old and worn, with low productivity. At least 40% of all the equipment in the processing industry is over 10 years old.
 - Due to wear and the removal of the main production parts, serviceability of the machinery has been surpassed: one-third of the equipment has been in use for more than two amortization periods; enterprise labour productivity for processing agricultural raw materials has diminished 2-3 times as compared to similar enterprises in developed countries, and more than 50% of food processing operations are carried out manually; drying of fruit and berries is carried out with the use of traditional labour methods.
 - Lack of refrigeration equipment remains one of the main problems for the fruit and vegetable industry.
 - With the appearance of so-called “small enterprises” in the oil-fat industry more than 20 % of oil seeds are processed only by pressing without extraction, with consequent losses of oil.
 - Due to the absence of a packaging industry and the unavailability of packaging materials, over 40% of local food products and agricultural raw materials enter the retail market in an unpackaged form. Perhaps the most glaring example is that of the fruit and vegetable canning industry which today is still equipped with antiquated canning facilities for packing fruit and vegetable into 2-3 litre cans.

The lack of capacity to produce fruit and vegetable juices and pack them in small containers, convenient for the consumer, has led to post-harvest losses in fruits and vegetables.

8. Insufficient financing for scientific research has led to a reduction in the scientific potential of agro-industrial complexes, and the post-harvest sector in particular. This has had a negative impact on both basic and applied science, as well as on the implementation of scientific and technological advances.

Specialized scientific institutions engaged in the development of technologies for the processing of local raw materials, new recipes, etc., are however operational in countries such as Kyrgyzstan and Tajikistan.

9. Border and ethnic conflicts (Azerbaijan-Armenia, Tajikistan) and the lack of regularization of frontier river water use for irrigation of agricultural crops (Kazakhstan, Kyrgyzstan, Uzbekistan) inhibits post-harvest development, information exchange, technologies and trade.

INTRODUCTION

The need for an appraisal of the current status of the post-harvest sector from both institutional and stakeholder perspectives in developing countries is of paramount importance in identifying the problems, potentials and constraints of that sector. This was the rationale for the conduct of five technical regional workshops (Workshops) by FAO in cooperation with the Global Forum on Agricultural Research (GFAR).

THE WORKSHOP

The regional Workshop for Central Asia and the Caucasus was organized by the Regional Agricultural Research Forum, and was held in the Republic of Kazakhstan during the period 20 to 22 February 2002. Activities preparatory to the workshop were carried out by the National Academic Centre of Agrarian Research (NACAR), Almaty, Kazakhstan under the guidance of Dr. A. Satybaldin, Chairman of the Agricultural Research Forum for Central Asia and Caucasus, and Director General of NACAR.

Thirty-five representatives from the region participated in the Workshop. Participants originated from ministries of agriculture, research institutes, and scientific and research centres in Kazakhstan, Kyrgyzstan, Uzbekistan, Tajikistan, Azerbaijan, Armenia, and Georgia. Representatives from the Ukraine also participated as observers.

Inputs to the Workshop were:

- One regional report.
- Two sub-regional reports.
- Sixteen stakeholder reports.

Working Group Deliberations

Two working groups were formed to analyze strengths, weaknesses, opportunities and threats to the post-harvest sector in the region. One group consisted of representatives from Armenia, and Georgia, while the other consisted of representatives from Kazakhstan, Uzbekistan, Tajikistan and Azerbaijan.

During joint meetings of the working groups the aims, objectives and strategic priorities of post-harvest initiatives in the region were defined, and proposals for the solution of problems and recommendations for action were developed.

A. BACKGROUND PAPERS

Issues Emerging From Regional and Sub-Regional Reports

Member countries of the CAC forum region share a number of commonalities. These can be categorised within the context of:

1. Development risks.
2. Strengths of the post-harvest sector.
3. Weaknesses of the post-harvest sector.
4. Constraints and opportunities for the development of the post-harvest sector.

Development Risks

- Lack of infrastructural (transportation and road) links to potential food markets.
- Poor access to world markets.
- Lack of trade regulations.
- Competitiveness and protectionism of world markets.
- Low purchasing capacity in local markets.

Strengths

- Sufficient land resources for agricultural development (Kazakhstan) and favourable climatic conditions.
- Low labour costs and an abundance of trained capacity.
- High level of education among rural populations.
- Existing basic infrastructure for storage and processing of crops.
- Transport and communication facilities for the development of inter-country trade in agricultural products in the CIS.
- Traditional processing technologies for fruits and vegetables.
- Limited use of fertilizers and pesticides in plant production.
- Private sector interest in agri-business development.
- Availability of research and educational institutions which conduct research and staff training.

Weaknesses

- Incomplete market transformation.
- Lack of effective state policies.
- Outdated processing technologies.
- Lack of modern packaging facilities and materials.
- Corruption and abuse of official functions.
- Poor marketing and management.
- Unemployment.
- Water shortages and insufficient development of irrigation systems.

- Erratic weather and climatic instability.

Constraints to Post-Harvest Development

- Insufficient water resources which negatively impact on crop yields (Kazakhstan, Uzbekistan, Tajikistan).
- Low purchasing power of local populations.
- Outdated processing and packaging technologies.
- Insufficient investment directed to upgrading the food industry.
- Poor access to credit.
- Weak extension services.
- Failure of management systems to meet modern requirements.
- Inability to meet international standards.
- Inadequacy of standards.
- Poor road and transportation infrastructure.
- Poor and expensive communication services.

Despite the crisis, there is great potential to accelerate the development of agriculture and the post-harvest sector in each country of the region.

Opportunities for post-harvest development

- Sufficient land resources for agricultural development (Kazakhstan) and favourable climactic conditions.
- Abundance of trained personnel.
- Basic industrial infrastructure for storage and processing of crops.
- High educational level of rural populations.
- Transport and communications network for the development of inter-country trade in agricultural products in the CIS.
- Existing traditional technologies for processing fruits and vegetables.
- Private sector interest in agri-business development.
- Research and educational institutions conducting research and staff training.

B. WORKING GROUP DELIBERATIONS

1. Analyses of Sub-regional Strengths, Weaknesses, Opportunities, and Threats (SWOT Analyses)

As a strategic planning tool, sub-regional SWOT analyses were conducted by grouping participants on the basis of their sub-regional origin. Two working groups were constituted: one which included representatives from Armenia, Georgia, and Ukraine, while the other included representatives from Kazakhstan, Uzbekistan, Tajikistan and Azerbaijan.

Working groups were requested to identify five of the major strengths, weaknesses, opportunities and threats to development of the post-harvest sector, as a basis for developing strategies for post-harvest development within the sub- Region. This exercise allowed the participation of all stakeholders.

During joint meetings of the working groups the aims, objectives and strategic priorities of post-harvest initiatives in the region were defined, and proposals for the solution of problems and recommendations for action were developed.

CENTRAL ASIA

Internal Strengths

1. Availability of land and labour resources.
2. Educational and scientific potential.
3. Transport infrastructure.
4. Ecologically sound raw materials.
5. Traditional processing technologies.

Weaknesses

1. Incomplete market transformation.
2. Outdated processing technologies and antiquated equipment.
3. Poor marketing and management.
4. Lack of investment.
5. Irrational use of irrigation systems.
6. Lack of information technology.

Threats

1. Land use, soil degradation and shortage of water resources.
2. High transportation cost.
3. Low purchasing power in local markets.
4. Insufficient regulatory frameworks.
5. Poor access to world markets.
6. Migration of populations (Azerbaijan).

Opportunities

1. Availability of raw material base for processing.
2. Availability of infrastructure and industrial base for storage and processing.
3. Cooperation among countries in the sub-region.
4. Availability of educational and research institutions.
5. Integration between science and industry.

CAUCASUS

Strengths

1. Favourable climatic conditions and fertile soil resources.
2. Inexpensive labour.
3. Scientific potential.
4. Beneficial tax and customs legislation.
5. Availability of transportation infrastructure.

Weaknesses

1. Inefficient state policy.
2. Lack of funding for post-harvest activities.
3. Small land holdings and lack of co-operation.
4. Weak management and marketing.
5. High cost of transportation tariffs and high energy costs.

Opportunities

1. Use of scientific potential for the development of joint interregional projects.
2. Setting up of information networks to satisfy the post-harvest needs of the region.
3. Production of high value-added products - high quality wines, cognacs, brandies, natural aromatics, spices, and cigarettes to satisfy the demand in the region.
4. Use of improved germplasm in order to ensure high quality raw materials.
5. Application of scientific and engineering potential to serve the needs of the post-harvest sector.

Threats

6. Unsettled ethnic conflicts.
7. Protectionism.
8. Environmental concerns and natural disasters (global warming and natural calamities).
9. Potential threat of global energy crisis.
10. Cross-border ecological disasters (locust's migration, penetration of plant diseases, etc).

2. Regional Strategic Priorities

Goal

To become self sufficient in food production, and to improve the economic, social and nutritional status of the region.

This statement identifies the broad development goal towards which the GIPh initiative in the CAC Region will contribute. In line with the development strategies of the region as a whole, the goal is concerned with improving the welfare of the poor through enhanced food security and through sustained and equitable economic growth that delivers reductions in the incidence of poverty. Meeting this objective would however necessitate the following in the region:

- Continuation of economic reforms.
- Rationale use of soil, water and human resources.
- Development and efficient use of information technology.
- Investment (local and foreign) in agro-industrial development.
- Improvements in post-harvest technologies, marketing, management and information exchange and dissemination.
- Improved production, cooperation and trade in the region.

3. Sub-Regional Strategies

Strategies were developed on a sub-regional basis against the background of the sub-regional reports, and the SWOT analyses, conducted during working group sessions.

CENTRAL ASIA

Target government policy geared toward development of the raw material base and the post-harvest sector.

CAUCASUS

Improve the prosperity of the country by producing competitive goods for export.

4. Thematic Discussions

During a card-writing exercise, Workshop participants prioritized a number of areas for inclusion in the post-harvest initiative. These included:

- Development of the raw material base to provide for both local consumption and export
- Marketing and management.
- Modernization of processing technologies.
- Training.
- Development of information technologies and modernization of communication infrastructure (roads, transportation, telecommunication).
- Improvement of state regulations.
- Increased investment in food processing industry.
- Harmonised food safety regulations.
- Food standards compliant with global market demand.
- Access to credit.
- Trade promotion and facilitation.
- Economic reform.
- Enlargement of small farms.

5. Recommendations

Further to discussions, participants recommended the following as priority areas for action:

- Continuation of economic reform in the region.
- Rational use of soil, water and human resources.
- Creation and efficient use of information technologies.
- Exploitation of the use of existing expertise and scientific potential.
- Fostering of production-processing linkages.

Summary Table

| Sub-region | Strengths | Weaknesses | Opportunities | Threats |
|---------------------|---|---|--|--|
| Central Asia | <ul style="list-style-type: none"> • Availability of, land and labour resources. • Educational and scientific potential. • Transport infrastructure. • Ecologically sound raw materials. • Traditional processing technologies. | <ul style="list-style-type: none"> • Incomplete market transformation. • Outdated processing technologies and antiquated equipment. • Poor marketing and management. • Lack of investment • Irrational use of irrigation systems. • Lack of information technology. | <ul style="list-style-type: none"> • Availability of raw material base for processing. • Availability of infrastructure and industrial base for storage and processing. • Cooperation among countries in the sub-region. • Availability of educational and research institutions • Integration between science and industry. | <ul style="list-style-type: none"> • Land use, soil degradation and shortage of water resources. • High transportation cost • Low purchasing power in local markets. • Insufficient regulatory frameworks. • Poor access to world markets. • Migration of populations (Azerbaijan). |
| Caucasus | <ul style="list-style-type: none"> • Favourable climatic conditions and fertile soil resources. • Inexpensive labour. • Scientific potential. • Beneficial tax and customs legislation. • Availability of transportation infrastructure. | <ul style="list-style-type: none"> • Inefficient state policy • Lack of funding for post-harvest activities. • Small land holdings and lack of co-operation. • Weak management and marketing. • High cost of transportation tariffs and high energy costs. | <ul style="list-style-type: none"> • Use of scientific potential for the development of joint interregional projects. • Setting up of information networks to satisfy the post-harvest needs of the region. • Production of high value-added products - high quality wines, cognacs, brandies, natural aromatics, spices, and cigarettes to satisfy the demand in the region. • Use of improved germplasm in order to ensure high quality raw materials. • Application of scientific and engineering potential to serve the needs of the post-harvest sector. | <ul style="list-style-type: none"> • Unsettled ethnic conflicts. • Protectionism. • Environmental concerns and natural disasters (global warming and natural calamities). • Potential threat of global energy crisis. • Cross-border ecological disasters (locust's migration, penetration of plant diseases, etc). |