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Analysis of Artificial Intelligence Induced Machines to Improve the Fiscal Advancement of Agronomy



Abstract: - Horticulture became a key player in the development of UT. The total land area of Jammu and Kashmir under horticulture is 332704, among which 214162 in the Kashmir valley and 118542 in the Jammu region. The district Baramulla has achieved first rank in production in apples with 404089 metric tons, and also covers an area of 25231 hectares. Horticulture of UT of Jammu and Kashmir contributes 8-10% contribution to the SGDP (DHK, 2021). In 48 years, the area under horticulture shows a growth rate of 25%. The growth of production of horticulture has also increased 10 thousand metric to 25 Lakh metric tons during 1950-2022. In this paper we will analysis growth in production, productivity, area and State Gross Domestic Product through the Compound Growth Rate from 2012 to 2022. Artificial Intelligence will become a game changer for horticulture sector, which is facing loses consistently from the last few years. Need of the hour to improve the technique like artificial intelligence and procedures for the betterment of horticulture, especially open national, use of drones in farms, highway 44 during the peak season.

Keywords: Growth, High Density, Horticulture, Artificial Intelligence, Improvements, National highway 44, Suggestions.

I. INTRODUCTION:

Horticulture is the big source of income in Jammu and Kashmir. Approx.77% (Apple), 90 % (Walnut) production of India comes from J&K. The market in the horticulture sector is adversely affected by market strategies, lack of knowledge and new quality fruits. (Rather, N.A., et al., 2013). About 320 million tons of products and 10 % of land is involved in horticulture in India. Horticulture contributes 6% to the GDP and adds 33% of whole agriculture output. In Baramulla district, the main horticulture products are apples, cherries, vegetables, olives etc. In one district, one product, an apple, is the product of Baramulla district. In Budgam district, the main horticulture products are apple, pear, peach, almond, vegetables etc. In some parts of the Budgam district, saffron is also cultivated. For the last decade, the horticulture has had a lot of problems. Fruits & vegetables are important for the diet of a healthy man that is why; The United National General Assembly selects 2021, the year of fruits. And Vgt. Recommended intake of fruits and vegetables in the world is 400 grams per person a day. But India has consumed less than recommended fruits. And Vgt. India stands 2nd position in the world in fruits and vegetables next to China. India contributes 12 % of global fruits and vegetables. Tourism and horticulture are two sides of the same coin. Both the two sectors help to improve the wealthy condition of the people in UT. A few improvements have to be made to develop the horticulture sector, especially the creative and innovative management and broad policy framework. The big hindrance coming in the way of development of the horticulture sector is turmoil in the Kashmir valley (R, S., et al., 2012). When a Robotic apple harvester works in a farm of New Zealand in 2019, the world has seen a new change in the field of horticulture namely Artificial Intelligence. Weather forecasting is also an example of artificial intelligence through which a grower can understand the future need such as hot season, dry season, and rainy season. With the use of these technologies a farmer can ready for any season (Legun, K., & Burch, K., 2021). Artificial Intelligence is a revolution not for the entire world but for the horticulture producers of Jammu and Kashmir. Farm Cold storage is essential for the development of horticulture. Rates are depending on market, when the grower cannot get good price they can store their surplus harvest in cold storage. Some growers face the problem of money, some face original fertilizers, some face middle-man exploitation. In recent times, National highway 44 remains closed during the main season.

II. LITERATURE REVIEW:

Horticulture is a significant sector. Some problems are faced by horticulture sector, but worst problem is middle man exploitation. Government should give maximum support price (per kg per box), so that the prices of fruits does not fluctuate (Dar, A.A., & Bhat, M.A., 2018). If we want to double income of farmers there is only way, that is diversification towards high value crops. Horticulture has potential to earn foreign exchange. With the help of

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foreign exchange it will raise the income of farmers and provide livelihood security (Jha, G. K., et.al, 2019). Germany has started digital agriculture initiative 0.4 for the development of agriculture. China, USA and EU have already applied it with the help of humans and called it robotization and Automation. With Robotized unmanned and devices in machines have ease the life of growers especially apple and nut (Zavrazhnov, A. A., et al., 2021). Apple is being cultivated since prehistoric times. He further mentions that the apple of Kashmir is the first choice fruit of the people of India. It helps to improve employment generation in the people of Jammu and Kashmir (Naqash, F., et.al, 2018). Strawberry is one of the small fruits in the world. They impressed upon the introduction of new varieties of strawberry for improving the marketing aspect of the fruit. The study also mentioned the strawberry culture in greenhouses (Raja, W.H., et.al 2018). The crop diversification is necessary. People engaged in horticulture sector faced different problems when availing bank loan. Lot of documents are needed before applying horticulture loan (Shah, M.A., 2017). With the improvement in horticulture sector, it will help the country to protect its citizens from malnutrition. A lot of things have to be done, but a lot of efforts are needed for the betterment of the horticulture sector in UT (Dimyati, A., & Kuntarsih, S., 2006). The land diversification is important to remove the unemployment and poverty from the society. Further, it emphasized that the marketing, transportation and storage are important for the horticulture sector. Horticulture is important for the GDP growth of the country. On the same aspect, in 2005 National Horticulture Mission started in the whole country (Choudhary, S.K., 2021). The problem of the horticulture sector in J&K is it is currently in the hands of aged growers, who are not willing to accept new techniques. Horticulture sector has shown a remarkable improvement in last two decades. Saffron is important because its value is very high. 80% production of Saffron comes from Pulwama district. In 2020 it got GI tag (Mushtaq, A.G., & Nusrath, A., 2016). The horticulture sector is a good contributor to the temperate fruit cultivation of the country. Under the horticulture mission technology and the 12th five year plan, focus was given to improving the storage and marketing of the apple sector in UT OF J&K. But the productivity needs immense improvement with special focus in cold storage .further post harvest management, introduction of superior quality and virus free qualities have to be taken in to consideration (Malik, Z., & Choure, T., 2014). Economic reform 1991 is the best decision. Economic reform means change for the better economy. Once there was a time when the service sector was called the third grade sector. After economic reforms, the service sector emerged as the main sector of the economy. The GDP of the primary sector has been declining since 1947 in the country. On the other hand, the GDP of the primary sector improves day by day in our state. (Sofi, M.R., 2014) The significance of universal and commercial banking is to provide loans. The study also mentioned how banks are helping people to get money on time, so that they purchase seeds for sowing on time (N, F., 2014). The horticulture sector is profitable, not only in our country but in other countries such as China, Sri-lanka, Bangladesh and Indonesia. Our country is 5th in production in fruits and the largest producer of vegetables (Choudhary, S.K., 2013). China's apple sector has been improving day by day in the last decade and has reached the no. 1 spot through linking small-scale farmers with the international market. In 2001, China joined the WTO and, from that point onwards, apples market strategies, producing good quality apples at low prices (Zhang, X., et al., 2009). After the liberalisation, the demand for horticultural products doubled. The main reason is that a lot of things happened after liberalisation of a new agricultural policy in 1992, which came into force in 1993. Processing and storage facilities improved. The government set a target of 4% growth in agriculture in the 12th five-year plan (Chand, R., et al., 2008). Horticulture is improving day by day and how pesticides, quality, quantity, marketing and cold storage are helping our society to gain more and more profit. (Von Baeyer, E., 2010). Artificial intelligence in horticulture means machine intelligence or we can say that machines which reduce the work of humans and improve quality in horticulture. Large landholders use these technologies to improve the production and Quality. These farms cannot maintain by the help of labours. Agricultural innovation system helps the growers to take every shake holder in one platform with the help of artificial Intelligence (Alaie, Z.A., 2020).

Objectives:

To Study the role of horticulture in the economic growth of Districts of Baramulla and Budgam.

To Examine the growth in production of horticulture with the help of Artificial Intelligence in the districts of Baramulla and Budgam.

Data Collection:

Data was collected from secondary sources such as National Horticulture Board of India, State Horticulture Board, Chief horticulture officer Baramulla, Books, Magazine, Directorate of Economics & Statistics, Government of Jammu & Kashmir Economic survey of 2011-2012 To 2021-2022.

III. RESEARCH METHODOLOGY:

Compound annual growth rate (CAGR).

$$\text{CAGR} = (\text{E.B}/ \text{S.B})^{1/n} - 1.$$

Table 1. Area of fruits in UT.

Period	Area in Hectares under fresh fruits	Area in Hectares under dry fruits	Total area in Hectares of UT of J&K
2011-2012	240185	102606	342791
2012-2013	236780	110443	347223
2013-2014	242695	112398	355093
2014-2015	246071	113017	359089
2015-2016	241182	96495	337677
2016-2017	241620	96908	338528
2017-2018	241856	91872	333728
2018-2019	240679	90906	331585
2019-2020	240041	90915	330956
2020-2021	243442	91392	334834

Sources: 1. D.H.J & K.

2. D.E&S.

Data tells us the area in hectares increase under the fruit production is fluctuating from the last decade. What we seen that the total area in hectares was 342791 in 2011-2012 and in 2020-2021 it was 334834. The area in hectares under the dry fruits has decreased from 102606 in 2011-2012 to 91392 in 2020-2021. The main reason behind the decreasing Area in hectares under the dry fruits is the death of the labours during harvest. The total area in hectares has also decreased from 342791 in 2011-2012 to 334834 in 2020-2021. The total area in hectares under the UT of Jammu and Kashmir has been decreasing constantly from the last four years from 2017-2018 to 2020-2021. The compounded annual growth of area in hectares under the fresh fruits is 0.987. The compounded annual growth of area in hectares under the dry fruits is 1.109 and the compounded annual growth rate under the total area in hectares of UT of Jammu and Kashmir is 1.021.

Table.2.1. Production of fruits in UT.

Period	Production in M. tones of fr.fruits	production in M.tones of dry fruits	Total production in M.tones of UT of J&K
2011-2012	1949173	211996	2161169
2012-2013	1524593	217549	1742142
2013-2014	1644077	197123	1841200
2014-2015	1344553	198123	1542676
2015-2016	2217584	276415	2493999
2016-2017	1959351	275629	2234980
2017-2018	2141182	288640	2429822
2018-2019	2125583	289838	2415421
2019-2020	2268878	272280	2541158
2020-2021	1696879	264001	1960880

Sources: 1.D.H.J & K.

2. D.E&S.

The data tells us that the production in M.tones has decreased from 2011 to 2021. The total production of fruits in 2010-2011 in UT of J&K was 2161169 metric tons and in 2020-2021 it was 1960880 metric tons. The compounded annual growth of production in M.tones of fresh fruits is 1.132. The compounded annual growth rate of production in M.tones of dry fruits is 0.820 and the compounded annual growth rate under the total production in M.tones of UT of Jammu and Kashmir is 1.109.

Table 3. NSDP growth (%) of J&K at current and constant prices (INR) and SGDP growth (%) of horticulture of J&K at current prices (INR).

Year	NSDP growth (%) of J&K at current prices (INR)	NSDP growth (%) of J&K at constant prices (INR)	SGDP growth (%) of horticulture of J&K at current prices (INR)
2011-2012	8.51	0.06	6
2012-2013	8.51	0.06	6
2013-2014	9.17	4.78	7
2014-2015	1.69	-4.79	7
2015-2016	21.44	20.03	7
2016-2017	6.27	2.53	8
2017-2018	11.91	5.95	8
2018-2019	14.71	8.75	8
2019-2020	6.96	2.96	9
2020-2021	3.57	0.66	8

Sources: 1.D.H.J & K.

2. D.E&S.

NSDP growth (%) in (INR).

Growth of constant and current in 2011-2012 was 0.06% and 8.51%. It is increasing every year except 2014-2015, in which constant growth was negative. From 2011-2012 the constant growth was increased from 0.06 to 0.66. But at current prices the growth is decreased from 2011-2012 to 8.51% to 3.57%. The State Gross Domestic product of horticulture has increased constantly year after year. It was 6% on 2011-2012 and in 2020-2021 it was 8%. Increase in SGDP in horticulture has improved the lives of people. It provides new employment opportunities after the introduction of Ultra high density apple scheme. The compounded annual growth rate of NSDP growth (%) of J&K at current prices (INR) is 2.185. The compounded annual growth of NSDP growth (%) of J&K at constant prices (INR) is 0.917 and the compounded annual growth rate of SGDP growth (%) of horticulture of J&K at current prices (INR) UT of Jammu and Kashmir is 0.771.

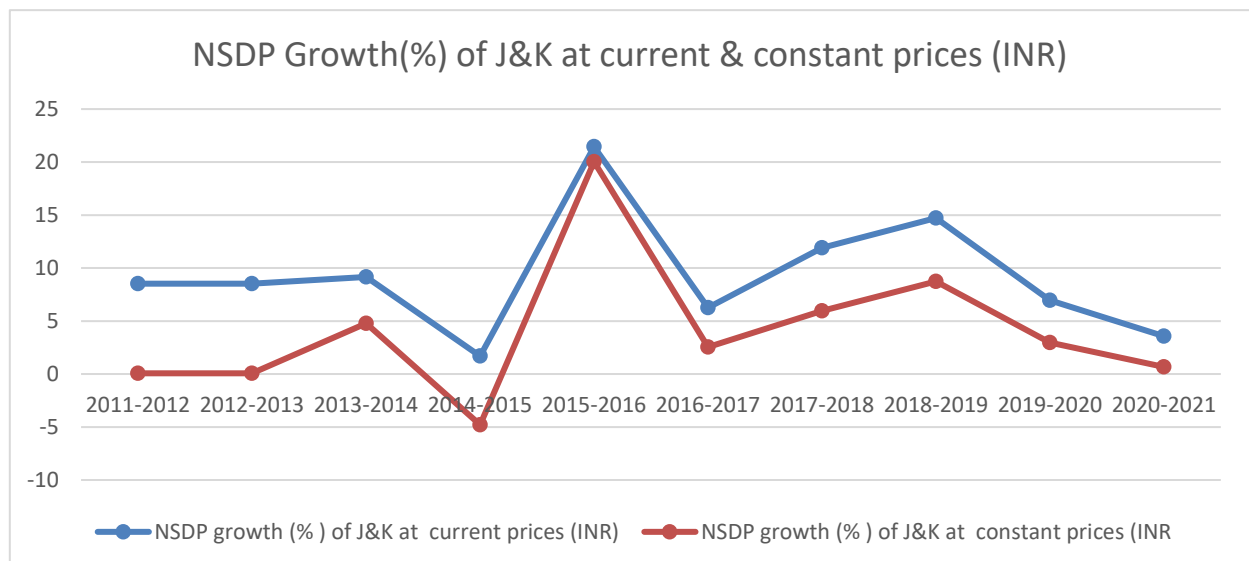


Table .4.1. NSDP of UT. of J&K at per capita current and constant prices (crore INR).

Year	NSDP of J&K at per capita current prices (crore INR)	NSDP of J&K at per capita constant prices (crore INR)
2011-2012	53173	53173
2012-2013	56828	52406
2013-2014	61108	54088
2014-2015	61211	50724
2015-2016	73215	59967
2016-2017	76634	60557
2017-2018	84471	63195
2018-2019	95448	67697
2019-2020	102789	70176
2020-2021	104860	69579

Sources: D.E&S.

NSDP of UT of J&K at per capita current and constant prices (crore INR).

The compounded annual growth of NSDP of J&K at per capita current prices (crore INR) is 0.542 and the compounded annual growth of is NSDP of J&K at per capita constant prices (crore INR) is 0.785.

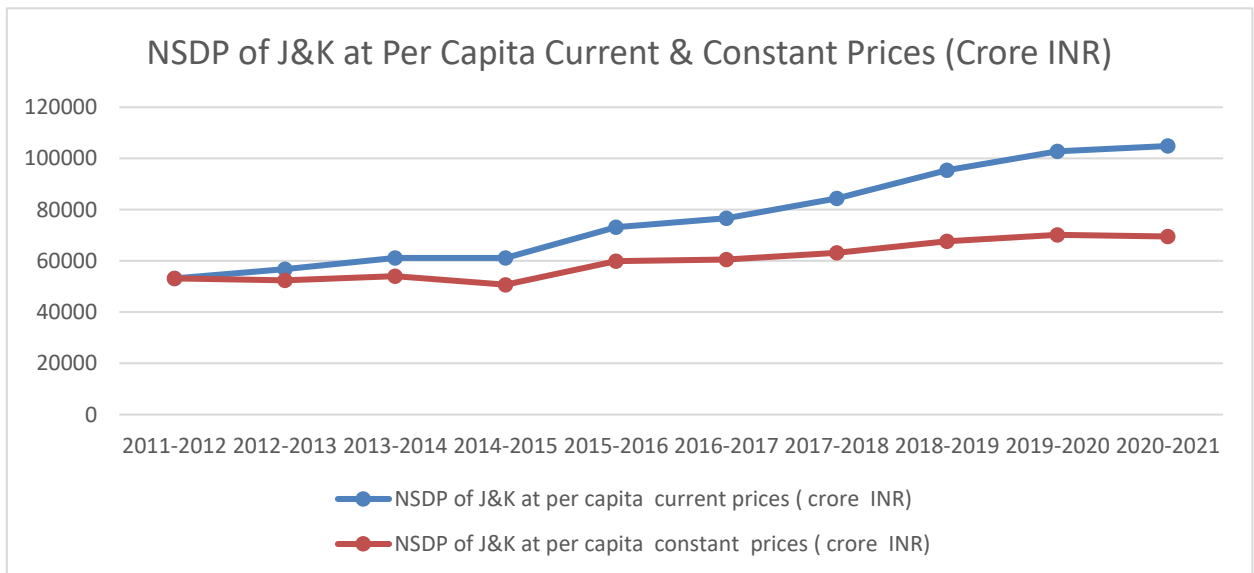


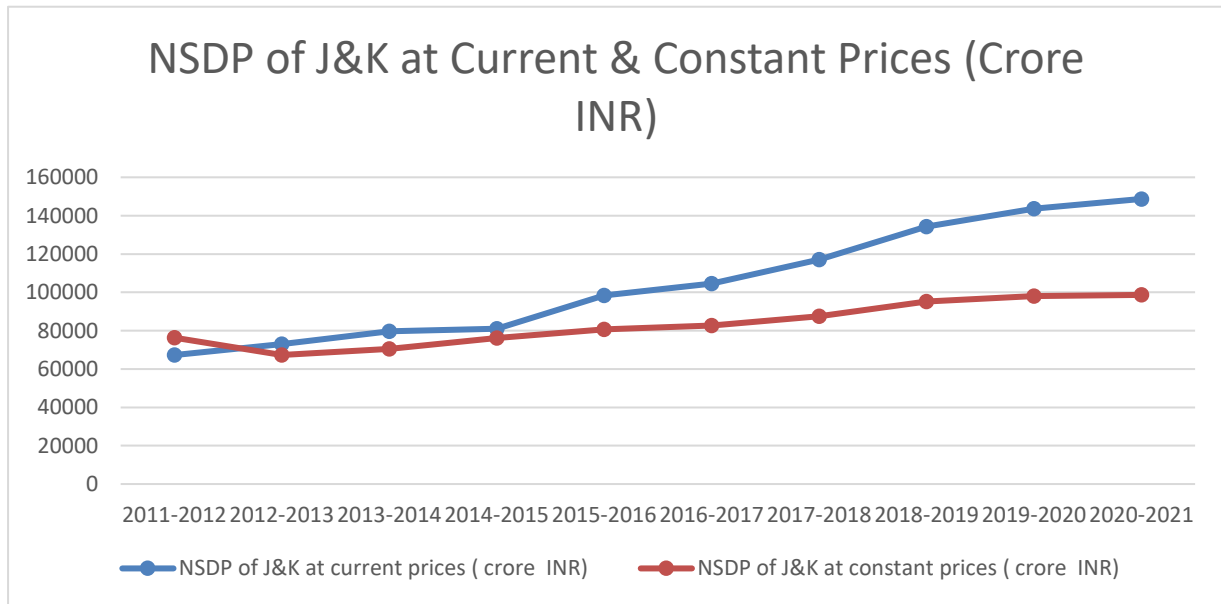
Table .5.1. NSDP of J&K at current and constant prices (crore INR).

Year	NSDP of J&K at current prices (crore INR)	NSDP of J&K at constant prices (crore INR)
2011-2012	67274	76274
2012-2013	72996	67316
2013-2014	79692	70536
2014-2015	81037	76154
2015-2016	98409	80602
2016-2017	104575	82636
2017-2018	117026	87551
2018-2019	134238	95208
2019-2020	143586	98029
2020-2021	148713	98667

Sources: D.E&S..

NSDP of UT of J&K at current and constant prices (crore INR).

The compounded annual growth rate of NSDP of J&K at current prices (crore INR) is 0.489. The compounded annual growth rate of NSDP of J&K at constant prices (crore INR) area is 0.793.



Suggestions:

Farmers of Jammu and Kashmir will use artificial intelligence for the safety of original product like saffron, because some fraudsters sold saffron outside state on the name of Kashmiri saffron.

MSP should be provided for apple, walnut and almond.

National Highway-44 should be kept open 24*7 for the whole year.

Awareness campaigns regarding new schemes should be organised at Village level, so people will know better regarding these schemes.

The Government should provide medicine (Pesticides) for plants, so that the people in the UT aren't deceived by the dubious shopkeepers.

The government should provide loans with subsidies, or with low interest loans with the interest of 2% per annually.

Cold storage should be installed in every halqa.

50% subsidy should be given to every farmer.

Kisan credit cards were given to farmers without interest.

Trainings for the fruit growers should be organized, so that they get well acquainted with the Ultra High density fruit growing.

IV. CONCLUSION:

The Apple industry can provide the solution to the unemployment of the UT of J&K. However, at present, the apple industry is facing various challenges, including competition from the other markets and ever decreasing cultivable land. Artificial Intelligence can improve the Quality of all the products of horticulture in Jammu and Kashmir. With the help of new machines which are controlled by computers ease the work of growers like nut threshing machine, Pit digging machine, weeding machine, Harvesting machine et cetera .In present world all the machines are running on Artificial Intelligence. Therefore, moving towards the Ultra high-density cultivation coupled with the necessary trainings for the horticulturists is the need of the hour. Government intervention w.s.r.t ensuring opening of the NH-44 throughout the year and MSP for the horticulture products is also must for the

horticulture sector. With special focus on these areas, the Horticulture sector can be the game changer for the economic development of the UT.

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