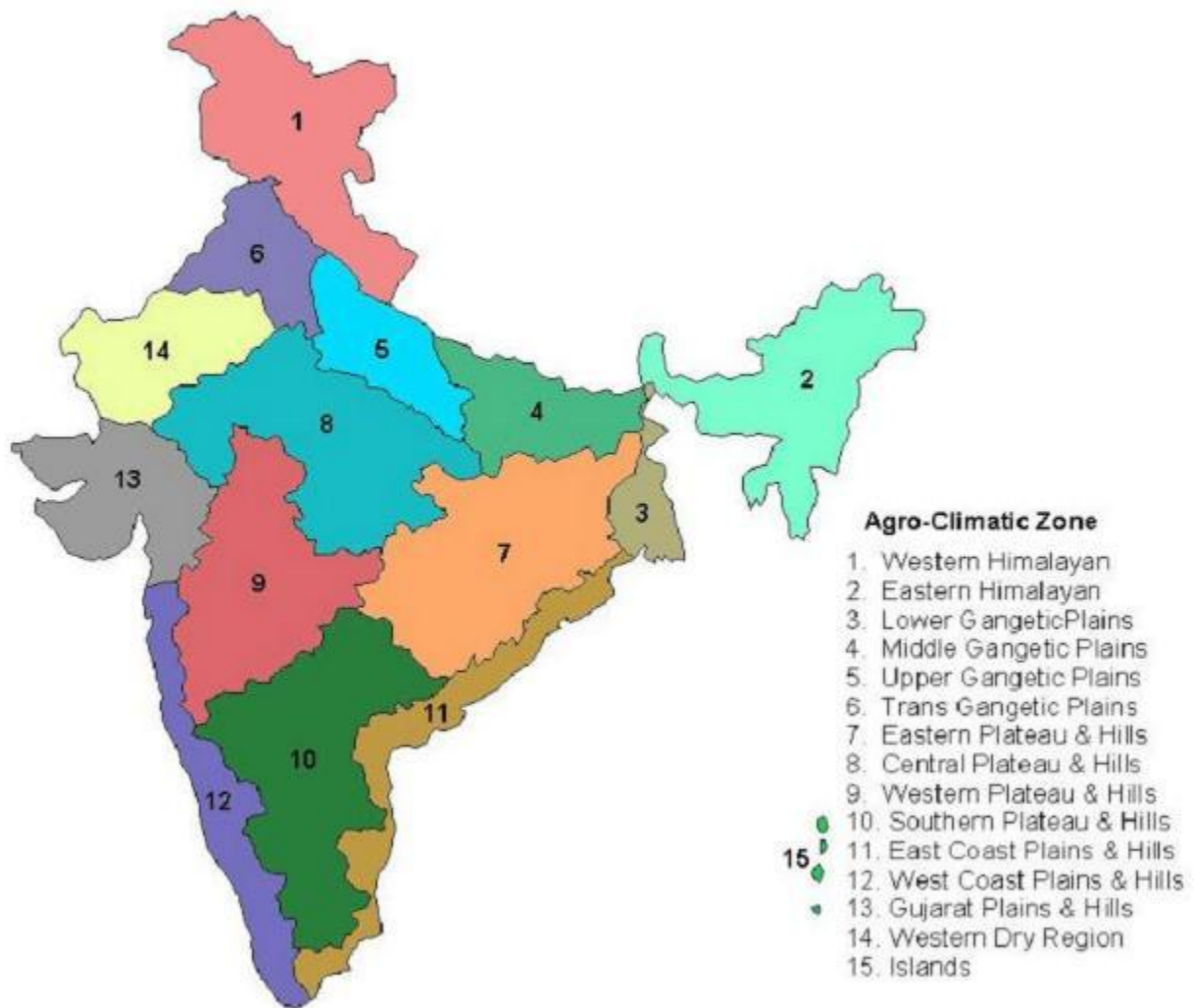


Agro-climatic zones of India



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Classification of Agro-ecological zones:

The Agricultural regions, Forest Regions and the Livestock rearing zones are fully controlled by a set of inter-related geographic factors. They are:

- a) Climatic factors
- b) Soil properties and
- c) Physiographic settings(topography & drainage).

Based on these three major parameters, the land area of India is classified into several classes of regions and sub-regions. The Length of Growing Period (LGP) of crops vary depending upon these factors and also the genetic characteristics of crops grown. LGP is related to the moisture availability to the crops grown which is controlled by those three major factors of agriculture.

Agro-ecological zone is a land unit, carved out of climatic zone, correlated with landforms, climate and the length of growing period (LGP). LGP refers to the number of days available for crop growth with suitable conditions.

Agro-Ecological zoning is the process of correlating the units of physiography, bioclimate, soilscape and the length of growing period. Each one of these aspects have a very wide number of classes and subdivisions.

As we have seen that the Indian sub-continent exhibits a variety of landscapes and climatic conditions which are noticeable in the types of soils and vegetation.

In the past, several attempts have been made to understand and classify the agro-climatic regions as well as the agro-ecological regions of India.

The Planning Commission of India, divided the country into 15 broad agro-climatic zones based on physiography and climate. This we have seen as the first part of this lesson.

Based on the four parameters which have been explained so far,

- a) physiographic features,
- b) Soil characteristics,
- c) Bio-climatic features,
- d) the Length of growing period, the land area of India is divided into 20 agro-ecological regions.

They are the following:

1. Cold Arid Eco-region with Shallow Skeletal Soils
2. Hot Arid Eco-region with Desert and Saline Soils
3. Hot Arid Eco-region with Red and Black Soils
4. Hot Semi-Arid Eco-region with Alluvium Derived soils
5. Hot Semi Arid Eco-region with Medium and Deep Black Soils
6. Hot Semi-Arid Eco-region with Shallow and Medium (Dominant) Black Soils
7. Hot Semi Arid Eco-region with Red and Black soils
8. Hot Semi-Arid Eco-region with Red Loamy soils
9. Hot subhumid (Dry) Eco-region with Alluvium- Derived Soils
10. Hot Subhumid Eco-region with Red and Black Soils
11. Hot Subhumid Eco-region with Red and Yellow Soils
12. Hot Subhumid Eco-region with Red and Lateritic soils

13. Hot Subhumid (Moist) Eco-region with Alluvium-derived soils
14. Warm Subhumid to Humid with Inclusion of Perhumid Eco-region with Brown Forest and Podzolic Soils
15. Hot Subhumid (moist) to Humid (inclusion) of perhumid Eco-region with alluvium-derived soils
16. Warm Perhumid Eco-region with Brown and Red Hill Soils
17. Warm Perhumid Eco-region with Red and Lateritic Soils
18. Hot Subhumid to Semi-arid Eco-region with Coastal Alluvium-derived soils
19. Hot Humid Perhumid Eco-region with Red, Lateritic and Alluvium-derived soils
20. Hot Humid/Perhumid Island Eco-region with Red loamy and Sandy Soils .

Agro-ecological zones, their soil resource and cropping systems

1. Western Himalayas, cold arid eco-region	
REGION 1.1	
Area	Eastern aspect of Ladakh Plateau
Subregion	cold, hyper-arid eco-subregion
Soils	shallow skeletal soils
Available water Capacity (AWC)	Very Low
Length of Growing Period(LGP)	<60 days
Standard Code	A13Eh1

REGION 1.2	
Area	1.2 Western Aspect of Ladakh Plateau and north Kashmir Himalayas
Subregion	cold to cool typic-arid
Soils	shallow, loamy skeletal soils
Available water Capacity (AWC)	low
Length of Growing Period(LGP)	60-90 days
Standard Code	A13Et2

2. Western Plain, Kachchh and part of Kathiawar Peninsula, hot arid eco-region (M9E1)	
REGION 2.1	
Area	Marusthali
Subregion	hot, hyper arid
Soils	shallow and deep sandy desert soils
Available water Capacity (AWC)	very low
Length of Growing Period(LGP)	< 60 days
Standard Code	M9Eh1

REGION 2.2	
Area	Kachchh Peninsula (Great Rann of Kutch as inclusion),
Subregion	hot hyper-arid
Soils	deep loamy saline and alkali soils

Available water Capacity (AWC)	low
Length of Growing Period(LGP)	<60 days
Standard Code	L12Eh1

REGION 2.3	
Area	Rajasthan Bagar, North Gujarat Plain and South-Western Punjab Plain
Subregion	hot typic- arid
Soils	deep, loamy desert soils (inclusion of saline phase),
Available water Capacity (AWC)	low
Length of Growing Period(LGP)	60-90 days
Standard Code	M9Et2

REGION 2.4	
Area	South Kachchh and North Kathiawar Peninsula
Subregion	hot arid
Soils	with deep loamy saline and alkali soils
Available water Capacity (AWC)	low
Length of Growing Period(LGP)	60-90 days
Standard Code	L12Et2

3 Deccan plateau, hot arid eco-subregion (K6E2)	
REGION 3.0	
Area	Karnataka Plateau (Rayalseema as inclusion)
Subregion	hot arid
Soils	with deep loamy and clayey mixed Red and Black soils
Available water Capacity (AWC)	low to medium
Length of Growing Period(LGP)	60-90 days
Standard Code	K6Et2

4. Northern Plain (and Central Highlands) including Aravallis, hot semi-arid ecoregion (N8D2)	
REGION 4.1	
Area	4.1 North Punjab Plain, Ganga-Yamuna Doab and Rajasthan Upland,
Subregion	hot semi-arid
Soils	deep loamy alluvium-derived soils (occasional saline and sodic phases),
Available water Capacity (AWC)	Medium
Length of Growing Period(LGP)	90-120
Standard Code	N8Dd3

REGION 4.2	
Area	North Gujarat Plain (inclusion of Aravalli range and east Rajasthan Uplands),
Subregion	hot dry semiarid
Soils	deep loamy Gray Brown and alluvium-derived soils,
Available water Capacity (AWC)	Medium
Length of Growing Period(LGP)	90-120 days
Standard Code	P14Dd3

REGION 4.3	
Area	4.3 Ganga Yamuna Doab, Rohilkhand and Avadah Plain
Subregion	hot moist semi-arid
Soils	deep, loamy alluvium-derived soils (sodic phase inclusion),
Available water Capacity (AWC)	medium to high
Length of Growing Period(LGP)	120-150 days
Standard Code	N8Dm4

REGION 4.4	
Area	Madhya Bharat Plateau and Bundelkhand Uplands
Subregion	hot, moist semi-arid
Soils	Deep loamy and clayey mixed Red and Black soils,
Available water Capacity (AWC)	medium to high
Length of Growing Period(LGP)	90-120 days
Standard Code	N6Dm4

5 Central (Malwa) Highlands, Gujarat plains and Kathiawar Peninsula Ecoregion (I5 D2)	
REGION-5.1	
Area	Central Kathiawar Peninsula,
Subregion	hot, dry semiarid
Soils	shallow and medium loamy to clayey black soils (deep black soils as inclusion)
Available water Capacity (AWC)	medium
Length of Growing Period(LGP)	120-150 days
Standard Code	L4Dd3
REGION-5.2	
Area	Madhya Bharat Plateau Western Malwa Plateau, Eastern Gujarat Plain, Vindhyan and Satpura range and Narmada Valley
Subregion	hot moist semi-arid
Soils	medium and deep, clayey Black soils (shallow black soils as inclusions)
Available water Capacity (AWC)	medium to high

Length of Growing Period(LGP)	120-150 days
Standard Code	I5Dm4

REGION-5.3	
Area	Coastal Kathiawar Peninsula
Subregion	hot moist semi-arid
Soils	deep loamy coastal alluvium-derived soils (saline/phases inclusion)
Available water Capacity (AWC)	low to medium
Length of Growing Period(LGP)	120-150 days
Standard Code	L7Dm4

6. Deccan Plateau, hot semi-arid eco-region (K4D2)	
REGION-6.1	
Area	South Western Maharashtra and North Karnataka Plateau
Subregion	hot dry semi-arid
Soils	shallow and medium loamy Black soils (deep clayey Black soils as inclusion)
Available water Capacity (AWC)	medium to high
Length of Growing Period(LGP)	90-120 days
Standard Code	K4Dd3

REGION-6.2	
Area	Central and Western Maharashtra Plateau and North Karnataka Plateau and North Western Telangana Plateau
Subregion	hot moist semi-arid
Soils	shallow and medium loamy to clayey Black soils (medium land deep clayey Black soils as inclusion)
Available water Capacity (AWC)	medium to high
Length of Growing Period(LGP)	120-150 days
Standard Code	K4Dm4

REGION-6.3	
Area	Eastern Maharashtra Plateau
Subregion	hot moist semi-arid
Soils	medium land deep clayey Black soils (shallow loamy to clayey Black soils as inclusion)
Available water Capacity (AWC)	medium to high
Length of Growing Period(LGP)	120-150 days
Standard Code	K5Dm4

REGION-6.4	
Area	North Sahyadris and Western Karnataka Plateau
Subregion	hot dry subhumid
Soils	-
Available water Capacity (AWC)	-
Length of Growing Period(LGP)	-

Standard Code	K4Cd5
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7. Deccan Plateau (Telangana) and Eastern Ghats, hot semiarid ecoregion (K6D2)	
REGION-7.1	
Area	South Telangana Plateau (Rayalseema) and Eastern Ghat
Subregion	hot dry semi-arid
Soils	Deep loamy to clayey mixed Red and Black soils
Available water Capacity (AWC)	medium
Length of Growing Period(LGP)	90-120 days
Standard Code	K6Dd3

REGION-7.2	
Area	North Telangana Plateau
Subregion	hot moist semi-arid
Soils	Deep loamy and clayey mixed Red and Black soils
Available water Capacity (AWC)	medium to very high
Length of Growing Period(LGP)	120-150 days
Standard Code	K6Dm4

REGION-7.3	
Area	Eastern Ghat (South)
Subregion	hot moist semi-arid/dry subhumid
Soils	medium to deep, loamy to clayey mixed Red and Black soils,
Available water Capacity (AWC)	medium
Length of Growing Period(LGP)	150-180 days
Standard Code	H6Dm/Cd5

8. Eastern Ghats and Tamil Nadu Uplands and Deccan (Karnataka) Plateau, hot semiarid eco-region (H1D2)	
REGION-8.1	
Area	Tamil Nadu Uplands and Leeward Flanks of South Sahyadris
Subregion	hot dry semi-arid
Soils	moderately deep to deep, loamy to clayey, mixed Red and Black soils
Available water Capacity (AWC)	medium
Length of Growing Period(LGP)	90-120 days
Standard Code	H6Dd3

REGION-8.2	
Area	Central Karnataka Plateau

Subregion	hot moist semi-arid
Soils	medium to deep Red loamy soils
Available water Capacity (AWC)	low
Length of Growing Period(LGP)	120-150 days
Standard Code	K1Dm4

REGION-8.3	
Area	Tamil Nadu Uplands and Plains
Subregion	hot moist semi-arid
Soils	deep red loamy soils
Available water Capacity (AWC)	low
Length of Growing Period(LGP)	120-150 days
Standard Code	H1Dm4

9. Northern Plain, hot subhumid (dry) eco-region (N8C3)	
REGION-9.1	
Area	Punjab and Rohilkhand Plains
Subregion	hot dry/moist subhumid transitional
Soils	deep, loamy to clayey alluvium-derived (inclusion of saline and sodic phases) soils
Available water Capacity (AWC)	medium
Length of Growing Period(LGP)	120-150 days
Standard Code	N8Cm/Cd4

REGION-9.2	
Area	Rohilkhand, Avadh and south Bihar Plains
Subregion	hot dry subhumid
Soils	deep loamy alluvium-derived soils
Available water Capacity (AWC)	medium to high
Length of Growing Period(LGP)	150-180 days
Standard Code	N8Cd5

10. Central Highlands (Malwa and Bundelkhand), hot subhumid (dry) eco-region (I6C3(4))	
REGION-10.1	
Area	Malwa Plateau, Vindhyan Scarpland and Narmada Valley
Subregion	Hot dry subhumid
Soils	medium and deep clayey Black soils (shallow loamy Black soils as inclusion)
Available water Capacity (AWC)	high
Length of Growing Period(LGP)	150-180 days
Standard Code	15Cd5

REGION-10.2	
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Area	Satpura and Eastern Maharashtra Plateau
Subregion	hot dry subhumid
Soils	shallow and medium loamy to clayey Black soils (deep clayey Black soils as inclusion)
Available water Capacity (AWC)	medium to high
Length of Growing Period(LGP)	150-180 days
Standard Code	K4Cd5

REGION-10.3	
Area	Vindhyan Scarpland and Bundelkhand Plateau
Subregion	hot dry subhumid
Soils	deep loamy to clayey mixed Red and Black soils
Available water Capacity (AWC)	medium to high
Length of Growing Period(LGP)	150-180 days
Standard Code	I6Cd5

REGION-10.4	
Area	Satpura range and Wainganga Valley
Subregion	hot moist subhumid
Soils	shallow to deep loamy to clayey mixed Red and Black soils
Available water Capacity (AWC)	low to medium
Length of Growing Period(LGP)	180-210 days
Standard Code	K6Cm6

11. Chattisgarh/Mahanadi Basin Agro-eco-region (J3 C3)	
REGION-11.0	
Area	Moderately to gently sloping Chattisgarh/Mahanadi Basin
Subregion	Hot moist/dry subhumid transitional
Soils	deep loamy to clayey Red and Yellow soils
Available water Capacity (AWC)	medium
Length of Growing Period(LGP)	150-180 days
Standard Code	J3Cd/Cm5

12. Eastern Plateau (Chhotanagpur) and Eastern Ghats, hot subhumid eco-region (J23C3(4))	
REGION-12.1	
Area	Garjat Hills, Dandakaranya and Eastern Ghats
Subregion	hot moist subhumid
Soils	deep loamy Red and Lateritic soils
Available water Capacity (AWC)	Low to medium
Length of Growing Period(LGP)	180-210 days
Standard Code	J2Cm6

REGION-12.2	
Area	Eastern Ghats
Subregion	hot moist subhumid
Soils	medium to deep loamy Red and Lateritic soils
Available water Capacity (AWC)	medium
Length of Growing Period(LGP)	180-210 days
Standard Code	H2Cm6

REGION-12.3	
Area	Chhotanagpur Plateau and Garjat Hills
Subregion	hot, dry subhumid
Soils	moderately deep to deep loamy to clayey Red and Lateritic soils
Available water Capacity (AWC)	medium
Length of Growing Period(LGP)	150-180 days
Standard Code	J2Cd5

13. Eastern Plain, hot subhumid (moist) ecoregion (08C4)	
REGION-13.1	
Area	North Bihar and Avadh Plains
Subregion	hot dry to moist subhumid transitional
Soils	deep, loamy alluvium-derived soils
Available water Capacity (AWC)	Low to medium
Length of Growing Period(LGP)	180-210 days
Standard Code	O8Cd/Cm6

REGION-13.2	
Area	Foothills of Central Himalayas
Subregion	warm to hot moist subhumid
Soils	deep loamy to clayey Tarai soils
Available water Capacity (AWC)	high
Length of Growing Period(LGP)	180-210 days
Standard Code	B10Cm6

14. Western Himalayas, warm subhumid (to humid with inclusion of perhumid) ecoregion [A15C(BA)4(5)]	
REGION-14.1	
Area	South Kashmir and Punjab Himalayas
Subregion	cold and warm by dry semi-arid/dry subhumid
Soils	shallow to medium deep loamy Brown Forest and

	Podzolic soils
Available water Capacity (AWC)	low to medium
Length of Growing Period(LGP)	90-120 days
Standard Code	A15Dd/Cd3

REGION-14.2	
Area	South Kashmir and Kumaun Himalayas
Subregion	warm moist to dry subhumid transitional
Soils	medium to deep loamy to clayey Brown Forest and Podzolic soils
Available water Capacity (AWC)	medium
Length of Growing Period(LGP)	150-210 days
Standard Code	A15Cd/Cm6

REGION-14.3	
Area	Punjab Himalayas
Subregion	warm humid to perhumid transitional
Soils	shallow to medium deep loamy brown forest and podzolic soils
Available water Capacity (AWC)	low to medium
Length of Growing Period(LGP)	270-300+ days
Standard Code	A15BA9

REGION-14.4	
Area	Kumaun Himalayas
Subregion	warm humid to perhumid transitional
Soils	shallow to medium deep loamy Red and Yellow soils
Available water Capacity (AWC)	low
Length of Growing Period(LGP)	270-300+ days
Standard Code	A3B/A9

REGION-14.5	
Area	Foothills of Kumaun Himalayas (Subdued)
Subregion	warm moist subhumid
Soils	medium to deep, loamy arai soils
Available water Capacity (AWC)	medium
Length of Growing Period(LGP)	270-300 days
Standard Code	A10A9

15. Assam and Bengal Plain, hot subhumid to humid (inclusion of perhumid) eco-region (Q8C(BA)5).	
REGION-15.1	
Area	Bengal basin and North Bihar Plain

Subregion	hot moist subhumid
Soils	deep loamy to clayey alluvium-derived soils
Available water Capacity (AWC)	medium to high
Length of Growing Period(LGP)	210-240 days
Standard Code	08Cm7

REGION-15.2	
Area	Middle Brahmaputra Plain
Subregion	hot humid
Soils	deep, loamy to clayey alluvium-derived soil
Available water Capacity (AWC)	medium
Length of Growing Period(LGP)	240- 270 days
Standard Code	Q8B8

REGION-15.3	
Area	Teesta, lower Brahmaputra Plain and Barak Valley
Subregion	hot moist humid to perhumid
Soils	deep, loamy to clayey alluviumderived soils
Available water Capacity (AWC)	medium
Length of Growing Period(LGP)	270-300 days
Standard Code	Q8A9

REGION-15.4	
Area	Upper Brahmaputra Plain
Subregion	warm to hot perhumid
Soils	moderately deep to deep loamy, alluvium-derived soils
Available water Capacity (AWC)	medium
Length of Growing Period(LGP)	300 days
Standard Code	Q8A10

16. Eastern Himalayas, warm perhumid eco-region (C11A5)	
REGION-16.1	
Area	Foot-hills of Eastern Himalayas (Bhutan foot-hills)
Subregion	warm to hot perhumid
Soils	shallow to medium, loamy-skeletal to loamy Tarai soils,
Available water Capacity (AWC)	low to medium
Length of Growing Period(LGP)	270-300 days
Standard Code	C10A9

REGION-16.2	
Area	Darjeeling and Sikkim Himalayas
Subregion	warm perhumid
Soils	shallow to medium deep loamy Brown and Red Hill soils
Available water Capacity (AWC)	Low to medium

Length of Growing Period(LGP)	300 days
Standard Code	C11A10

REGION-16.3	
Area	Arunachal Pradesh (Subdued Eastern Himalayas)
Subregion	warm to hot perhumid
Soils	deep, loamy to clayey Red Loamy soils
Available water Capacity (AWC)	low to medium
Length of Growing Period(LGP)	300 days
Standard Code	C1A10

17. North-eastern Hills (Purvachal), warm perhumid ecoregion (D2A5).	
REGION-17.1	
Area	Meghalaya Plateau land Nagaland Hill
Subregion	warm to hot moist humid to perhumid
Soils	medium to deep loamy to clayey Red and Lateritic soils
Available water Capacity (AWC)	medium
Length of Growing Period(LGP)	270-300+ days
Standard Code	D2A9

REGION-17.2	
Area	Purvachal (Eastern Range)
Subregion	warm to hot perhumid
Soils	medium to deep loamy Red and Yellow soils
Available water Capacity (AWC)	low to medium
Length of Growing Period(LGP)	300 days
Standard Code	D3A10

18. Eastern Coastal Plain, hot subhumid to semiarid ecoregion (S7Cd2-5)	
REGION-18.1	
Area	South Tamil Nadu Plains (Coastal)
Subregion	hot dry semi-arid
Soils	deep, loamy to clayey, alkaline Coastal and deltaic alluvium-derived soil
Available water Capacity (AWC)	medium
Length of Growing Period(LGP)	90-120 days
Standard Code	S7Dd3

REGION-18.2	
Area	North Tamil Nadu Plains (Coastal)
Subregion	hot moist semi-arid

Soils	deep, clayey and cracking Coastal land Deltaic alluvium derived soils
Available water Capacity (AWC)	high
Length of Growing Period(LGP)	120-150 days
Standard Code	S7Dm4

REGION-18.3	
Area	Andhra Plain
Subregion	hot dry subhumid
Soils	deep, clayey Coastal and Deltaic alluvium-derived soils
Available water Capacity (AWC)	low to medium
Length of Growing Period(LGP)	150-180 days
Standard Code	S7Cd5

REGION-18.4	
Area	Utkal Plain and East Godavari Delta
Subregion	hot dry subhumid
Soils	deep, loamy to clayey Coastal and deltaic alluvium derived soils
Available water Capacity (AWC)	medium
Length of Growing Period(LGP)	180-210 days
Standard Code	S7Cd6

REGION-18.5	
Area	Gangetic Delta
Subregion	hot moist subhumid to humid
Soils	deep, loamy to clayey Coastal and deltaic alluvium-derived soils
Available water Capacity (AWC)	medium
Length of Growing Period(LGP)	240-270 days
Standard Code	S7Cm7

19. Western Ghats and Coastal Plain, hot humid-perhumid eco-region (E2BA5)	
REGION-19.1	
Area	North Sahyadris and Konkan Coast
Subregion	hot humid
Soils	medium to deep loamy to clayey mixed Red and Black soils
Available water Capacity (AWC)	medium to high
Length of Growing Period(LGP)	210-240 days
Standard Code	E6B8

REGION-19.2	
Area	Central and South Sahyadris

Subregion	hot moist subhumid to humid transitional
Soils	deep, loamy to clayey Red and Lateritic soils
Available water Capacity (AWC)	low to medium
Length of Growing Period(LGP)	210-270 days
Standard Code	E2Cm/B7(9)

REGION-19.3	
Area	Konkan, Karnataka and Kerala Coastal plain
Subregion	hot humid to per humid transitional
Soils	deep, clayey to loamy acidic coastal alluvium-derived soils
Available water Capacity (AWC)	low
Length of Growing Period(LGP)	240-270 days
Standard Code	(R7A(B8(7).

20. Islands of Andaman-Nicobar and Lakshadweep, hot humid to perhumid island ecoregion (T1A(B)5/T1B(A)5)	
REGION-20.1	
Area	Andaman and Nicobar group of Islands
Subregion	hot perhumid
Soils	shallow to medium deep, loamy to clayey Red and Yellow and Red Loamy soils
Available water Capacity (AWC)	low to medium
Length of Growing Period(LGP)	300 days
Standard Code	T3A10

REGION-20.2	
Area	Level Lakshadweep and group of Island
Subregion	hot humid
Soils	shallow to medium deep loamy to sandy Black, sandy and Littoral soils
Available water Capacity (AWC)	low to medium
Length of Growing Period(LGP)	240-270 days
Standard Code	U16B8