

INTRODUCTION

In Odisha, tobacco used for country cheroot purpose is locally known as *Pikka*. The tobacco is cultivated on the sandy loam soils of Rayagada, Gajapati, Koraput and Nabarangpur districts of Odisha (Odisha Agriculture Statistics 2018). Earlier country cheroot was a common form of tobacco smoking in rural areas. *Pikka* tobacco made cheroots are smoked by fishermen community in coastal belts of Ganjam, Puri, Cuttack, and Balasore. *Pikka* tobacco leaf is dark and thick with prominent veins. It has very strong in aroma and smoking characteristics with good burn and chalky white colour ash. *Pikka* tobacco products include tobacco paste (*Gudaku*), snuff (orally consumed), *kharamasala (Gundi)*, *Dhuligundi*, *khaini and Gutka* etc.



CLIMATE

Tobacco cultivation in Odisha is concentrated in Rayagada, Koraput and Nabarangpur district. These three districts were coming under 3 different agro-climatic zones of Odisha. Rayagada district is under North Eastern Ghat (NEG) agro-climatic zone (Zone 5) of Odisha. The climate of this zone is hot and moist sub-humid with mean annual rainfall of 1597 mm with mean maximum summer temperature of 37 degree Celsius and mean minimum winter temperature of 10.4 degree Celsius. Eight blocks of Nabarangpur district and 10 blocks of Koraput district are coming under Eastern Ghat High Land (EGHL) agro-climatic zone (Zone 6) of Odisha. Here the climate is warm and humid with mean annual rainfall of 1522 having mean maximum summer temperature of 34.1 degree Celsius and mean minimum winter temperature of 7.5 degree Celsius. During winter, the temperature goes down to 2 °C to 3 °C in high altitude areas of Semiliguda and Pottangi. Part of Koraput district is coming under South Eastern Ghat (SEG) agro-climatic zone (Zone 7) of Odisha. The zone experiences warm and humid climate with mean annual rainfall of 1522 mm having mean maximum summer temperature of 34.1 °C and mean minimum winter temperature of 13.2 °C.

SOILS

Generally, the soils are light textured, sandy loams slightly acidic to neutral in soil reaction and low in salts and chloride. They are low in organic carbon content, medium in phosphorus and high in available potassium status and respond well to NPK fertilizers.

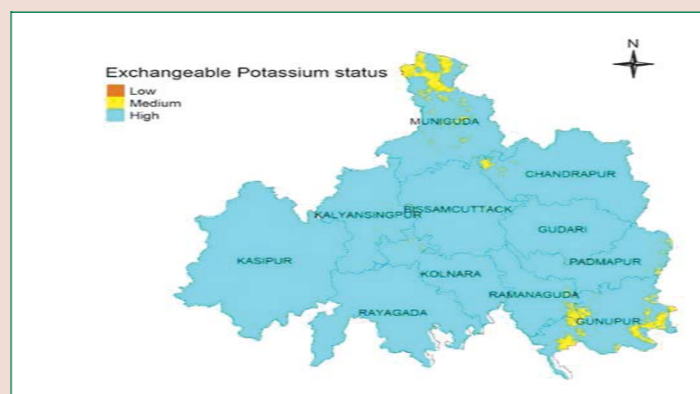
Fertilities status of *pikka* tobacco soil

Soil constituent	Surface soil
pH(1:2)	5.8-7.0 (6.3)
EC (ds/m)	0.11- 0.30 (0.16)
Chloride (ppm)	12-24 (21)
Organic carbon (%)	0.27-0.66 (0.45)
Available phosphorus (kg/ha)	3.15- 58.50 (17.42)
Available potassium (kg/ha)	210- 686 (408)
Texture	Sandy loam
Clay mineralogy	Kaolinite

* Figures in parentheses represent mean values. Source: Soil testing laboratory ICAR - CTRI Rajahmundry, 2005

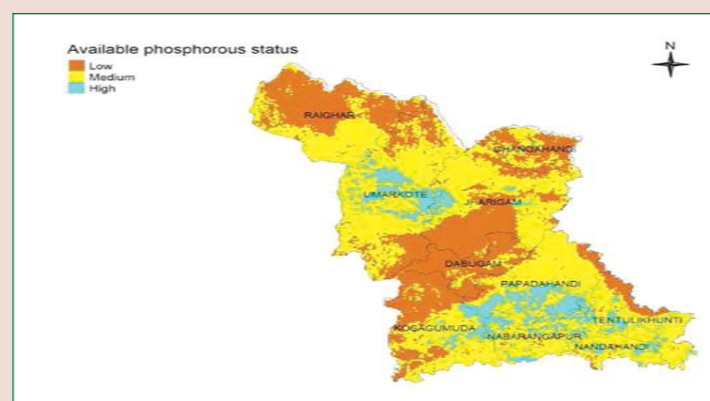
North Eastern Ghat (NEG) agro climatic zone (Zone 5)

Rayagada district is coming under North Eastern Ghat (NEG) agro climatic zone (Zone 5). Soils of the zone are red, mixed red and black soils which are sandy loam to sandy clay loam, moderate to slightly acidic and medium in soil fertility with irrigation ratio of 27.4%.

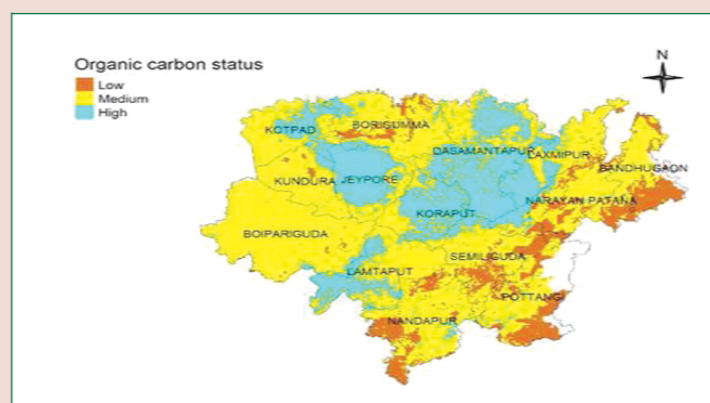


Eastern Ghat High Land (EGHL) agro climatic zone (Zone 6)

Eight blocks of Nabarangpur district and 10 blocks of Koraput district are coming under Eastern Ghat High Land (EGHL) agro climatic zone (Zone 6). The red non calcareous type soil is prevalent in high altitude areas where as, calcareous mixed red and black forest clay loams are found in Narayanapatna block. Non calcareous alluvial soils with various combination sandy clay and loams are found in Nabarangpur and Umarkote belt. The pH range of high altitude soils varies from 4.9 to 5.5 where are in Nabarangpur and Umarkote areas the pH varies from 5.6 to 6.5. the soils of Indravati river basin of Nabarangpur belongs to Entisols and Inceptisols and the remaining areas of Nabarangpur are mostly Alfisols. Broad soil groups of this region are red, mixed red and black, and mixed red and yellow. Irrigation ratio of the region is 32.0%, Indravati and Kolab basin enriches the flora and fauna of the agro climatic zone. The land types vary from hill regions with variable slopes to plateau mostly comes under upland and medium land.



South Eastern Ghat (SEG) agro climatic zone (Zone 7): Part of Koraput district is coming under South Eastern Ghat (SEG) agro climatic zone (Zone 7). Red, lateritic and black soils are major soil groups spread in different parts of the agro climatic zone. The zone consists mostly of Alfisols and Inceptisols. In areas where forest vegetation exists, the humus content of soil is found to be rich. The land types vary from hill region with variable slopes to plateau mostly comes upland and lowland.



RAINFALL DISTRIBUTION

Normally Rayagada district receives an annual rainfall of 1285.9 mm with 72.8 rainy days. Out of total rainfall, 72.1% rainfall received during 4 monsoon months and 27.9% during pre and post monsoon phase. Maximum rainfall received in the month of August followed by July, September and June. The normal rainfall of Koraput district is 1567.2 mm with 83.9 rainy days. August month has maximum rainfall followed by July, June and September. The normal rainfall of Nabarangpur district is 1569.5 mm in 74.3 rainy days. The maximum rainfall was received in the months of July, August and September.



PRODUCTION SCENARIO

Pikka tobacco grown in Odisha showed a decline trend in area and production. At present only 190 ha is grown with a production of 130 tonnes. There are two types of tobaccos are grown in Odisha. They are FCV tobacco and *pikka* tobacco. About 32 ha FCV tobacco is grown in Ramnaguda block of Rayagada district and in other places, *pikka* tobacco is grown for family consumption and business purpose. This FCV crop is grown in irrigated condition and the entire produce is sold at e mandi of tobacco board at Devarpalli of Andhra Pradesh. The average cured leaf productivity of FCV tobacco is 15-20q/ha whereas the resource poor tribal farmers grow *pikka* tobacco under rainfed condition without adopting any improved package of practices. *Pikka* tobacco is usually transplanted in the October. The land remains vacant up to September. Farmers don't use any chemical fertilizers, plant protection measures except addition of FYM and cow or sheep penning before transplanting. They usually get a normal crop when the crop receives two or three showers of rainfall due to low pressure in Bay of Bengal in post monsoon season. The yield level of tobacco is poor in Odisha, as farmers don't adopt any recommended package of practices and tobacco is grown in *rabi* season under rainfed condition.

Under recommended package of practices the average cured leaf productivity of *pikka* tobacco is 10 to 12 q/ha whereas the average cured leaf yield of *pikka* tobacco of Odisha is around 7 q/ha. Minimum 30% gap exist between the improved packages of practices versus local tribal package of practices. In spite of this, tobacco is a profitable crop for them. Prices of tobacco also fluctuate every year which is determined by the traders of the locality who purchase the product. The price also depends upon the length and quality of tobacco cured leaf. Even today tribal people don't sell their product by weight that is kg rather they are getting price per mutha *i.e.* one palmful material. Since *pikka* tobacco is grown traditionally, without adopting any improved package of practices, the cost of cultivation is also low. Their cost of cultivation is Rs. 45000 per hectare and their cost of produce is Rs. 60000/ ha and net return is Rs.15000/ ha with BC ratio of 1.33:1. Tribal farmers are not selling their entire produce. They keep a portion of the produce for their own family consumption (country cheroot) purpose for one year. The remaining stock is disposed to the traders.

AINPT CENTRE, BERHAMPUR

Berhampur research Centre under AICRP on Tobacco at ARS, Berhampur was established in 1987. Systematic research works pertaining to various aspects of varietal improvements, collection, maintenance and evaluation of germplasm hybridization and crop management programmes were undertaken on *pikka* tobacco.



SEASONS

Tobacco in Odisha is mainly grown in Rayagada, Koraput and Nabarangpur districts. *Pikka* (country cheroot) is the major tobacco grown here. FCV tobacco is also grown to a very lesser extent. Both *pikka* and FCV tobacco raised in nursery in the month of August and transplanted in the month of October. The crop is harvested in the month of February. This practice is followed in all the three districts of Odisha.

PEST AND DISEASE MANAGEMENT

Tobacco leaf eating caterpillar and tobacco aphids are the major insect pests of tobacco. Black shank, brown leaf spot and frog eye leaf spot are the major diseases. Tobacco leaf eating caterpillars are controlled with spraying of emamectin benzoate 5 SG @0.5g/l of water and tobacco aphids are controlled with Thiomethoxam 25 WG @ 5g/15l of water.

TOBACCO AND TOBACCO BASED CROPPING SYSTEM

Most farmers grow *Pikka* tobacco in rotation with other crops such as ragi, Sunflower, groundnut maize and other small millets in one year and tobacco in the second year. Adoption of cropping systems instead of growing mono crop of tobacco renders tobacco crop less susceptible to diseases and insect pests. Majority of tobacco farmers are adopting 2 years crop rotation first year non tobacco crop and second year tobacco crop is the general practice of tribal farmers of Odisha.

Chemical quality of *pikka* tobacco

Chemical analysis showed that Popular *pikka* tobacco variety Gajapati cultivated in Odisha contains 3.89 to 3.92% nicotine and 1.92-5.52 % reducing sugar and 0.84-1.10% chloride and another popular *pikka* tobacco variety Jagannath Prasad Local contains 3.0 - 3.5 % nitrogen 5.0 - 5.5% nicotine and 1.0 - 1.5 % reducing sugar and 1.0 - 2.0% chloride

PIKKA TOBACCO USES

Good qualities of *pikka* include thin to medium textured cured leaf, dark brown colour, and good aroma having desirable qualities like white ash fire holding capacity with nicotine ranging from 4 to 5% is essential. Lengthy type of *pikka* is manufactured specifically for fishermen in the coastal districts. *Pikka* is widely used in the districts of Koraput, Nabarangpur, Gajapati, Ganjam, Puri, Cuttack and Balasore.

SNUFF

Snuff is manufactured with *pikka* and *rustica* tobaccos having 5 to 6% of Nicotine, mixed with lime and gingely oil. Snuff is inhaled by very few people. It is manufactured in different procedures as is called in various local names such as *Nasa*, *Bhanga* etc. some people used to consume it orally.

KHARAMASALA AND GUNDI

It is prepared with 15% *pikka* tobacco and 5% *rustica* tobacco having nicotine content 5 to 6% and remaining 80% with spices such as coriander, fenugreek, cardamom, clove, cinnamon and poppy seeds in various proportions. The finished products of Kharamasala prepared include Khaini, Gutka and Gundi.

IMPACT OF TOBACCO TECHNOLOGIES

Varieties

Tobacco variety Gajapati was released from AINPT Berhampur. It has high yield potential of 1774 Kg/ ha and recommended for cultivation both in *kharif* (rainfed) and *Rabi* (irrigated) condition. Under *kharif* (rainfed) average cured leaf yield is 1200 to 1400 kg/ha and under *rabi* (irrigated situation) the average cured leaf yield is 1500 - 1800 kg/ha. It has registered 3.4 to 45.9% increase in yield over check variety Jagannath P rasad Local. 3. Now the adaptability of this variety in the present situation is around 5%. Low adaptability of the technology mainly due to negative attitude of the state and Central Government for which



most of the tobacco areas are diverted to other crops like cotton vegetables, maize, sweet corn, millets, pulses, groundnut etc.

Topping at 9th leaf stage

Agro-technology recommended is topping at 9 leaf stage for higher yield than topping at 12, 15 and 18 leaf stage. This technology has been widely accepted by the tribal tobacco farmers of the state. Their current practice is topping at 9 to 12 leaf stage.

Green manuring

Agro technology developed by this centre which has been widely adopted by the FCV farmers of the state is "green manuring with sunhemp @60 kg per ha preceding to *pikka* tobacco". This technology has been adopted by the FCV tobacco farmers of Ramanaguda block of Rayagada districts.

Intercropping of tobacco with tomato/ Chilli

Intercropping of tobacco + tomato in 2:4 ratio and tobacco + chilli in 2:4 ratio recorded higher tobacco cured leaf equivalent yield than sole crop of tobacco. This technology is accepted by the *pikka* tobacco farmers of Odisha

CONSTRAINTS

- Non adoption of improved technologies such as growing of drought tolerant varieties like Bhairavi, Gajapati etc.,
- Non Adoption of recommended inorganic fertilizer and plant protection measures.
- Growing of the crop under rainfed condition.
- No organized market structure for trading of tobacco.
- Tobacco control policies (WHO-FCTC, COTPA-2003)
- Heightened anti-tobacco campaign
- Enhanced health consciousness among public

FUTURE THRUSTS

- Development of economically viable and eco-friendly agro technologies for enhancing productivity and quality, reducing harmful substances,
- Exploratory trials on burley and *rustica* tobaccos as they have high export potential
- In view of low production cost FCV tobacco cultivation needs impetus.
- Development of value added products for pharmaceutical, agricultural and industrial uses

Alternative crops to *Pikka* tobacco



Chilli - Tomato



Brinjal

Published by

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Word process & Designing by Md. Elias



PIKKA TOBACCO IN ODISHA



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