

An Analysis of Conversion of Paddy Land into Apple Orchards of District Kulgam

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Abstract

The present study is carried out in the District Kulgam of Jammu & Kashmir Union Territory. The study area is southern most part of Kashmir valley, known throughout South Asia for its scenic beauty and charismatic nature. The dynamics in land-use to obtain livelihood has been there from early Civilization, but its severity and extent has increased from past few decades due to tremendous population pressure. With the increasing population, human-nature relationship also changes. The structure, functions and dynamism of most of the landscapes are largely dependent on its population. The present study is intended to study the conversion of agricultural land into horticultural land in district Kulgam of Jammu and Kashmir. The study is based on a mixed methodology. The primary data was extracted from interviews and the secondary data was extracted from the agricultural and horticultural department of Kulgam district. The results revealed that there has been a tremendous increase in the area horticultural land because of its economic benefits, and a decline trend has been observed in the area under agricultural area. Some of the causes of land use change are also discussed in the study.

Key Words: land-use, horticulture, conversion, increase

Introduction:

Initially, Kulgam was called the rice bowl of Jammu and Kashmir and was the big source of agricultural produce (Raina, 2012) because 80.01% of the population of the District constitute rural population who are involved in agricultural activities as their chief occupation (Census 2011). In a short duration of time rice was replaced by fruits at large scale, because it has proven very favourable for the cultivators due to its economic benefits. In whole country Kashmiri apple has been popular for centuries. Very high demand of Kashmir apple has brought laurels to the whole valley. This convergence of paddy land into horticulture has proved to be a boon on one hand and ban on other hand while bringing miseries in shortage

of food (Andrabi & Bhat, 2017). Rice is staple food of Kashmir and at present food is obtained from other parts of country. Rice land conversion into horticultural land mostly into apple orchards has extensive implications on sustainability of rice production. Thus, if the conversion of agricultural land remained unchecked, it can threaten the capacity to food supply, even in the long term it can result social disasters (Firmansyah et al, 2021). Kashmir shares about 75% of the apple production in India. Apple industry contributes 8.2% to GDP of union territory of Jammu and Kashmir (Business Standard, 2022).

With the changing cropping pattern the areal extend and production of some crops has increased whereas decreased for the others (Andrabi & Bhat, 2017). The important reasons for land conversion being huge economic benefits and water scarcity (Reshi et al., 2010). From the past decade the production of rice has decreased considerably while as the production of apples has increased. Since rice is the staple food for the District, its reduction has created extreme problems as a whole. Although the conversion to horticultural sector has creating employment to sizeable section of population. Agricultural activities require unskilled labour force and accommodated a majority of population. Although humans have been modifying the earth's surface for centuries to procure food and other items for their livelihood but its severity, extent and rate are more severe now than in the past. These modifications are responsible for changes in environment and ecosystems at local, regional and global level unprecedented changes in ecosystems and environmental processes (Hassan et al., 2016). Under the influence of topographical conditions, land utilisation varies across country (Wani et al., 2009). In the context of global change, the formal characteristics of landuse i.e. Its effects on cover structure, phenology and composition, is more relevant than the purpose or function of land use (Veldkamp and Fresco, 1994). The prime reasons for the land-use change from rice cultivation to apple plantation were related to water crisis or to higher level by planting fruit trees (Yang and Zhang, 2014). The paddy field conversion demonstrates the inter-relationship between human beings and nature (Setiadi et al, 2021). Human modifications on Earth's surface are unparalleled today in terms of space, magnitude and spatial extent. The most recognizable indicators for such modifications is change of land-cover (biophysical properties of the Earth's surface) and land-use change (human intent or purpose applied to these features) (Suliman et al, 2022).

Study Area:

District Kulgam lies in the southernmost part of the Kashmir valley along the foothills of Pir Panjal mountain range. Kulgam sprawls over a geographical area of about 1067 sq. kms. The District lies between the coordinates $74^{\circ} 14'$ E and $33^{\circ} 15'$ N. The district can be divided into three physiographic divisions, but major portion of the District is plain. According to 2011 census District Kulgam has total population of about 4, 24,483 with population density of about 1051 persons per km^2 .

Objectives of the study:

1. To study the conversion of agricultural land into horticultural land in district Kulgam.
2. What are the causes of the conversion of agricultural land into horticultural land?

Methodological framework:

Mixed method approach was used by the investigator. It implies adopting quantitative and qualitative methods to make the results more reliable and valid. In the present study, the investigator in the first phase has quantified the data using secondary sources to fetch the details of the amount of land converted from paddy fields to apple orchards and in the second phase, he uses phenomenological approach to identify the reasons of this conversion from the viewpoint of the interviewees. The investigator interviewed twenty landowners who have transformed their entire paddy fields into apple orchards and recorded their conversation for further qualitative analysis.

i) Analysis and Interpretation of data:

There is spatial and temporal variation in the cropping pattern of the district and this variation has occurred due to increase in market value of apples, climatic influences and increasing carrying capacity of land. In the study area the paddy cultivation has been progressively decreasing. Area in hectares under rice from 2011-2020 has been shown in the table below.

Table No.1 showing the decreasing trend of area under paddy cultivation year wise in hectares.

2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
18500 ^H A	18500 ^H A	18500 ^H A	17000 ^H A	16500 ^H A	16500 ^H A	16000 HA	16000 HA	12900 HA	12900 HA

It is evident from the table that the area under the cultivation of rice has decreased from 18500^{HA} in 2011 to 12900^{HA} in 2020. This decrease of 5600 hectares of land under paddy has been converted into apple orchards mostly due to various reasons such as climate, market demand of apples throughout the country etc. climate has forced the paddy cultivators of plain area of the district to change the landuse because paddy cultivation has been less remunerative.

Table No.2 showing upward trend of area under apple orchards year wise in hectares.

2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
14667 ^H A	15586 ^H A	16766 ^H A	17153 ^H A	17442 ^H A	18192 ^H A	18204 HA	18298 HA	19148 HA	20787 HA

Table no. 2 shows that land area under apple orchards has increased from 14667 hectares in 2011 to 20787 hectares in 2020. Thus 6120 hectares of land has been brought under apple plantation in the study area during a short span of ten year's. This increase in the areal coverage of land under apple plantation can be attributed to high demand of apples throughout the country and high market value of apples as compared to other crops.

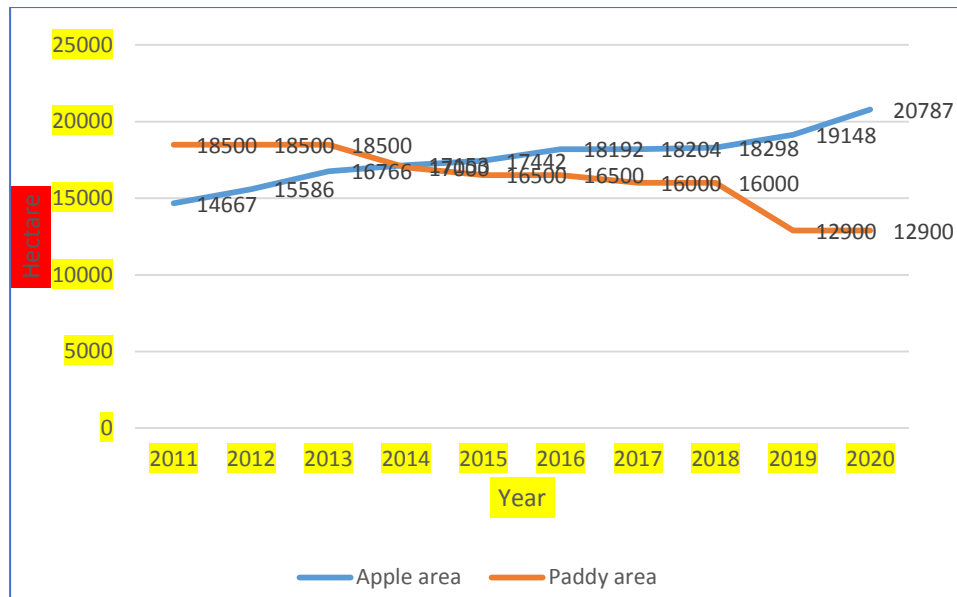


Fig.No.1 Trend Analysis

Qualitative analysis: Based on the interviews some of the factors which emerged out are as:

- High market value:** There are various apple varieties which are grown in the district of Kulgam. Chief varieties include Delicious, Kullu delicious, American Trel, Golden, and Maharaja. Apple cultivation is considered as backbone of Kashmir economy. Some of the respondents reported that

“As compared to paddy cultivation, apples fetch high economic benefits besides it requires less labour force, apples produced from a tract of land give us more money than paddy cultivation on the same patch of land”

Apples fetch high market value more than any other crop in valley. No crop of Kashmir can match its market value.

Changed perception of Kashmiri Youth: Youth of today are the natives of the technological world where there is knowledge explosion in every field of study. So the perception of youth towards different sectors also change overtime. Several neighbouring farmers are impacted though the land use conversion did occur in a particular area. A single tract of land can cut off the follow of water or may cast shadow on the adjacent land. Then the neighbouring farmers may lose the opportunity to farm even if they have the strong appetite to farm (Setiadi et al, 2021).

According to the respondents,

“Our ancestors were stubborn in fulfilling only one type of need that is physiological need, but today an individual has different kinds of needs and demands that he has to fulfil. For satisfaction of varied types of needs, he needs to have sufficient money which a paddy field will never be able to fetch. So we need to explore different avenues to generate money and the best way is to use the land resource that we have”.

Success stories that have emerged from horticultural industry have changed the perception of people of Kashmir especially young generation. Young generation of

Kashmir were dissatisfied with the low productivity and low market price of rice which compelled them to give off rice cultivation and choose horticulture instead.

2. **Water crisis:** Shortage of irrigation facilities is another factors which serve for the conversion of paddy land into horticultural land..

“Most of the respondents stated that the idea of changing the form of their paddy field to apple orchards was due to the reason that there is shortage of water to irrigate their fields. This shortage is the result of irregular and unseasonal precipitation that has taken place due to change in climatic conditions. The availability of water in Kashmir in the months of April to September depends on the amount of precipitation in winters. But due to dry weather during winters from last decade or low amount of rainfall or snowfall in winters have resulted in shortage of irrigating water in the canals which compelled us to shift from paddy to apple growing”.

Rice cultivation requires abundant water supply than any other crop growing in the valley. Some of the irrigation canals through which water was transported to paddy fields are now disappeared.

Discussion of results:

Kashmir valley falls in temperate zone where temperature falls to a very low level and apple is the prime temperate fruit, moreover highly conducive environmental, soil and climatic conditions influence the production of apples in the valley. Farmers in Kashmir have diverted huge tracts of agricultural land into horticulture for the alluring monetary benefits. This conversion of land has wider ramifications on both people and environment both. This conversion of agricultural land makes people of Kashmir even more dependent on other parts of the country for their food. Diminishing of land under paddy due to landuse change to non paddy agricultural land is a serious threat to state food security prospects.

The results of the study reveal that the area under paddy fields has diminished, while as the area under apple orchards has flared up considerably. The paddy land has decreased from 18500 hectares in 2011 to 12900 hectored in 2020, a total of (30.27 %) of decrease in ten years has been witnessed under paddy fields. On the other hand area under apple orchards has increased from 14667 hectares in 2011 to 20787 hectares in 2020 about (41.72%) increase has been witnessed in area under apple trees in ten year's. There were many causes for the conversion the important being (1) Increase in the monetary value of apples has prompted cultivator's to plant apple trees in their fields. (2) Changed perception of Kashmiri Youth (3) unavailability of irrigation facilities. Landuse change was one of the cause of flood that occurred in 2014, because paddy fields situated along the banks of major rivers in Kashmir act as natural reservoirs. As per the findings of the study an increasing trend of conversion of paddy land into horticulture land has been observed and vice versa. According to the qualitative analysis factors like High market value, changed perception of Kashmiri Youth and Water crisis is prompting the landowners towards their conversion of agricultural land into horticultural land in district Kulgam.

References:

- Andrabi, S. D. A., & Bhat, M. Y (2017). Agricultural Sector in District Anantnag of J&K A Shift from Producer to Consumer. *International Journal of Trend in Research and Development*, 1 (4), 603-608
- Business Standard (3Nov.2022) E-paper. Retrieved from: https://www.business-standard.com/article/economy-policy/kashmir-apple-rates-down-by-30-growers-seek-govt-support-to-curb-losses-122110300743_1.html
- Census (2011) Retrieved from: <https://www.census2011.co.in/census/district/633-kulgam.html>
- Firmansyah, F., Susetyo, C., Pratomoatmojo, N. A., Kurniawati, U. F., & Yusuf, M. (2021, May). Land use change trend of paddy field and its influence on food security in Gerbangkertosusila Region. In IOP Conference Series: Earth and Environmental Science (Vol. 778, No. 1, p. 012023). IOP Publishing.
- Hassan, Z., Shabbir, R., Ahmad, S. S., Malik, A. H., Aziz, N., Butt, A., & Erum, S. (2016). Dynamics of land use and land cover change (LULCC) using geospatial techniques: a case study of Islamabad Pakistan. *SpringerPlus*, 5(1), 1-11.
- Raina, A. N. (2002). Geography of Jammu & Kashmir State. *Radha Krishan Anand & Co., Pacca Danga, Jammu*, 9.
- Reshi, M. I., Malik, M. A., & Vijay, K. (2010). Assessment of problems and prospects of apple production and marketing in Kashmir valley, India. *Journal of Environmental Research and Development*, 4(4), 1077-1082.
- Setiadi, H., Dimiyati, M., Rizqihandari, N., Restuti, R. C., Indratmoko, S., & Handayani, T. (2021). Paddy Field Conversion in Indonesia in a Contemporary Geographic Perspective: a Conceptual Overview of Human-Nature Dialectics. *Jurnal Geografi*, 13(2), 195-210.
- Suliman, S., & Setiawan, Y. (2022). Assessing the paddy fields conversion using optical satellite imageries: A case study in Karawang Regency, West Java. In IOP Conference Series: Earth and Environmental Science (Vol. 950, No. 1, p. 012092). IOP Publishing.
- Veldkamp, A., & Fresco, L. O. (1996). CLUE: a conceptual model to study the conversion of land use and its effects. *Ecological modelling*, 85(2-3), 253-270.
- Wani, M. H., Baba, S. H., & Yousuf, S. (2009). Land-use Dynamics in Jammu and Kashmir. *Agricultural Economics Research Review*, 22(1), 145-154.
- Yang, D., & Zhang, M. (2014). Effects of land-use conversion from paddy field to orchard farm on soil microbial genetic diversity and community structure. *European journal of soil biology*, 64, 30-39