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PROBLEMS IN SUPPLY CHAIN OF POMEGRANATE (*Punica Granatum*) IN ARGHANDAB DISTRICT, KANDAHAR PROVINCE, AFGHANISTAN

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Pomegranate plant has been grown since ancient times for its delicious fruits and as an ornamental garden for its red, orange or occasionally, creamy yellow flowers. Pomegranate (*Punica granatum L.)* belongs to the Punicaceae family. It is also known as the Chinese Apple or Carthage or Apple with many seeds. About 12 per cent of the total land in Afghanistan is arable and less than 6 per cent currently is cultivated. Agriculture is the backbone of the Afghan economy; according to the statistical book FY (2017-18) the contribution agriculture to the country Gross Domestic Product (GDP) was 20.9 per cent while the labor force engaged in this sector is around 60.8 per cent. The annual growth rate of pomegranate production in Afghanistan was predicted at 2.9 per cent (Fitrat, 2014). Pomegranate contribute of the total population of Afghanistan was about (2) per cent to the total horticultural production in Afghanistan. The local varieties grown in the main production areas of Kandahar province are known for their high quality and productivity. Different varieties of pomegranates are produced in Afghanistan and supplied to the local markets. Through the maturity time of the crop varies according to the climatic conditions, usually the fruit comes into the market during summer and continues into the fall season. The Agriculture sector is entirely run by private enterprise, including farmers, cooperatives, inputs suppliers, herders, agribusiness processors, and exporters. Kandahar province is recognized worldwide for its high quality pomegranate production especially the Kandahar varieties, which are highly preferred by national and international consumers. Of the total land under pomegranate cultivation in the country, Kandahar share is about 36.7

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per cent with 39.5 per cent of the total national production. But due to poor orchard management practices, careless production, widespread pest and diseases, lack of quality inputs and lack of technical and financial support to the farmers both quality and quantity of pomegranate is badly affected and gradually decreasing.

Kandahar is one of the thirty-four provinces of Afghanistan, located in the Southern part of the country next to Pakistan. The climate of Kandahar is that of a true desert. The province receives only (7 to 8 inches) of rain per year, with relative humidity averaging just 38 per cent. The primary data for the study was collected from the respondents by personal interview method using pre-tested schedule. Convenience sampling technique is used for the survey. The sample size was 120 respondents (80 growers and 40 traders). The secondary data was collected from research paper, books, government publication and statistics, journal, provincial department of Agriculture and Ministry of Agriculture, Irrigation and Livestock (MAIL) of Afghanistan.

Garrett's Ranking Technique for ranking the problems in the supply chain

The supply chain of pomegranate for domestic market is 1- production, 2- collection farmer/ traders or cooperative, 3- Kandahar market, 4- Whole seller, 5- Super market or retailer, 6- consumer. The supply chain of pomegranate for foreign market is 1- production, 2- collection farmer/trader, 3- Farmers marketing cooperatives, 4- Foreign supper market/any other market, 5- Foreign consumer. The study of constraints faced by farmers and traders is one of the important objectives of the study. The respondents were asked to rank the problems in production, processing, and marketing of pomegranate and these ranks were converted into scores by referring to Garrets table. In the study, Garret's ranking technique was used to analyze the constraints of the pomegranate supply chain. The order of the merit given by the respondents was changed into ranks by the using the formula.

$$\text{Percent Position} = \frac{100(Rij-0.5)}{Nj}$$

Where: Rij=Rank given for i^{th} item by j^{th} respondent

Nj= Number of item ranked by i^{th} respondent

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Table 1. Problems of the supply chain faced by farmers

	1	2	3	4	5	6	7	8	9
1. Water scarcity & Drought									
2. Limited capital									
3. Pests & Diseases									
4. Lack of government support									
5. Lack of market									
6. Lack of infrastructure									
7. High cost of Transportation									
8. Lack of quality inputs (Machineries, Pesticides, Fertilizers)									
9. Lack of technical guidance									

Table 2. Garrett's Ranking Technique for ranking the problems in the supply chain

No	Problems	Garrett's Mean Score	Rank
1	Water scarcity & Drought	74.7	1
2	Limited capital	74.2	2
3	Pests & Diseases	71.6	3
4	Lack of government support	70.3	4
5	Lack of market	69.5	5
6	Lack of infrastructure	69.3	6
7	High cost of Transportation	67.8	7
8	Lack of quality inputs (Machineries, Pesticides, Fertilizers)	65.4	8
9	Lack of technical guidance	65.3	9

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From the above-mentioned tables, it is indicated that producing pomegranates, farmers faced with many constraints. These constraints/problems are presented in the table (1) and table (2). The list of problems faced by the farmers in the production of pomegranate in the study area was based on the farmers asked to rank the problems in the order of importance. The farmers were asked to rank the problems in order of importance so rated problems were analyzed by using Garrett's ranking technique. The first important problem was found Water scarcity & Drought with a mean score (74.7). Drought which leads to a shortage of water and which again leads to a gradual decrease in the quantity and quality of the produce. Drought is the main problem in Arghandab and Dand districts. The farmers say

the underground water level in Arghandab district has significantly plummeted as a result of the prolonged dry spell and water in Karez systems reduced by 75 per cent. The second most important problem was Limited capital or non-availability of financial support a mean score (74.2). Due to this problems, the farmers have to get money from traders in advance in return they sell the pomegranates to the same traders by very cheap price. Pests & Diseases with mean score of (71.6), Lack of government support with mean score of (70.3), Lack of market with mean score of (69.5), Lack of infrastructure with mean score of (69.3), High cost of Transportation with mean score of (67.8), Lack of quality inputs (Machineries, Pesticides, Fertilizers) with mean score of (65.4) and Lack of technical guidance with mean score of (65.3).

Pomegranate fruit is considered as the suitable fruit for the processing and utilization due to its excellent flavor, color, physic-chemical constitution and therapeutic properties. The pomegranate supply chain management has played important role in the increased consumption and utilization of pomegranate. The most important problem in supply chain of pomegranate in Arghandab district was Water scarcity & Drought followed of Limited capital, Pests & Diseases, Lack of government support, Lack of market, Lack of infrastructure, High cost of Transportation, Lack of quality inputs (Machineries, Pesticides, Fertilizers) and Lack of technical guidance. Therefore, it is important that the government and other responsible bodies should consider the following points.

Association and NGOs need to be more involved by providing technical assistance for pomegranate supply chain management.

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Helping the pomegranate growers have access to modern technology to increase quality in production, processing and sorting according to the needs of the international market. It means the government can use both regulatory tools and technological tools to ensure the standardized quality of pomegranates beginning with the first stages.

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