

AGRICULTURAL REGIONS

Dr. R.S. Randhawa (Ex. Director of Indian Council of Agriculture Research) has divided India into 5 agricultural regions in his book "Agriculture and Animal Husbandry in India". The criteria of the his divisions are:-

1. Rainfall
2. Temperature
3. Crop Combination

1. Himalaya Agriculture Region – subdivided 2 parts

1. Western Himalayan Agriculture Region
2. Eastern Himalayan Agriculture Region

1. Western Himalayan Agriculture Region

Is situated in Jammu and Kashmir, Himachal Pradesh, Uttarakhand in the Western Himalaya. The Average temperature of summer is about 15⁰ C while average temperature of winter is 0⁰ C. Annual precipitation 16 – W. part of West Bengal + North Eastern states + Sikkim.

1. Varies between 150 cms to 10 cms. Apple, saffron, walnut, chest nut, plums are the major product while maize, rice and barley are grown in lower valleys. The Eastern Himalayan agriculture region has about 25⁰C summer temperature, 15⁰ C average winter temperature, rain fall varies between 200-600 cms. Rice is the dominating crop. While rice + Maize are grown in the Brahmaputra valley.

2. **Eastern Humid Rice Dominating Region** – Includes Eastern part of the county in the east of 100 cms 180 the line crossing eastern coastal states, Jharkhand, Chattisgarh, Bihar and eastern U.P. The average summer temperature about 35⁰ C about winter temperature 22⁰ C, average annual rainfall varies between 100 – 150 cms. Rice is the dominating crop, jute, sugarcane, Maize are the other crops.

3. **Western dry wheat dominating region** – Rajasthan, Punjab, Haryana, North part of Gujarat, West U.P. and North West part of M.P. average summer temperature about 43⁰ C + average winter temperature – 10⁰ C rainfall varies between 100-25 cms, wheat is dominating crop. Cotton, soya between, mustard other crops.

4. Semi Arid Peninsular Millet Growing Region and cover peninsular India covering Maharastra, M.P., Karnataka, Interior A.P. and Interior of Tamil Nadu average temperature 20⁰ C, while 50 cms in average rainfall, Ragi, Jowar, Bajra are the imp crops.

5. **Per Humid Malabar Coconut Growing Region** – Malabar coast of Kerala and part of Karnataka. Average temperature – 30⁰C. Average annual rainfall – 250 cms. Coconut is the dominating crop, rubber and spices, tea supporting crops.

Agro-Climate Regions of India

The agro-climatic regions were demarcated to gain the enhanced agricultural productivity through the suitable cropping congenial to the temp, rainfall, humidity, drainage and soil types conditions. The basic concept of agro climatic divisions was desired sat the planning regions produced by an Indian Economist V. Nath in 1951. In 1964 the planning commission of government of India adopted the scheme for agro climatic regions. There one 15 agro-climatic regions in India.

1. Western Himalayan Agro-Climatic Regions

Includes J & K, M.P. and Uttrakhand over 245,000 sq kms area. River Indus, River Sutluj, River Jhelum, River Chenab, River Ravi, River Bhagirati, River Alaknanda, River Yamuna and Hed Ward of River Ganga are the major drainage. Average summer temp rain between 30-25⁰ C, the average water temp varies between 5 to -5⁰ C, white average annual rainfall varies between 100 cms to 200 cms. About 45% land is covered by forest and 18% under agriculture. They have orchards rice and maize.

2. Eastern Himalayan Regions

Covers Sikkim, Bhutan, Assam Arunachal and Hills of West Bengal, River Tista, River Sankash, River Manar, River Kamang, River Sobansiri, River Debang and River Dihang are the major drainage, Average summer temp 20-30⁰ C, Average winter temp 12-20⁰ C. Rain fall 135-400 cms. 25% forest 19 of land under agriculture. Jed is the principle crop total area 274,000 sq kms.

3. Sutlej Pain and Upper Ganga Valley Region

Includes Punjab, Haryana, Delhi, Chandigarh and Western U.P. River Sutlej, River Beas, River Ganga and River Yamuna are the major drainage. Average summer temp 26-42⁰ C average winter temp 7-18⁰ C. Average rainfall 30 to 125 cms 75% land under agricultures and 4.5% land under forest wheat is the dominating crop. 143000 sq kms.

4. Middle Ganga Valley Region.

Covers eastern U.P. and Bihar, River Ganga, Ghagra, River Rosi and River Sone are the major drainage 164,000 sq kms total area. Average summer temp 26-41⁰ C winter temp 9-24⁰ C. 100-200 cms average annual rain fall 63% land is under agriculture and 8% under forest crop – wheat and rice.

5. Lower Ganga Valley and Delta Region

Covers plain of West Bengal, parts of Jharkhand, Ganga sagar and delta region area 69,000 sq kms. Average summer temp. 26-40⁰ C, Average winter temp 10-24⁰ C average rain fall 80-150 cms. 65% land under cultivation and 11% under forest R. Damodar, R. Hoogli are the major drainage. Rice and Jute are the major crops.

6. Trans Ganga Plain Region

Covers slopes of Siwalik valleys, Bhabar and Tarai region , 116,000 sq

kms area. Ram Ganga, Gomti, Ganga and Yamuna are the major drainage, average summer temp 26-34⁰ C, average winter temp 7-23⁰ C rainfall 80-150⁰ cms. 81% land under agriculture 3-2% forest, crops – rice, maize, sugarcane.

7. Eastern Plateau and Hills Region

Covers hills and plateaus of the Far East India Meghalaya, Tripura, Mizo, Manipur, Wagoland and Brahmaputra Valley 395,000 sq kms area. River Dhansiri, River Gomati, River Surma are the major drainage. Average summer temp 24-34⁰ C. Average winter 15⁰ to 22⁰ C rainfall 200-400 cms. 35% land under cultivation and 35% under forest. Maize, Rice, Tea, are the major crops. This region is affected by Jhum (shifting) cultivation.

8. Central Plateau and Hills Region

Covers plateau of Chota Nagpur, Chattisgarh, Bagelkhand Telangana and Bastar Plateau. 37000 sq kms area River Damodar, River Mahanadi, major drainage. Average summer temp 26-34⁰ C, Average winter temp 7-24⁰ C rainfall 50-160 cms 45% under agriculture 14% forest, Maize, rice are the major crops.

9. Western Plateau and Hills Region

Covers lava plateau the Malwa, Bundelkhand plains and Hills such as Satpura & Vindhyachal 331000 sq kms area, Narmada, Tapti, Chanbal and Mahi are the major drainage. 24-41⁰ average summer 8-24⁰ average winter. 60-120 cms average rainfall, 60% land under cultivation, 12% under forest cotton, soyabean, pulses and wheat are the major crops.

10. Southern Plateau and Hills Region

Covers plateau of Mysore, Malnad & Maidan, Tamil Nadu & W. Ghats 395,000 sq kms area. River Savarmati, River Koyna, River Ghat Pratiha, River Mal Prabha, major chain age 24-35⁰ C average summer, 15-22 average winter, 50-100 cms average rainfall, 60% under cultivation, 12% forest, Rayl, Jowar, Bajra, cotton are the major crops.

11. Eastern Coastal Plain & Hills

Covers coromamandel & North cisoo coast & Eastern Ghats, 197,000 sq kms, Mahanadi, Godavari, Krishna, River Kavri – major drainage, 26-38⁰ C temperature summer, 20-30⁰ C average winter, 50-100 cms rainfall, 43% under agriculture, 18% forest, rice is the dominating crop.

12. Western Coastal Plain & Hills

Covers konkan, Malabar & W. Ghats, 117000 sq kms area, average summer temperature 26-32⁰ C, average winter temperature 20-29⁰ C. rainfall 200-250 cms, 37% land under agriculture 29% under forest, coconut, rubber, tea, coffee & spices are the major crops, River Periyar is the major Drainage.

13. Gujarat Region

Includes plains & hills of Gujarat, 196,00 sq kms satbarmati, Mhai Luni

River Narmada & Tapi are the major drainage. 26-42⁰ C summer temperature, 6-24⁰ C average winter, 15-150 cms average, annual rainfall, 51% under cultivation & 11% under forest colon, wheat, Groundnut as a major crop.

14. Western Day Region

Includes Raj-Har borcles, Fast Aravalli, Thar diseit & West part of Gujarat, 175000 sq kms. River Luni & R, Banas are the major drainage. 26-45⁰ C average summer 5-20⁰ average winter, 15-30 cms average rainfall 47% under cultivation, 1.2% under forest wheat is the dominating crop Bajra cotton are the other crops.

15. Island Region

Include A & N & Lakshawep 8.5000 sq kms average summer 30⁰ C average winter -26⁰ C, rainfall more dhari 200 cms, 4% under agriculture, 88% under forest, maize & sugarcane, rice-coconut are grown in Andaman, While Lakshweep has only fishing.

DRY LAND FARMING

It is a technique to grow the drought resistance crop in the semi-arid & the arid conditions. In India those areas receiving annual rainfall less than 50 cms per annual one considered to be the dry land farming areas. Almost 64% of the total agricultural land in India is rain-fed. According to Professor Webster "production of crops with-out irrigation in low rainfall area is known as dry land farming. It is done by a concentration of moisture through agricultural technologies.

According to professor Kuts, the dry land farming is defined as a technique using no artificial irrigation under condition of inadequate rainfall. Hence dry land farming is known as "Water concentrating culture or run off culture."

In India dry land forming is of great importance 44% of the grains produced in India is derived for dry land farming areas. It supports 40% of the India's total population 66% of the total cattle population of the country. For improved techniques & consideration D.L.F. practices the central Arid zone research institute (CACRI) has been established in Jodhpur.

Following are techniques applied in D.L.F.

1. Techniques to maintain the soil moisture

- a) **Warabandi** – To concentrate the rain water in agricultural field itself to chance the soil moisture as well as soil quality

(To maintain soil moisture in field)

- b) **Deep planning (Mechanization of farm practices)** – 10-12 cms deep
- c) Interculture with Emphasis on legumes (leaves more broad ground is covered by plants to avoid direct isolation to the ground. Crop spread horizontally on the surface with broad leaves – Legumes)

also the selection of crops proper concentration is given on the fodder crops because the animals are the backbone of D.L.F.

- d)** Emphasis led on diversity of cropping with crop rotation
- e)** Emphasis on mixed farming practices

watershed management & water shed techniques – dry land farming areas have become more prosperous & efficient by the concentrating surface water & enhancing the underground water by animal husbandry & horticultural crops provide financial support to the formers & dry land regions.