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RESEARCH PAPER

Economic Constraints and Production Challenges of Almond Growers in Samangan Province, Afghanistan

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ABSTRACT

This study investigates the challenges faced by almond farmers in Samangan province of Afghanistan. Through surveys of 60 farmers, the research identifies limitations across the production cycle, including pest management, lack of quality inputs, water issues, limited machinery, traditional harvesting methods, and inadequate storage facilities. Additionally, marketing challenges like limited buyer access and unfair pricing were reported. Weaknesses in local trade unions further hinder farmer support. Findings reveal marketing, production difficulties, and weak unions as the most pressing issues. The study recommends interventions such as improved harvesting techniques, disease-resistant varieties, sustainable water management, and farmer education. Post-harvest improvements like better storage, fairer market access, and stronger unions are also suggested. Increased government/NGO support was seen as crucial. These improvements hold the potential to significantly benefit Samangan's almond industry and its farmers.

HIGHLIGHTS

- This study examines economic constraints affecting almond growers in Samangan Province, Afghanistan, focusing on financial limitations, market access, and production challenges.
- Results show that limited credit access and high input costs significantly reduce almond productivity and farmer income.

Keywords: Almond, Production cycle, Marketing challenge, Constraints, Storage, Trade Union

The historical significance of almonds in the world, and Afghanistan's position on the Silk Road strongly suggests a long and potentially lucrative relationship between this crop and the country (Ahmed & Verma 2009; Verma 2014; Anonymous 2015; Gradziel 2017 and Wani & Bhat 2021). Afghanistan is a prominent producer of high-quality almonds, about half (48%) of this come from the Central Region (30% of the national total). The Northern Region contributes 29%, while the Western and Southern Regions each account for 10%. Hard-shell almonds, mostly shelled domestically, make up 75% of Afghan production (Sultani *et al*. 2021). Like other agricultural commodities in Afghanistan, the almond trade has faced challenges due to factors such as political instability, security issues, and the impact of environmental conditions (Anonymous, 2004). Almonds are the first fruit to flower in the spring, and the risk of frost damage during flowering or fruiting is a major problem. Early flowering, which can occur due to frost, is a factor that limits almond production. Most of the native almond species in Afghanistan flower early, do not self-fertilize, and as a result, have low yields. Additionally, these species bear fruit on young branches, causing the branches to bend. The country's hot and dry summer climate is conducive to almond cultivation (Anonymous, 2012). Despite the potential, several challenges hinder the growth

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of the almond industry in Afghanistan. Farmers are often unaware of the opportunities available to them, and there is a lack of solid market infrastructure. Additionally, most almond products are shipped under the name of other countries after being packaged. Addressing these challenges is crucial to unlocking the full potential of Afghanistan's almond industry. Almonds from Samangan Province are considered one of the country's export commodities with a global reputation for quality. Over the past five years during the Republic era, approximately 60% of this product was exported to foreign countries, while 40% was distributed in the domestic market. However, following the Taliban's control over Afghanistan due to the political crisis in the country, the export of these dried fruits to foreign countries declined. In the first year of the Taliban's rule, almond growers in Samangan province suffered significant losses. Nevertheless, this year, with a relatively moderate revival in dried fruit exports, almond yields have experienced a notable decrease due to severe cold during the three months of last year (Anonymous, 2023). Therefore, the present study attempts to explore the main problems and obstacles that farmers are faced with.

MATERIALS AND METHODS

This study aimed to explore the main problems and obstacles that farmers are faced with in all districts of Samangan province, Afghanistan, but the primary data for this research include center of the province were collected from three more districts such as Hazrat Sultan, Feroz Nakhchir, and Khuram and Sarbagh. From each district five villages selected and from each village four farmers through face-to-face interviewed. From 82 interviewed farmers (due to some technical miss understanding responds rejected) only 60 farmers for final selected, using questionnaires as the data collection tool. The secondary data were obtained from various sources, including the central statistical organization of Afghanistan, FAO, USAID, MAIL, MIT reports, national and international journals, theses, and websites. The target population for this study comprises smallholder almond farmers and their associated problems. To determine the sample size, the accessible population was stratified based on the size of almond orchards operated by each farmer, and divided into three strata as small, medium, and large farmers.

Data Collection

The present study's data collection instrument was developed through extensive review of relevant literature and socioeconomic characteristics and agricultural infrastructure of the region. Particularly, studies by (Anonymous 2014, Akubude & Nwaigwe 2016 and Anonymous 2022) were explicitly utilized in preparing the questionnaire of this study. The questionnaire included questions pertaining production-related problems, marketing channels and their problems, harvesting and post-harvesting losses, membership of trade unions (TU), and reasons for non-membership of TU. The questions were both open-ended and closed-ended and reliability established through a pre-test, which resulted in slight modifications to the questions. Data were collected in December, 2023 and it took approximately one hour to complete one questionnaire.

Constraint analysis

To understand the difficulties faced by almond farmers, researchers built a survey. This survey asked farmers about specific challenges they encounter in production, marketing, and involvement with trade unions (9, 12, and 19, respectively). The questions were clear-cut and direct. Drawing on previous research (Sarmin and Hasan 2020, Joel *et al.* 2018, Ijatuyi *et al.* 2017, Agada and Igbokwe 2015, and Dayo *et al.* 2008), It identified 40 potential obstacles that farmers might face. Through discussions with the farmers themselves, the most significant 40 challenges were chosen for the survey. Farmers were asked to rate each challenge on a scale of 0, 1, and 2, with 0 meaning "not a problem," 1 meaning "somewhat of a problem," and 2 meaning "a major problem"(Mahzabin, 2011). A total score was calculated for each farmer by adding up their individual ratings. Scores could range from 0 (no difficulties) to 120 (facing the most difficulties). Based on their scores, farmers were divided into three groups.

Constraint Facing Index (CFI) was computed using the following formula:

$$CFI = (C_{vi} \times 2) + (C_i \times 1) + (C_n \times 0)$$

Where,

CFI = Constraints Facing Index

C_{vi} = Number of respondents mentioned the extent of facing the constraint as very important

C_i = Number of respondents mentioned the extent of facing the constraint as important

C_n= Number of respondents mentioned the extent of facing the constraint as not important

Each constraint received a score between 0 and 180. A score of 0 indicated the constraint posed no difficulty to the farmers, while 180 meant it caused the most significant problems. It ranked the constraints based on these scores, with the highest score representing the most significant challenge. An open-ended question in the survey asked farmers to propose solutions to the identified constraints. The solutions were then ranked based on how many farmers mentioned them.

RESULTS AND DISCUSSION

Despite possessing significant potential in horticultural production, Afghanistan faces challenges stemming from inadequate infrastructure across the value chain, deficiencies in the cold chain system, non-compliance with standard product packing, and the absence of a certification system crucial for accessing emerging global markets. A thorough examination highlights the crucial need to increase primary farm production while also reducing post-harvest waste, as it plays a vital role in the daily livelihood of farmers. The majority of farms in Afghanistan are characterized by their small size, resulting in consistently low productivity levels. Farmers primarily cultivate crops to fulfill their own families' dietary requirements, while a minor portion of their produce is channeled into commercial markets, exacerbating the country's trade deficit (Muradi & Boz, 2018). A survey of Samangan, Afghanistan farmers (2023-24) identified pest & disease management as the top challenge (reported by 48 out of 60 farmers). Insufficient inputs (fertilizers, seedlings, medication) and lack of proper training ranked second and third, respectively. Water management issues (insufficient irrigation water, traditional practices) were also significant concerns. Other challenges included high input costs, limited machinery access (tractor rentals), problems with water canals, and limited access to credit in Table 1. It categorizes these issues into three levels of importance, such as very important, important, not important, constraint facing index (CFI), and rank-ordered. Problems are considered the most significant barriers to production. Important issues are deemed important but slightly less critical than the "very important" category, and the last is not important, which problems are considered less significant or not major concerns for most farmers. In this finding, pest and disease management was the most important challenge, reported by 48 farmers, and CFI (106) ranked the first order. Insects, diseases, and weeds harm food crops, reducing harvests and putting food supplies at risk (Sarmin and Hasan, 2020). The second challenge of almond production in Samangan was insufficient inputs like fertilizers, seedlings, medication, and lack of training in farming techniques and management, highlighted by 46 farmers as "very important", and 10 as

Table 1: Agricultural production problems in Samangan, 2023-24

Problems of production	Very important	Important	Not important	CFI*	Rank Order
Incident of diseases, fungi, insects, etc.	48	10	2	106	1th
Insufficient inputs (fertilizer, sapling, medicine, etc)	46	11	3	103	2nd
Lack of loan to buy inputs	15	32	13	62	9th
High rent of tractor and other tools	25	30	5	80	7th
High price of fertilizer, sapling, medicine, etc.	35	16	9	86	6th
Lack of training in farming techniques and management	46	10	4	102	3rd
Insufficient water for irrigation	43	12	5	98	4th
Traditional irrigation	34	21	5	89	5th
Problem in water canals	29	20	11	78	8th

CFI = Constraint Facing Index.*

"important," with CFI (103 and 102), respectively, ordering the 2nd and 3rd of the rank. This eventually drives up food prices, putting food out of reach for the most vulnerable (Sarmin, 2019). In the case of water management, insufficient water for irrigation was a critical issue for 43 farmers, categorized as "very important" for 43, "important" for 12, and "not important" for 5 (CFI 98 ranked the 4th order). For traditional irrigation practices, 34 farmers consider them a challenge ("very important" for 34, "important" for 21, and "not important" for 5) with CFI 89 ranked in the 5th order. Other challenges like the high price of fertilizers, saplings, and medication are a concern for 35 farmers, categorized as " very important" for 35, "important" for 16, and "not important" for 9 (CFI 86 ranked the 6th order). In terms of machinery and equipment, the high rent of tractors and other tools is a concern for 25 farmers, all categorized as Important (CFI 80, ranked in 7th order). Problems in water canals pose ("very important" for 29, "important" for 20, and "not important" for 11) CFI 78 ranked the 8th order. Financial constraints and lack of access to loans for purchasing inputs is a significant concern for 15 farmers, categorized as "important" by 32 and "not important" by 13(CFI 62 ranked the 9th order).

The major difficulties faced by farmers in acquiring better quality almond varieties and saplings in Samangan, during the 2023-24. It specifies the specific challenge faced by the farmers in Table 2. Surprisingly high rate of several concerns were raised by farmers such as a lack of "trust for real sapling" (31.1 per cent, representing 19 farmers) suggests concerns about the genuineness or quality of available saplings, ranked in the first order. "Lack of control by the government" (20 per cent, representing 12 farmers) indicates a perceived need for stricter regulations or quality assurance measures, ranked in the 2nd order. In terms of infrastructure issues, "lack of standard colonies" (15.6 per cent, representing 9 farmers and ranked in the 3rd order) suggests a potential absence of designated areas for cultivating or distributing high-quality saplings. Other reported challenges like a smaller number of farmers mentioned that lack of new varieties (11.1 per cent, representing 7 farmers, ranked in the 4th order), highlighting a desire for access to improved cultivars. Weathering impact (8.9 per cent, representing 5 farmers, and ranked in the 5th order) suggests concerns about the impact of weather conditions on sapling survival. Limited factors related to resource availability, only a few farmers reported issues with less availability of chemical and manure fertilizer (6.7 per cent, representing 4 farmers, and ranked in 6th order). Less availability of water (4.4 per cent, representing 3 farmers, and ranked in the 7th order). Finally, indicated a single farmer (2.2 per cent, ranked in the 8th order) mentioned the "lack of agricultural research and extension farms", suggesting a potential need for improved knowledge dissemination and support services. While a significant portion of the surveyed farmers reported no difficulty acquiring improved saplings, the data also suggests several noteworthy challenges. Addressing concerns about trust, government oversight, and the lack of standardized saplings or access to new varieties is crucial for ensuring farmers have access to high-quality planting materials.

Table 2: Challenges in accessing improved almond varieties and quality saplings in Samangan, 2023-24

Particular	Number	Percent	Rank order
Trust for real sapling	19	31.1	1st
Lack of control by the government	12	20.0	2nd
Lack of standard colonies	9	15.6	3rd
Lack of new varieties	7	11.1	4th
Weathering impact	5	8.9	5th
Less availability of chemical and manure fertilizer	4	6.7	6th
Less availability of water	3	4.4	7th
Lack of agricultural research and extension farms	1	2.2	8th
Total sample size	60	100	-

Table 3 highlights the challenges faced by farmers during almond harvesting in Samangan, 2023–24. The majority of farmers (27, representing 45 per cent, and ranked in the 1st order) rely on traditional techniques, which might be less efficient and potentially lead to product damage. A significant portion of farmers (19, representing 31.7 per cent, and ranked in the 2nd order) reported branch breaking during harvest, possibly due to improper techniques or inadequate tools. A smaller number of farmers mentioned that there is a lack of harvesting tools (8 farmers, representing 13.3 per cent, and

ranked in the 3rd order), highlighting the need for proper equipment. Limited workforce during harvest (3 farmers, representing 5 per cent, and ranked in the 4th order), suggesting potential labor constraints. Other unspecified challenges (2 farmers, representing 3.3 per cent, and ranked in the 5th order). Only one farmer (representing 1.7 per cent, and ranked in the last or 6th order) reported "no problem" during harvest, indicating that challenges are widespread. The table suggests that almond farmers in Samangan face several obstacles during harvest, potentially impacting efficiency and fruit quality. Reliance on traditional methods and lack of proper tools can lead to damage and post-harvest losses. Labor shortages further complicate the harvesting process. Addressing these challenges is crucial for improving harvest efficiency and minimizing losses. The need for interventions aimed at modernizing harvesting practices in Samangan. This could involve introducing training programs on improved techniques, facilitating access to appropriate tools and equipment, and exploring solutions to address labor shortages during peak harvest times.

Table 3: Challenges faced during almond harvest in Samangan, 2023-24

Particular	Fr.	Percent	Rank order
Traditional harvesting	27	45.0	1st
Branch breaking	19	31.7	2nd
Lack of harvesting tools	8	13.3	3rd
Fewer workers on harvesting time	3	5.0	4th
Other	2	3.3	5th
No problem	1	1.7	6th
Total	60	100	—

The major challenges faced with storing almond products in Samangan, in agricultural year 2023-24. It specifies the storage issue faced by the farmers, indicates in Table 4. The majority of farmers (83.3 per cent, representing 50 farmers, and ranked in the 1st order) reported a lack of "standard storage" facilities. This suggests inadequate standard storage infrastructure, potentially leading to spoilage and post-harvest losses. A smaller portion of farmers mentioned that there is the absence of a "perfect market" (6.7 per cent, representing 4 farmers, and ranked in the 2nd order), possibly indicating difficulties in finding reliable buyers or fair prices. "Economic problems" (5 per cent, representing 3 farmers, and ranked in the 3rd order), potentially refer to financial constraints hindering investment in proper storage solutions. "Black coloring" (3.3 per cent, representing 2 farmers, and ranked in the 4th order), which might be a specific storage-related concern requiring further investigation. Only one farmer (1.7 per cent, ranked in the 5th order) reported having "no problem" with storage, indicating that proper storage facilities are not widely available. It suggests that the lack of proper storage facilities is a significant challenge for almond farmers in Samangan. This can lead to spoilage, reduced product quality, and potential income losses for farmers. Addressing the issue of inadequate storage infrastructure is crucial for improving post-harvest management and ensuring the economic viability of almond production. Overall, the table highlights the need for interventions aimed at improving storage facilities and infrastructure for almond farmers in Samangan. This could involve promoting the construction of proper storage units, providing access to financing for storage solutions, and exploring alternative storage methods.

Table 4: Major Storage issues faced by almond farmers in Samangan, 2023-24

Particular	Number	Percent	Rank Order
There is no standard storage	50	83.3	1st
There is no perfect market	4	6.7	2nd
Economic problem	3	5.0	3rd
Black coloring	2	3.3	4th
No problem	1	1.7	5th
Total sample size	60	100.0	—

Table 5 summarizes the opinions of almond farmers in Samangan, regarding the level satisfaction with the existing auction system used for selling almonds during the 2023-24. It is categorized based on how satisfied the farmers are with the auction system. The table indicates that a moderate portion of farmers (43.7 per cent, representing 26 farmers) agree with the existing system, suggesting they are satisfied with it. A significant portion of farmers (36.6 per cent, representing 22 farmers) disagree with the system, indicating dissatisfaction. Some farmers (19.7 per cent, representing 12 farmers) expressed a neutral opinion, implying they might

not have strong feelings either way. The mean value (2.233) likely reflects the average score assigned to the level of satisfaction (assuming 1 for "agree", 0 for "disagree", and 0.5 for "normal"). A higher mean closer to 1 indicates greater overall satisfaction and its standard deviation value (3.601) represents the spread of the data around the mean. A larger standard deviation suggests a wider range of opinions among the farmers. It suggests a divided perspective among farmers regarding the auction system. Nearly the same number of farmers expressed satisfaction (43.7 per cent) and dissatisfaction (36.6 per cent) with the system. A notable portion of farmers (19.7 per cent) remained neutral, indicating a lack of strong opinions about the current system. Understanding the specific concerns of dissatisfied farmers and exploring potential improvements to the system could be crucial for ensuring a fair and efficient market for almond producers.

Table 5: Farmers satisfaction with the existing auction system in Samangan, 2023-24

Level of satisfaction	Number	Per cent	Mean	Standard deviation
Agree	26	43.7	2.233	3.601
Disagree	22	36.6		
Normal	12	19.7		
Total sample size	60	100.0		

Almond Marketing Problems highlights the major challenges faced by farmers in Samangan, when they sell their products during 2023–24. In Table 6 noted that financial constraints in terms of lack of loans are the most significant challenge, which is lack of or insufficient access to loans for marketing purposes, reported as "very important" by 55 farmers, important by 4 farmers, and only 1 farmer considering it "not important. CFI shows the highest level at 114, ranking it in the first position order. Lack of training in sorting, grading, and packing practices was a concern for 36 farmers ("very important") and 4 ("not important"), with CFI (92) ranked in the 2nd order. Also, the lack of sufficient packaging materials like cartons, plastics, and bags was a concern for 36 farmers ("very important") and 5 ("not important"), with CFI (93) ranked 3rd order. The potential for lower selling prices in external markets due to weak grading, sorting, and packing is a concern for 34 farmers ("very important") and 4 ("not important"), with CFI (90) ranked in the 4th order. In terms of market dynamics and knowledge, many farmers (28 "very important" and 27 "important") feel they lack adequate negotiation skills when dealing with buyers, with CFI (83) ranked in 5th order. The presence of middlemen who offer lower prices is a challenge for 29 farmers ("very important") and 7 ("not important"); CFI (82) got the 6th ranked order position. Additional taxes

Table 6: Almond farmers marketing problems in Samangan, 2023-24

Marketing problems	Very important	Important	Not important	CFI*	Rank Order
Lack/insufficient loan for marketing of almond products	55	4	1	114	1st
Lack storage or warehouse for almond products	24	22	14	70	11th
Lack/insufficient less price rent vehicles for transporting	28	17	15	73	9th
Farmers weakness in bargains	28	27	5	83	5th
Lack/insufficient training about sorting, grading, packing….	36	20	4	92	2nd
Lack of (carton, plastics, bags, etc.) for transporting and selling	36	19	5	91	3rd
Lack of processing tools	15	29	16	59	12th
Availabilities of middle-men, local traders who buy lower prices	29	24	7	82	6th
Less price selling in case of weak grading, sorting, packing in external markets	34	22	4	90	4th
Taking illegal money by police and others during transporting and exporting	20	31	9	71	10th
Problems when taking exporting permission letters (tax, export certificates, etc.)	26	22	12	74	8th
More taxes by Pakistan boarders on Afghanistan almond products	30	20	10	80	7th

imposed by Pakistani border authorities on Afghan almond products were a concern for 30 farmers ("very important") and 10 ("not important"), with CFI (80) ranked in 7th order. There were complexities and challenges associated with obtaining export permission letters for taxes and other certificates faced by 26 farmers ("very important") and 12 ("not important"), with CFI (74) ranked in 8th order. In terms of transportation issues, lack of or insufficient funds to rent vehicles for transportation was a challenge for 28 farmers ("very important") and for 15 farmers was ("not important"), with CFI (73) ordered rank in 9th. Similarly, in terms of regulatory and logistical challenges, the potential for unauthorized fees or bribes demanded by police or others during transportation and export was a concern for 20 farmers ("very important") but observed to be less significant by 31 ("important") and 9 ("not important"), with CFI (70) ranked in 10th order. Lack of infrastructure and resources were the other challenges faced by farmers in storage facilities. The absence of proper storage or warehouses was a major concern, with 24 farmers considering it "very important,"22 farmers deeming it important, and 14 deeming it not t important, with CFI (70) ranked in 11th order. Finally, the absence of processing tools was another challenge for 15 farmers ("very important") but is considered less significant by 29 ("important") and 16 ("not important"), with CFI (59) ranked in 12th order.

Table 7 summarizes the estimated losses of almonds experienced by farmers in Samangan, during the 2023-24 harvest and post-harvest stages. This specifies the stage at which the almond loss occurred, indicates the number of farmers who reported losses at each stage, estimated quantity of almonds lost in kilograms (Kg) at each stage, displays the percentage of the total almond loss (19.6 Kg) that occurred at each stage, ranks the stages based on the percentage of loss, with 1st representing the stage with the highest loss. Almond farmers experience losses at various stages, from harvest to storage. The greatest loss (42.7 per cent) is reported during harvest (15 farmers, 8.4 Kg). This could be due to factors like improper harvesting techniques or fruit damage. Losses occur during handling and loading (15 farmers, 4.2 Kg, 22 per cent) and transportation (14 farmers, 4.4 Kg, 22 per cent). This might be due to inadequate handling practices or improper storage conditions during transportation. Losses in storage (14 farmers, 2.6 Kg, 13.4 per cent) are also a concern, highlighting the need for proper storage facilities. It suggests that significant almond losses occur throughout the harvest and post-harvest stages, potentially impacting farmer income. Addressing losses during harvest, handling or loading, and transportation is crucial for improving almond production efficiency. Investing in proper storage facilities can help minimize post-harvest losses. The importance of implementing strategies to reduce post-harvest losses across the almond production chain in Samangan, could involve training farmers on proper harvesting techniques, improving handling and transportation practices, and investing in better storage facilities.

Table 7: Estimated post-harvest losses of almonds in Samangan, (2023-24)

Harvest/Post-harvest	Number	Qty loss (Kg)	Per cent	Rank Order
During harvest	15	8.4	42.7	1st
During the handling and loading	15	4.2	22.0	2nd
During Transportation	14	4.4	22.0	3rd
In storage	14	2.6	13.4	5th
No answered	2	0	0.0	6th
Total in sample size	60	19.6	100	—

Table 8 appears to be a breakdown of various challenges and problems faced by a group or organization referred to as a local organization or institution in Samangan during 2023–24. The finding focused on internal and external weaknesses, and it indicates with constraint-facing index score calculated based on the number of farmers who ranked the problem as very important and important. Higher scores indicate a greater perceived constraint and rank the challenges based on their CFI score, with 1 being the most severe problem according to the farmers. In the case of internal weaknesses, weak management and lack of expertise were the most significant challenges, with 54 out of 60 farmers reporting as "very important", 4 as "important", and only 2 finding "not important", with CFI 112 ranked in the first order. It suggests a need for improved leadership, governance, and professional skills within the TUs. Similarly, the TUs themselves seem to lack sufficient

financial resources, as reported by 49 farmers ("very important"), 7 farmers as "important", and only 4 finding it "not important" with CFI 105, ranked in the second order, and insufficient training for farmers, 41 farmers agreed very important and 2 only not important, with CFI 99, ranked in the 3rd order are also considered major problems. This could hinder their ability to invest in necessary infrastructure and support for members. In terms of external weakness, insufficient help from the government and NGOs is a concern for 39 farmers ("very important"), 19 farmers reported "important", and only 2 found "not important", with CFI 97 ranked in the 4th order. This suggests a need for increased collaboration and support from external actors. Further, a lack of confidence and sense of responsibility among members is a concern for 38 farmers ("very important"), 20 farmers reported "important", and only 2 found it "not important" CFI 88 ranked in the 5th order. This could affect the TUs' overall effectiveness and sustainability. Lack of access to loans 38 farmers agreed very important and 4 only not important, with CFI 94, ranked in the 6th order. Limited access to timely and affordable agricultural inputs 36 farmers agreed very important and 4 only not important, with CFI 93, ranked in the 7th order. Also, the lack of essential resources like machinery, warehouses, and vehicles is a concern for 32 farmers ("very important"), 26 as "important", and only 2 finding it "not important", with CFI 90 ranked in the 8th order. This limits the TUs' capacity to provide effective services to members. Insufficient communication between the leadership and members was another challenge for 33 farmers ("very important"), 23 as "important," and 4 found it "not important", with CFI 89 ranked in the 9th order. This could lead to mistrust, and disengagement, and hinder collective action. Insufficient support materials for transporting and selling products, 35 farmers agreed very important and 7 formers not important with CFI 88, ranked in the 10th order. The lack of clear policies and programs specifically focused on rural development is a concern for 32 farmers ("very important"), 22 farmers reported "important", and 6 finding it "not important", with CFI 86 ranked in the 11th order. This highlights the need for targeted interventions and strategic support for the agricultural sector especially for almond growers. It suggests that trade unions in Samangan face numerous challenges that hinder their effectiveness in supporting farmers. Addressing the core issues of weak leadership, lack of resources, and inadequate communication is crucial for improving the functioning of trade unions. Providing sufficient training, financial support, and access to necessary resources are essential for empowering farmers. Overall, the table provides valuable insights into the current state of trade unions in Samangan and the challenges they face in serving their members. Addressing these issues effectively could significantly improve the trade unions' ability to support almond farmers and contribute to the development of the agricultural sector.

Table 8: Current problems faced by Trade Unions in Samangan, 2023-24

Challenges and problems	Very important	Important	Not important	CFI*	Rank Order
Weak management and lack of expert	54	4	2	112	1st
Lack of investment/wealth	49	7	4	105	2nd
Lack/insufficient of loans for farmers	38	18	4	94	6th
Lack/insufficient wealth, like machinery, warehouses, vehicles, etc.	32	26	2	90	8th
Insufficient training for farmers	41	17	2	99	3rd
Weak communication between the head and members of TU	33	23	4	89	9th
Lack of (kartan, plastics, bags, etc.) for transporting and selling	35	18	7	88	10th
Less confidence and responsibilities between members	38	20	2	96	5th
Insufficient help from the government and NGOs	39	19	2	97	4th
Lack of clear policies and programs for rural developments	32	22	6	86	11th
Lack or fewer inputs (nursery, fertilizer, medicine) on time and lower prices	36	21	4	93	7th

Table 9 presents the perceptions of almond farmers regarding the factors contributing to low productivity during 2023-24 in Samangan. It lists various challenges and the number of farmers who identified each one, along with the corresponding percentages, and ranks the factors based on the percentage of farmers reporting them, with 1 representing the most common cause. Findings show that there were the top three perceived challenges like weathering impact (cold weathering and more temperature and sunlight during flowering time), diseases, fungi and insects, and over-irrigation. Factor which was ranked as the most significant challenge, with 19 farmers (31.7 per cent) attributing low productivity to unfavorable weather conditions. A significant portion of farmers (21.7 per cent, representing 13 farmers, and ranked in the 2nd order) reported "incidents of diseases, fungi, insects" as a major concern, highlighting the need for proper pest and disease management strategies. Although less frequent, 7 farmers (11.7 per cent, ranked in the 3rd order) identified over-irrigation as a contributing factor, potentially leading to water mis-management and negative impacts on soil health. Limited access to resources like lack of a perfect market (10 per cent, representing 6 farmers, and ranked in the 4th order) suggests challenges in finding reliable buyers or obtaining fair prices. The lack of new varieties (8.3 per cent, representing 5 farmers, and ranked in the 5th order) indicates a potential need for introducing higher-yielding or disease-resistant almond varieties. Less water availability (6.6 per cent, representing 4 farmers, and ranked in the 6th order) highlights the importance of water management practices in a potentially arid region. Limited knowledge and resources indicated that lack of manure and fertilizer (5 per cent, representing 3 farmers, and ranked in the 7th order) suggests insufficient access to essential nutrients for the crops and lack of professional knowledge (3.3 per cent, representing 2 farmers, and ranked in the 8th order) points towards a potential need for providing farmers with training on improved agricultural techniques. Economic problems (1.7 per cent, representing 1 farmer, and ranked in the 9th order) suggest that financial limitations might hinder farmers' ability to invest in necessary resources or implement best practices. It suggests that multiple factors contribute to the low productivity of almond crops in Samangan. Addressing environmental challenges like harsh weather conditions and pest infestations is crucial. Improving agricultural practices through proper water management, providing access to new varieties, and ensuring essential resources like fertilizers are available can significantly impact yields. Investing in farmer education and training on modern agricultural techniques and resource management could improve overall productivity. Overall, the table highlights the need for a comprehensive approach to address the various challenges affecting almond productivity in Samangan. This could involve implementing strategies to mitigate the impact of environmental factors, promoting sustainable agricultural practices, providing access to knowledge and resources, and exploring solutions to address market-related challenges faced by farmers.

Table 9: Factors contributing to low almond productivity in Samangan, 2023-24

Particular	Number	Percent	Rank order
Weathering impact	19	31.7	1st
Incident of diseases, fungi, insects	13	21.7	2nd
Over irrigation	7	11.7	3rd
Lack of perfect market	6	10.0	4th
Lack of new varieties	5	8.3	5th
Less water availability	4	6.6	6th
Lack of manure and fertilizer	3	5	7th
Lack of professional knowledge	2	3.3	8th
Economic problem	1	1.7	9th
Total sample size	60	100.0	—

Table 10 explores the reasons why some almond farmers in Samangan, Afghanistan, do not participate in trade unions during 2023–24. It presents various reasons and shows the level of agreement among non-members with each statement. It is listed the explanations given by farmers for not belonging to a trade union, then shows the number of farmers who strongly agree with these explanations, who agree with the explanations, and who disagree or say the reasons were unimportant, constraint faced index (CFI), and the ranked order by them. Farmers who are not members of trade unions cite various factors for their decision. Lack of transparency or sufficient information about their activities (90

Table 10: Reasons for non-membership in Trade Unions among almond farmers in Samangan, 2023-24

Reasons	Very important	Important	Not important	CFI*	Rank Order
Does not have a profit	41	9	10	91	4th
I do not have sufficient information to start	45	9	6	99	1th
I have not believed the chief of Trade Union	44	10	6	98	2nd
Trade Union is in the hand of large landholders	44	7	9	95	3rd
Chief of the Trade Union did not accept my membership	28	19	13	75	6th
Government for its policy use this Trade Union	25	19	16	60	8th
I have a National Unity membership, so no need to take membership in TU	31	17	12	79	5th
I have plan to take the membership of Trade Union	30	13	17	73	7th

percent, or 54 farmers) was very important, with CFI (99) ranked in the first order. Ninety per cent of farmers, or 54, strongly agree or agree that the trade union's leadership is untrustworthy, and CFI (98) is ranked second in terms of trustworthiness among non-members. Perceive the trade union to be controlled by large landowners (85 per cent or 51 farmers strongly agree/agree), with CFI (95), ranked 3rd in order. Some formers perceived a lack of benefits, and a significant portion of non-members believe trade unions do not provide a profit or significant benefit (83.3 per cent or 50 farmers very important/important) with CFI (91), ranked in the 4th order. A few indicated belonging to another organization (National Unity) and not needing trade union membership (80 percent or 48 farmers agree/strongly agree), with CFI (79) ranked in the 5th order position. Some non-members mentioned that their membership application was rejected (78.3 per cent or 47 farmers strongly agree/agree), with CFI (75), ranked in the 6th order. Interestingly, a notable portion of non-members (71.6 percent, or 43 farmers who strongly agree and agree) plan to join a trade union in the future, with CFI (73), ranked 7th in the order. The government uses trade unions for its motives (73.3 per cent or 44 farmers strongly agree/agree), with CFI (60), ranked in the 8th order. The table suggests that several factors hinder farmer participation in trade unions. Perceived lack of value and potential misuse of resources seem to be significant concerns. Distrust in leadership and a lack of transparency further discourage farmers from joining. Despite the concerns, a considerable number of non-members are open to joining trade unions in the future, indicating a potential for increased membership.

CONCLUSION

The above study revealed challenges throughout the production process, pest management, lack of quality inputs (fertilizers, training), and water issues were the biggest hurdles. Farmers also struggle with limited machinery, traditional harvesting methods, and inadequate storage facilities. Many are dissatisfied with the current auction system and face marketing challenges like limited access to loans and bargaining power. These factors contribute to significant almond losses across harvest, storage, and transportation. The study also identified weaknesses in local trade unions, including weak leadership and lack of resources. Many farmers avoid these unions due to perceived lack of transparency and benefits. The study recommends various ways for improvement in Samangan's almond sector; include introducing better harvesting techniques and disease-resistant varieties, promoting sustainable water management, and educating farmers on resource use. Post-harvest improvements can come from better storage facilities, improved handling practices, and stronger market access through reliable buyers and fair pricing. Finally, strengthening institutional support through effective trade unions and increased government or NGOs resources, trainings, and financial aids can significantly benefit Samangan's almond industry and its farmers.

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