



African Journal of Biological Sciences



Challenges faced by farmers while growing High-Density apples; A study on Districts Baramulla and Budgam

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Abstract:

With 44.5 million metric tons, China tops the list of apple production in the world. After China, the United States, Turkey, Poland and India are the 5 major producers of Apple in the world. The UT of Jammu and Kashmir, Himachal Pradesh and Uttarakhand produces 95% of the apples in whole production in India. With 22.76 million metric tons, India's position stands 5th in the production of apples. The UT of Jammu and Kashmir tops the list of states for apple production with almost 70%. Ultra-high density was introduced 12 years ago and the results are surprising in the production of Apple. District Baramulla has 95000 (old varieties) and 31 (ultra-high density) growers of apple and District Budgam has 59329 (old varieties) and 109 (ultra-high density) growers of apple (Hort.Dept.). Juice is the main reason for the production of apples in the world. The paper tries to explain how important ultra high-density apple varieties are for the orchardists of Jammu and Kashmir and the challenges faced by apple growers, Rank wise challenges, with the help of the Garrett Ranking Method.

Key Words: Challenges, India, Rank wise, Ultra High Density apple, UT of J&K,

Introduction:

The population of China has increased day by day and the land for the cultivation of apples has decreased with the passing days. China not only dominates in productivity but also the export of fresh apples in the world. In forging trade, the apple is the main and most competitive fruit for China. From empirical knowledge, growers of apples need regular productivity. For high and regular productivity, it needs good fertilizers, which are available to the apple growers of China easily (Na, W., et al., 2016). After the adoption of ultra-high density apples in the UT of Jammu and Kashmir, the productivity has increased more than 53.6 metric tons and labor to 676 days. High density apples give fruit after two years of adaptation and the maturity is the 4th year after establishment. M9 is the most favorable Rootstock of the ultra-high density apple growers. After the introduction of high density, apple productivity has increased from 8.0 metric tons per hectare to 61.6 metric tons per hectare. Labour has increased, whether skilled or unskilled, from 125 days to 801 days per hectare (Wani, M. H., et al., 2021). The problem of replanting is often these days, for two reasons. One is planting some varieties without knowledge and the second is fake varieties which a grower does not need. An apple grower needs more than one variety due to pollination of plants. The ultra-high density Apple plant is a commercial plant and replanting means that the maturity period is from 5 to 8 years. It will affect its profits and work like old varieties of apple (Singh, N., et al., 2017). Horticulture of Jammu and Kashmir has the capacity to disguise unemployment. The apple is the main fruit of the Horticulture sector of the UT of Jammu and Kashmir. The starting cost of adopting an ultra-high density apple is very high and, after that, subsidies are the main issues of concern.

Literature Review:

The apple belongs to the Rosaceae family in pre-historical times and that is why it needs minimal temperature. Ultra-high density apple varieties like Jona Gold, Red Braeburn, Elstar, Red Volex, Gala Mat, Gala Redlum etc. need degrees below 18 degrees Celsius (Quyoom, S. et al., 2022). In the last decade, the apple sector of India has shown significant growth with the help of ultra-high-density apples. The production of apples at a high density has increased from 11.43 metric tons in the old variety to 49.55 metric tons per hectare in Jammu and Kashmir (Bakhtaver, H et al., 2020). The apple is growing in 9 out of 12 districts and is the fastest growing fruit in the state of Himachal Pradesh. Horticulture of Himachal Pradesh is an important player in economic growth. That is why it is known as the “Fruit Bowl of the Nation ”. The best quality apples are found in Himachal Pradesh. Apple has improved the life of the rural population by giving employment and a rise in per-capita income for the state (Wani, F. A., & Songara, M., 2018). Without soil, a plant cannot grow; it is the basic need for a plant to grow. As compared to other orchards, the soil of ultra-high density is full of all micro-nutrients (Maqbool, M., et al., 2018).99% of apples grown in Kullu district of Himachal Pradesh state for sale, so the apple growers can earn money. For selling, a channel of product has been adopted by the apple growers of Kullu district and the channel is producer-whole seller-consumer (Sharma, I. & Galleria, A., 2020). The high establishment cost of ultra-high density apples is a challenging factor for apple growers, and the result is that 95% of apple growers opt for old varieties of apple. The old variety apple plant costs between 10–30 rupees as compared to the ultra-high

density apple plant that costs 500 rupees and after the subsidy of 50%, it costs 250 rupees for a grower (Bakhtaver, H et al., 2020). Apple is the main fruit of Himachal Pradesh and the main districts are Shimla and Kullu, which face the problems of skilled and unskilled labor, on-time loans from banks, cold storage, lack of transport, lack of irrigation facilities, shortage of labor and lack of market knowledge (Wani, F.A., & Songara, M., 2019). Mite insects are common in ultra-high density apples in August and September during the time of harvest. It is important to spray pesticides and insecticides immediately after the harvest. Mite insects can attack ultra-high density apples quickly as compared to old varieties of apples (Khursheed, S., et al., 2020).

Objectives:

To examine that Subsidy and interest rate are the big hindrances in adopting ultra high density apple in both districts of Baramulla and Budgam. Data Collection:

Primary data was collected from total populations, which are 140 growers of ultra high density apple in district Baramulla and Budgam. Secondary Data was collected from Horticulture board of J&K, National Horticulture Board, Chief Horticulture Officer Baramulla and Budgam, SUAST Kashmir and Economic Survey 2020-2021.

Research methodology:

The Garrett ranking involves converting individual ranks into percentages using the formula: $\text{Percentage position} = \frac{(R_{ij} - 0.5)}{N_j}$ Where R_{ij} represents the rank and N_j the number of ranks (Decisions, I. S. P., 2019).

Table.1: Challenges.

Challenges No.	Challenges
C1	Interest Rate by the banks is too high
C2	Establishment Cost is very high
C3	Subsidy
C4	Non availability of roads and Electricity
C5	Aboriginal pesticides and fungicides

Source: survey done by in 2023-2024

Table 2: Challenges Rank wise.

Challenges	1 st	2 nd	3 rd	4 th	5 th

C1	113	10	11	4	2
C2	96	25	8	7	4
C3	90	20	10	10	10
C4	4	24	1	5	106
C5	12	3	14	13	98

Source : survey done in 2023-2024

Table 3: Calculate value and Garret value.

Rank	$28(R_{ij}-0.5)/N_j$	Calculated Value	Garret Value
1	$100(1-0.5)/5$	10	75
2	$100(2-0.5)/5$	30	60
3	$100(3-0.5)/5$	50	50
4	$100(4-0.5)/5$	70	40
	$100(5-0.5)/5$	90	25

Results and discussion:

Table 4: Calculations.

Description	Rank wise after Calculations					Total	Average	Rank
	1 st	2 nd	3 rd	4 th	5 th			
Interest Rate by the banks is too high	8475	600	550	160	50	9836	70.25	2 nd
Establishment Cost is very high	7200	1500	400	280	100	9480	76.71	1 st
Subsidy	6750	1200	500	400	250	9100	65	3 rd
Non availability of roads and Electricity	300	1440	50	200	2650	4640	33.14	5 th
Aboriginal pesticides and fungicides	900	180	700	520	2450	4750	33.92	4 th

From the above data we find that high establishment Cost is the main hurdle in establishing an ultra-high density apple Orchard. District Baramulla and Budgam have been the area/ field of study for compilation of the report. District Baramulla has been the largest producer of apple growers in Jammu and Kashmir with respect to the old varieties of the apple.

.Distribution Analysis

By analyzing the ranking distributions for each challenge, we can see which challenges

consistently ranked higher or lower across different respondents, which might indicate a consensus or a divergence in perceptions.

Interest Rate by the Banks is Too High (C1): Dominantly ranked 1st, which suggests a widespread concern about high interest rates affecting farming operations.

Establishment Cost is Very High (C2): Although it frequently appeared in the top two ranks, it also received a moderate spread across the 3rd and 4th ranks, indicating a strong but slightly varied concern among respondents.

Subsidy (C3): This challenge showed a more balanced distribution across the ranks, pointing to varied opinions on the importance of subsidies.

Non-availability of Roads and Electricity (C4): Mostly ranked 5th, indicating that while significant, it might not be as critical as other factors like cost or financial support.

Aboriginal Pesticides and Fungicides (C5): Received mixed rankings, with a notable number of low rankings, suggesting it's a significant issue but possibly more region-specific or varying by other factors.

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Establishment Cost is very high:

Establishment cost is very high for a farmer. It includes Land Development, Pit Digging, Land Fencing, Plant Cost, Trellising Cost, Drip Cost, Anti-hail Fencing Cost, and Bed making Cost. The total cost for the establishment of one acre of land is Rupees 20 lakh. Subsidy is 50% for the Trellising, Drip and Plant cost. It is a big hindrance to adopting an ultra-high density apple orchard.

Interest Rate by the banks is too high:

All the banks do not provide loans to the farmers for apple orchards of ultra-high density. Those banks which provide loans to the ultra-high density apple farmers will give an interest of 12.6% per annum, which is very high.

Subsidy:

In 2023-2024, subsidy is the main challenge for the farmers due to the lack of coordination between private contractors and the horticulture department of Jammu and Kashmir. The private contractors wanted cash payment from the farmers, whereas the horticulture department said they would provide them with subsidies after the establishment of an apple orchard by the farmers, which is sanctioned by the horticulture department. Lack of coordination between the government department and a private contractor delayed the establishment of apple orchards for the farmers, a result in a delay in establishment and then the difference in one's production. It is the main problem that the establishment of ultra-high density apple orchards is less in these years

as compared to previous years.

Aboriginal pesticides and insecticides:

With 1711 tons Jammu and Kashmir ranks first in usage of insecticides and pesticides. That is why we need original insecticides and pesticides. The important problem of apple growers is that shopkeepers sell duplicated pesticides. That can harm plants as well as fruits. It is the responsibility of the horticulture department to check these pesticides regularly, so that the farmers will not face losses.

Non availability of roads and Electricity:

The challenge of non-availability of roads and electricity is another hurdle when establishing orchards. An old apple orchard does not need irrigation through drip, so it does not need electricity. An ultra-high density apple needs three times drip irrigation in summer and in winter at least once a day. So electricity is necessary for orchardists. Roads are important for the orchards because when we harvest fruit we have to transport it with the help of ponies or with the help of labor.

Suggestions:

Subsidy should be provided to farmers after the establishment of an orchard within one month.

Free interest loans should be provided for the establishment of high-density apple orchards.

The Horticulture Department should provide plant, trellising, drip and anti-hail facilities by together own department not by the private company.

There will be a huge penalty of money for private companies if they provide any fake variety of apple plant.

The government should provide pesticides and insecticides through the horticulture department so that the fake insecticides and pesticides do not harm the fruit and apple trees.

Since interest rates and establishment costs are major concerns, policies or programs aimed at reducing financial burdens could be beneficial.

Conclusion:

Ultra High density is the new variety of apple in Jammu and Kashmir from 2010 onwards. It was introduced by the Jammu and Kashmir horticulture department with the help of private apple companies. But due to a few challenges like huge establishment costs, rates by the Jammu and Kashmir bank and, recently, subsidies, that is why this scheme does not get full attention. In 2023-2024, subsidy is the main challenge in front of the horticulture department as well as the apple growers who want to adopt this scheme. With the help of an ultra high-density apple, the gestation period has decreased from 15 years to 5 years. Ultra-high density has more than 30 varieties of Jammu and Kashmir, which is also a benefit for apple growers. Since interest rates

and establishment costs are major concerns, policies or programs aimed at reducing financial burdens could be beneficial. Even though infrastructure development it scored lower, improving infrastructure could enhance overall operational efficiency and should not be ignored.

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