

Assessing Crop Productivity in Upper Siang District, Arunachal Pradesh, India

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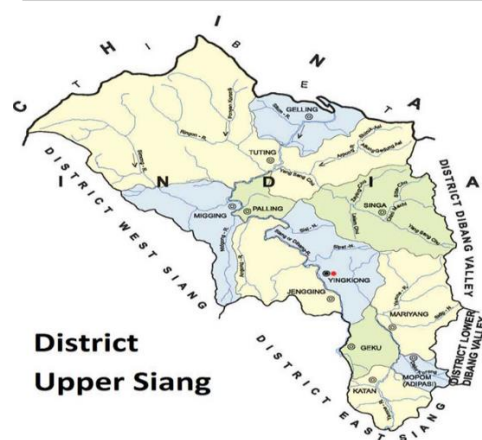
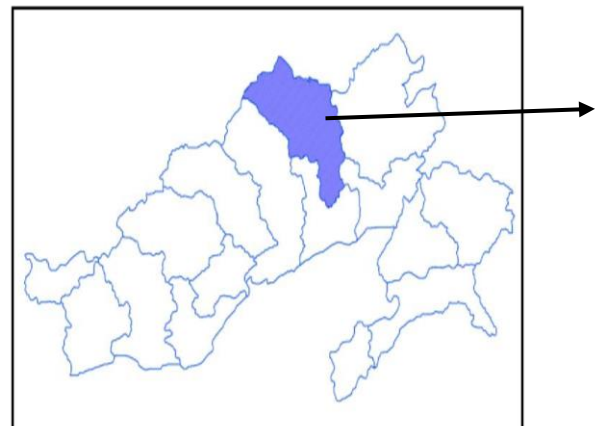
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Abstract: This study examines the productivity of major crops which are integral to the local economy and food security of Upper Siang district of Arunachal Pradesh. The region is home to some of the greatest genetic variability and crop diversity found anywhere in the India. These include a wide variety of field crops, fruits, vegetables and spices. Local farmers, many of whom are women, have been in charge of maintaining the region's diversity of crops. This area often has rainy season conditions from March to the end of August. Plenty of rainfall, rich soils, and a variety of agroclimatic conditions present the agriculture industry with enormous expansion potential. The purpose of this paper is to provide an overview of the production statuses of agricultural crops in Upper Siang district, Arunachal Pradesh, India.

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Key words: Crops, Arunachal Pradesh, Upper Siang, Agriculture.

1. Introduction: Arunachal Pradesh is located between 26.28° N and 29.30° N latitude and 91.20° E and 97.30° E longitude and has an area of 83,743 km² (32,333 sq mi). The diverse topography that ranges from lush river valleys to soaring Himalayan peaks (Kumari et al.,2020). The state's landscape is characterized by a complex network of rivers, including the mighty Brahmaputra and its tributaries, which carve through the terrain, creating deep gorges and fertile plains. The eastern Himalayan ranges dominate the northern regions, with peaks like Kangto and Nyegi Kangsang rising dramatically. In contrast, the lower regions feature dense tropical forests, teeming with biodiversity. The state's varying altitudes, from the foothills to high mountains, result in a rich tapestry of ecosystems, supporting a wide array of flora and fauna. This topographical diversity not only contributes to Arunachal Pradesh's natural beauty but also shapes its climate, culture, and way of life.



Upper Siang District is one of the remotest districts of Arunachal Pradesh endowed with serene beauties of the nature. It is occupying a geographical area of

6188 Sq. Km with population of 33, 363. Yingkiong is the district headquarters which is located at a distance of 720 Km from the state capital Itanagar. It is bounded by Tibet region of China in the North, Dibang Valley District in the East, West Siang District in the West, and East Siang District in the South. It is inhabited by Adi, Memba, Khamba and Idu Mishmi tribes who have been harmoniously living in the cradle of nature since time immemorial with colourful festivals like Solung, Aran, Reh, Lossar, Dihang, etc. The district is mountainous and enriched in rich natural resources and biodiversity. The area is characterised by deep gorges and fast flowing streams and rivulets, which form the tributaries of the mighty Siang River. The Siang River flows through the heart of the district running into Indian territory at a point near Gelling in the Indo-China border. In the early days of geographical exploration, the Siang River was referred to as the "Missing Link" - the unexplored channel that formed link between the Tsangpo of Tibet and the Brahmaputra of Assam.

Upper Siang is renowned for its rich biodiversity, which is a result of its diverse topographical features. The district's lush forests, ranging from subtropical to alpine, are home to an astonishing variety of plant and animal species. It serves as a critical habitat for numerous endangered and rare species (Taram et al., 2020). The diverse ecosystems include temperate forests, evergreen rainforests, and alpine meadows, each supporting unique flora and fauna. This rich biodiversity is preserved in several protected areas and wildlife sanctuaries, making the district a vital area for conservation and ecological research.

Agriculture is the mainstay of people. It is the major source of livelihood in the district. About 69% of the main working force in the district pursues agricultural activities. With its geographical area of 6188 Sq. Km of land, Upper Siang is one of the largest districts in terms of area. However, only 2.9% of land is put to agricultural uses and the net area sown in the district was around 800 hectares only in 1991. However, with the rapid increase in population, the land brought under cultivation is increased to 3277 Ha in 2020. Agriculture plays a vital role in the economy of the district. The

development of agriculture in the district is affected significantly by its typical topography. The topography by and large is dominated by hilly mountainous terrains with few pockets of flat land in low-lying areas. The tribal people of the district from time-immemorial followed two distinctive agricultural practices, namely 1. Shifting or Jhum Cultivation and 2. Sedentary or Settled Cultivation.

2. Climate and rainfall: Climate in the district is varied as rainfall and temperature differs from place to place. The district experiences temperate and sub-tropical humid set of climatic condition with maximum and minimum temperature recorded in the months of June and December respectively. The average minimum and maximum values of temperature were found to be 11.7°C and 21.4°C. Average annual rainfall in the district was recorded as 2137 mm (2001-2021) (Drema et al., 2004).

3. Soil types: Soils of the district have been derived from the country rocks of schists, gneisses in hilly areas and form alluvial and colluvial materials in the valleys. The soils in the valley areas are sandy loam in texture with high acidic content. The PH values range between 5 to 6. The carbon content is high with medium to low phosphorous and potassium concentrations.

4. Area of production and yield: The total area of field crops during 2022-2023 has been estimated as 10448 hectares with a total production of 23981 MT, fruits estimated 191.74 hectare with total production 528.44 MT and 1907.6 hectare under vegetables and spices with 8161.95 MT production. Nonetheless, when compared to the entire Indian population, the productivity status of different crops remains low. There are no controlled markets, and private traders who buy produce from nearby village markets dominate the trade. A few of the small farmers have been buying the crops and shipping them to other areas in the vicinity. Large cardamom and orange in good quantities are reportedly also being sold outside the state, but there isn't a formal market information system in place to measure the volume and cost of these transactions.

Table 1. Area and production under major field crops (2022-23)

Sl. No.	Field crops	Total area (Ha)	Production (MT)	Yield (Qntls/Ha)
1	Paddy	6765.00	19718.00	29.15
3	Maize	1760.00	2451.00	13.93
4	Millet	1407.00	1306.00	9.28
5	Pulses	280.00	261.00	8.34
6	Oilseeds	236.00	245.00	10.38
Total		10448.00	23981.00	

Table 2: Area and production under major horticultural crops (2022-2023)

Sl. No	Fruit Crops	Toal area (Ha)	Production (MT)	Productivity (MT/Ha)
1	Banana	324.2	177	1.42
2	Guava	16.4	20.1	2.24
3	Orange	280.2	156.4	3.57
4	Pears	21.3	41.8	6.1
5	Papaya	17.34	22.6	5.4
6	Others	132.3	110.54	2.56
Total		191.74	528.44	
Sl. No	Vegetables & Spices	Toal area (Ha)	Production (MT)	Yield (Qntls/Ha)
1	Potato	199	1557	78.24
2	Ginger	303	1479	48.51
3	Turmeric	280.2	156.4	5.57
4	Chilly	290	622	21.45
5	Sugarcane	201	3617	179.95
6	Large cardamom	362.6	144.5	4.1
7	Black paper	4.8	6.05	2.48
8	Others	267	580	21.72
Total		1907.6	8161.95	

5. Conclusion:

To enhance crop productivity, a multifaceted approach is essential. This includes adopting improved agricultural techniques, promoting sustainable farming practices, and leveraging advanced technologies for better crop management. Additionally, fostering community engagement and providing adequate training to farmers can facilitate the transition to more productive and resilient agricultural systems. Further research and continuous monitoring are necessary to understand the long-term impacts of these interventions. Collaborative efforts between government agencies, research institutions, and local communities will be pivotal in driving sustainable agricultural development in Upper Siang District, ensuring food security, and enhancing the livelihoods of the local population.

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