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4.1.4. Садоводство, овощеводство, виноградарство и лекарственные культуры (сельскохозяйственные науки)

ОСНОВНЫЕ ПРОБЛЕМЫ СЕКТОРА САДОВОДСТВА В АФГАНИСТАНЕ

Вафа Шамсулдин
аспирант

Чумаков Сергей Семенович
доктор сельскохозяйственных наук, профессор
РИНЦ SPIN-код: 1785-8634
Федеральное государственное бюджетное образовательное учреждение высшего образования «Кубанский государственный аграрный университет имени И.Т. Трубилина», Краснодар, Россия

Основные проблемы отрасли садоводства в Афганистане заключаются в отсутствие доступа к качественному посадочному материалу плодовых растений, отсутствие управления фермерским хозяйством и структуры для регулирования садоводческой деятельности. Например, подготовка растительного сырья, оборудования и инструментов, переработка продукции садоводства. Отсутствие образовательных курсов и рекламных услуг. Не существует систематического, научного или стандартизированного подхода к решению проблем отрасли. Неправильная закладка промышленных насаждений - в некоторых случаях привитые саженцы высаживаются не правильно, что приводит к формированию слабой кроны, или привитые саженцы высаживаются слишком глубоко, в результате чего подвой разрастается из точки прививки или привитая часть становится слишком большой. Отсутствие дорожного покрытия во многих районах Афганистана вызывает потерю качества плодов при транспортировке

Ключевые слова: САДОВОДСТВО, ПРОБЛЕМЫ, ЯБЛОНЯ, ПРОИЗВОДСТВО, МАРКЕТИНГ, КЛИМАТ, МЕСТНЫЕ И ЗАРУБЕЖНЫЕ СОРТА, РАЗМНОЖЕНИЕ И ОРОШЕНИЕ

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4.1.4. Horticulture, vegetable growing, viticulture and medicinal crops (agricultural sciences)

MAJOR PROBLEMS OF THE HORTICULTURE SECTOR IN AFGHANISTAN

Wafa Shamsuldin
postgraduate student

Chumakov Sergey Semenovich
Doctor of Agricultural Sciences, Professor
RSCI SPIN code: 1785-8634
Federal State Budgetary Educational Institution of Higher Education "Kuban State Agrarian University named after I.T. Trubilin", Krasnodar, Russia

The main problems of the horticultural industry are lack of access to quality planting material. Lack of farm management and structure for regulating horticultural activities. For example, preparation of plant materials, equipment and tools, processing of horticultural products. Lack of training and educational courses, advertising services. There is no systematic, scientific or standardized approach to solving problems. Incorrect establishment of industrial plantations - in some cases, grafted seedlings are planted incorrectly, which leads to the formation of an incorrect crown, or grafted seedlings are planted too deep, as a result of which the rootstock grows from the grafting point or the grafted part becomes too large. Currently, roads in many areas of Afghanistan are in poor condition and difficult to access. Bad roads and many hours or many days of walking on them cause destruction and destruction of fruits

Keywords: GARDENING, PROBLEMS, APPLE TREE, PRODUCTION, MARKETING, CLIMATE, LOCAL AND FOREIGN VARIETIES, PROPAGATION AND IRRIGATION

The main problems of the horticultural sector in Afghanistan are expressed in the lack of access to quality planting material [1,2].

Growing fruit trees using land map, cultivation, pruning, use of chemical fertilizers, irrigation regulation, diseases and insects, etc. in a correct and scientific way. Moreover, the main fruits are grown and produced in an unconventional way.

Post-harvest activities (sorting, grading, cleaning, packaging, storage, processing and transportation) are not carried out correctly. And there is no demand in the regional and international markets. And this leads to the loss of regional and international markets [3,4].

Loss of international markets, poor quality of fruits, lack of access to neighboring markets such as Iran, Pakistan and other countries.

Lack of farm management and structure to regulate gardening activities. For example, preparation of plant materials, equipment and tools, processing. Gardening supplies, training and educational courses, advertising services, etc. There is no systematic, scientific or standardized way.

There is not enough help and support for farmers and gardeners.

Lack of food safety control and certification

The main agricultural problems of fruit orchards in Afghanistan [5,6,7].

The main agricultural problems facing most of the fruit orchards in Afghanistan are:

Incorrect planting: In some cases, grafted seedlings are planted too shallow, resulting in a poor tree framework, or grafted seedlings are planted too deep, resulting in the rootstock growing out from the graft point or the grafted portion becoming too large.

Planting material of fruit trees or grafted seedlings. The appearance is usually unhealthy, the seedlings are not uniform, since the seedlings are grown from seed mother material, and the scion is collected from unknown trees.

Incorrect spacing: Lack of knowledge about the characteristics of the cultivar and the parent rootstock resulted in trees being planted too close together, one shading the other, resulting in low yields and only the top portion of the tree bearing fruit [8,9].

Incorrect formation and pruning of fruit trees. Fruit clusters that increase their size are not typical for fruit trees and grapes. Fruit tree death occurs due to lack of control over the condition of the tree trunk and failure to comply with proper agricultural practices. Flood irrigation systems are irrigation systems that are irregular and occur at the wrong time. Incorrect placement of crops between rows and cultivation of the soil too close to the tree trunk, which leads to damage to the roots and, in some cases, to injury to the trunk. Incorrect amounts of chemical fertilizers, as well as the use of chemicals at the wrong time.

Lack of wind protection leads to malformed trees and reduced yields.

Lack of pollination in fruit varieties that require cross-pollination. For example, apple, pear, almond, and walnut trees have low yields and irregular fruits due to lack of pollination.

There are no measures to prevent diseases and pests, which leads to a decrease in the quantity and quality of fruits.

Harvesting, sorting, grading, cleaning, packaging, processing, storage and transportation are not carried out properly, resulting in large amounts of waste and reducing the shelf life of the fruit.

Challenges and Opportunities in Afghanistan's Horticulture Sector

Afghanistan produces some of the world’s best fruits such as pomegranates and pistachios, and with India and Pakistan being the main export markets for fruits and vegetables, Afghanistan shows great potential for fruit production. However, the lack of value chain infrastructure, cold storage systems, and lack of product standardization and certification make it difficult to enter new markets. An

analysis of the current situation clearly shows the need to increase primary agricultural production and reduce post-harvest losses. In this context, the following key challenges for the horticulture sector have been identified and recognized: The responsibility for this lies with the Afghan Agricultural Research Institute, but its capacity is currently limited. The Afghan Agricultural Research Institute has been conducting fundamental and applied research on horticultural crops for many years [10,11].

Research suffers from limited capacity and resources. Need-based and problem-based research is needed to support the horticultural production sector. Development of consensus research focusing on cultivars, clonal mother rootstocks, consensus and late-flowering varieties of almond and apricot is important. Little research has been done on vegetable varieties. It is essential to initiate research programmes on some of the country's important vegetables. Initiatives are needed to encourage the cultivation of other varieties of fruits and vegetables suited to the climatic conditions. Selection of market-appropriate varieties and integrated pest management can increase production while improving quality. There appears to be little uniformity in practice as many cultivars have been used and a large number of walnut species, some almond cultivars and other stone fruit tree cultivars or breeds have been propagated without grafting.

Improved methods, comparative studies and off-season production will increase production volumes and quality. There is no program for testing and improving varieties and quality control of important vegetable seeds. The official seed system (Afghanistan Agricultural Research Institute, advanced seed enterprises, private companies) does not produce sufficient quantities of vegetable seeds. For this reason, attention should be focused on vegetable production and imports of vegetable seeds, especially hybrids, should be controlled [12,13,14].

The productivity of orchards and vineyards is generally low, the quality and yield are low due to ineffective agricultural technology, poor varieties, dry rootstocks of seedlings, insufficient pest control, etc.

Small farms and plots of land of Afghan farmers are less competitive and cannot afford mechanization and modern agricultural inputs. Farmers should be encouraged to form farmer organizational institutions in areas where they have common needs so that they can compete in domestic and international markets. A union of farmer organizational institutions would encourage large-scale production and marketing. Many orchards still grow mixed varieties of fruits, planted at different times without any planning. Full-fledged commercial orchards are still rare in Afghanistan.

Due to the lack of commercial gardens, lack of contact and communication system for farmers, and lack of proper and adaptive farming practices, production is not sustainable and the produce is not consistent in quantity and quality.

Electricity is needed for many horticultural activities including water pumps for irrigation, heating, processing, pre-cooling and cold storage including in agro-processing plants. Currently, electricity supply is insufficient and there is a need to assist enterprises in obtaining electricity to run their operations [15,16,17]. Water is one of the most limiting factors for horticultural production and good quality products. In many situations, off-farm water planning and management is unreliable as the rehabilitation and construction of irrigation systems is still very slow and water collection and storage are insufficient. Inefficient management of water systems limits water availability. On-farm water management such as the use of efficient and low-cost technologies (e.g. drip irrigation) and monitoring of their use are critical. This problem will be addressed in the first stage through the implementation of good agricultural practices.

Knowledge of soil properties will be of great help in the initial cultivation of garden crops etc., but unfortunately, the knowledge of farmers about soil and fertilizers is a problem that needs to be addressed. The existing soil laboratory at Badam Bagh is not functioning efficiently due to lack of necessary materials and trained personnel. At least some knowledge of the most commonly used elements is necessary to plan and organize an effective soil stabilization plan.

The use of chemicals is judiciously managed through integrated pest management (IPM) methods, where knowledge of pest and disease biology enables farmers to control pests and diseases more effectively using fewer chemicals. Pest and disease monitoring and control programs are ineffective, and the quality of agricultural chemicals without monitoring and regulation is poor [18,19].

Lack of awareness of the Ministry of Agriculture, Irrigation and Livestock on the procedures related to fruits, fruit varieties and nuts of the Afghan National Collection, which has been housed in six Horticultural Development Centers for many years, and lack of awareness of the National Collection Registry are issues that need to be addressed. The National Collection acts as a breeder of agricultural materials for fruits (PHDC)With), and also strengthens the capacity of the Department of Horticulture and the Afghan Agricultural Research Institute, which is essential to assume responsibility for the national collection. Lack of awareness of the importance and role of the six Horticultural Development Centres and the National Collection as living collections that need to be developed and updated is a problem that needs to be addressed.

The horticultural sector requires healthy and certified agricultural inputs to produce high-quality products and improve productivity. A well-equipped plant biotechnology laboratory is essential for testing agronomic inputs and micropropagation.

There is no testing mechanism for horticultural inputs (such as fertilizers and active ingredients in pesticides) and no reliable supply chain with certification of origin and quality control. The physical quality of inputs is gradually improving, but the lack of time and access to what is needed to improve agricultural products, especially for diversification and specialization in high-value crops, remain obstacles. A reliable supply chain for inputs, as well as certification of origin and quality control, is essential. To address this negative trend, supply planning needs to be reformed. Farmer organizations and farmer associations are expected to play an important role in this regard.

Lack of modern machinery and tools is a serious problem in agriculture and horticulture. Farmers are still not familiar with modern machinery in the horticultural sector. Imported machinery and equipment should be certified by international and Afghan standards.

Extension agents suffer from lack of knowledge and lack of transport facilities. Extension services should improve farmers' knowledge of production, integrated pest management, processing and marketing. The Ministry of Agriculture, Irrigation and Livestock should provide farmers with adequate extension services and comparative studies to improve production and quality. Farmers should be provided with appropriate training materials. Public-private partnerships should be established to maximize the range of services available to farmers.

Currently, roads in many parts of Afghanistan are in poor condition and difficult to access. Poor roads and walking for hours or days means that fruits and vegetables are damaged and destroyed. In this case, farmers will have to give up growing most fresh fruits and vegetables for sale, which cannot withstand these deteriorating conditions. Instead, farmers should consider growing resilient crops such as pomegranates, almonds, walnuts, pistachios or apricots and grapes for

drying. Farmers who grow fresh fruits and have access to good roads and large markets can consider marketing their fresh produce. Variety selection is very important for the fresh market, as variety is an important factor in determining when the produce is ripe and ready for sale.[20,21]

Lack of credit and lack of extensive financial services for farmers remain major obstacles to improving production, productivity, processing and marketing. Provision of long-term credit in accordance with Islamic terms is essential.

Basic data are insufficient, and databases and national statistics on domestic horticulture and regional trade are unreliable. Collecting data on economic activity in horticulture and agriculture more broadly would be a major advance. While collecting extensive information on agriculture is extremely difficult, collecting basic data on the number and age of fruit-bearing trees is more feasible. Data collection on horticultural crops is needed to inform planning rather than implement ideas based on insufficient data. A roadmap for developing Afghanistan’s horticulture production base needs to be completed before further investment in the sector can begin. This will include an assessment of the potential for (vegetable) production around urban areas to replace imports. Information on crop production such as field layout, planting, pruning, fruit set, fertilization, water management and integrated pest management is insufficient. Farmers and farmer associations lack information on harvesting, grading, processing, packaging and storage. There is a shortage of experienced and skilled workers who could take care of the gardens [22,23].

Inadequacy of training materials and opportunities for horticultural professionals: Educational materials resulting from fundamental and comparative research, demonstrations and courses should become practical training materials for agricultural extension workers, farmers and processors. These could be guides, leaflets, brochures, video presentations.

Accurate and timely information on market prices (domestic and international), production planning, storage, processing and marketing of key products is critical to making informed business decisions. The lack of centralized control over purchasing and prices is a major problem. Information on current prices of key products in local markets and in other countries can help to correctly target international markets.

Local markets are able to absorb large volumes of locally produced produce. An example is citrus fruits, where despite significant imports, there is still scope for increasing domestic production. In addition, with the establishment of cold storage facilities and the production of high-quality produce, Afghan fruits and vegetables will have a better market than imported products.

To regain export markets, necessary reforms need to be undertaken in the areas of quality, quantity, extension of the marketing season, grading, classification, packaging, processing, cold chains and market infrastructure. Cold chain capacity is essential to supply high-quality fresh fruits to export markets. Currently, there are limited number of functional cold storage facilities in the country. It is therefore important to encourage private traders to establish refrigeration facilities to extend the marketing season. The Ministry of Agriculture, Irrigation and Livestock should work with development partners to ensure that facilities built through indirect funding are transferred to private traders [24,25].

Producing high-quality products for demanding domestic and export markets requires knowledge from farmers, extension service providers, laboratory technicians and dedicated farm managers.

Afghan exporters lack international Good Agricultural Practice (GAP) certification. Adopting GAP methodology would help Afghan producers to enter the European Union and some high-value Asian markets where certification is critical for food products. Similarly, Afghan packing plants often lack the

appropriate Hazard Analysis and Critical Control Point (HACCP) requirements. The lack of GAP and HACCP practices, and therefore certification, affects not only the income of traders but also the income of farmers for whom these exports are a source of good income.

The lack of a national quality control system based on accredited food laboratories with qualified personnel who can apply international methods and standards makes it impossible to determine the safety of Afghan produce, which is important in many countries. The lack of quality standards results in low quality products and high post-harvest waste. As a result, when products are inspected at various customs offices around the world, they are found to be unsafe and do not meet sanitary standards. In this case, the cargo will be returned or destroyed. Producers and processors can use standards to improve and enhance the quality of their products. Another problem is the lack of branding opportunities. Branding can add value to high-quality products.

To develop and attract the necessary capital to the industry, it is necessary to create and implement a legal and regulatory framework that promotes product safety, certification for export, development of classification and standards, and the establishment of national marketing institutions. This is one of the main obstacles in the World Trade Organization (WTO). Fortunately, Afghanistan became a member of the WTO in 2016.

The value of processed products is usually significantly higher than the value of unprocessed raw materials. There are many opportunities in Afghanistan to add value to raw materials and reduce waste during transportation through processing and packaging. As noted, outdated technology and lack of investment have resulted in Afghanistan being in a state of low technological development.

Traditional production methods, lack of post-harvest value addition and lack of access to market information are key factors limiting farmers' income and

agricultural exports in the country. Addressing the needs of basic agribusiness infrastructure will bring about major changes in Afghanistan's agricultural sector. Establishing agro-industrial parks can catalyze investment in agricultural infrastructure in partnership with the private and public sectors to provide farmers and traders with essential agricultural inputs and access to products, services and market information [25,26]. Another constraint to Afghan exports is the lack of functioning packing houses and cold storage facilities as well as refrigerated trucks that can meet international standards for selection, grading and packaging. Packaging can also add value to produce and reduce waste. Slow procedures and lack of storage facilities at Afghan customs during exports increase post-harvest losses [27,28].

Coordination of ongoing activities (avoid duplication/strengthen existing programs) is critical. Collaboration between stakeholders and beneficiaries is weak and collaboration is needed to strengthen the horticulture sector. Strengthening collaboration and coordination between the Department of Horticulture, the Afghan Agricultural Research Institute and the Department of Extension and Development regarding indirect funding of horticulture projects is critical. In fact, there has been no coordinated effort by stakeholders to revive export markets in the last ten years [29,30].

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