Agro-ecological zoning

Dr. V. K. Venugopal
Former Professor & Head
Department of Soil Science and Agricultural Chemistry,
College of Agriculture, Vellayani
Consultant, Digital University

CDIPD
CENTRE FOR DIGITAL INNOVATION AND PRODUCT DEVELOPMENT

CENTRE FOR DIGITAL INNOVATION AND PRODUCT DEVELOPMENT
(A centre of excellence established by Digital University Kerala)
www.cdipd.duk.ac.in

DIGITAL UNIVERSITY KERALA
Curating a responsible digital world

Definition

- **Agro ecological zone- Concept is based on the ability of land to produce crops is limited by factors set by climate and soil conditions.**
- **Agro-ecological delineations was developed by FAO (1976,1978) with strong emphasis on comparable agro-climatic parameters to delineate agriculturally potential areas suitable for crops or crop combinations so that optimum productivity is achieved.**

Length of growing period (LGP)

Period in days during the year when the precipitation exceeds half the PET

- Normal growing season a crop experiences a humid period (P>PET)
- Moist period (P>0.5 PET)
- Moderately dry to dry period (P<0.5 PET).
- Potential evapotranspiration is a measure of the ability of the atmosphere to remove water from the surface through the processes of evaporation and transpiration assuming no control on water supply . Expressed as mm/unit time (1 mm water corresponds to 10 m^3 water per ha)
- Actual evapotranspirationis the quantity of water that is actually removed from a surface due to the processes of evaporation and transpiration

Agro-ecological zones determined by

- **Physiography**
- **Soil**
- **Bioclimate**
- **Length of growing periods (LGP) .**

Water balance concept (Thornthwaite (1948)

Change in soil water= Inputs of water- Losses of water

Additions of soil water

Precipitation (P)

- Irrigation (I)
- Contribution from Ground water (C)
- Water inputs = P+I+C

Water losses = ET+ D + RO

- ET Evapo transpiration
- D Drainage
- RO Run off
- Soil water Balance = P+I+C - ET+ D + RO
- This gives the amount of water available in the root zone of plant

Preparation of Agro – Ecological Zone (AEZ) Map

- **On completion of climatic inventory, the various main climatic division (Bio-climate) and the iso lines delineating various length of growing periods (LGP) are superimposed on the appropriate soil (soil inventory) which delineates areas with similar soil and climate i.e., agro – ecological zones**

Agro -ecological Regions of India-

- Twenty Agro-ecological Regions (AER) identified by NBSS&LUP based on the large scale variation of soil and climatic conditions.

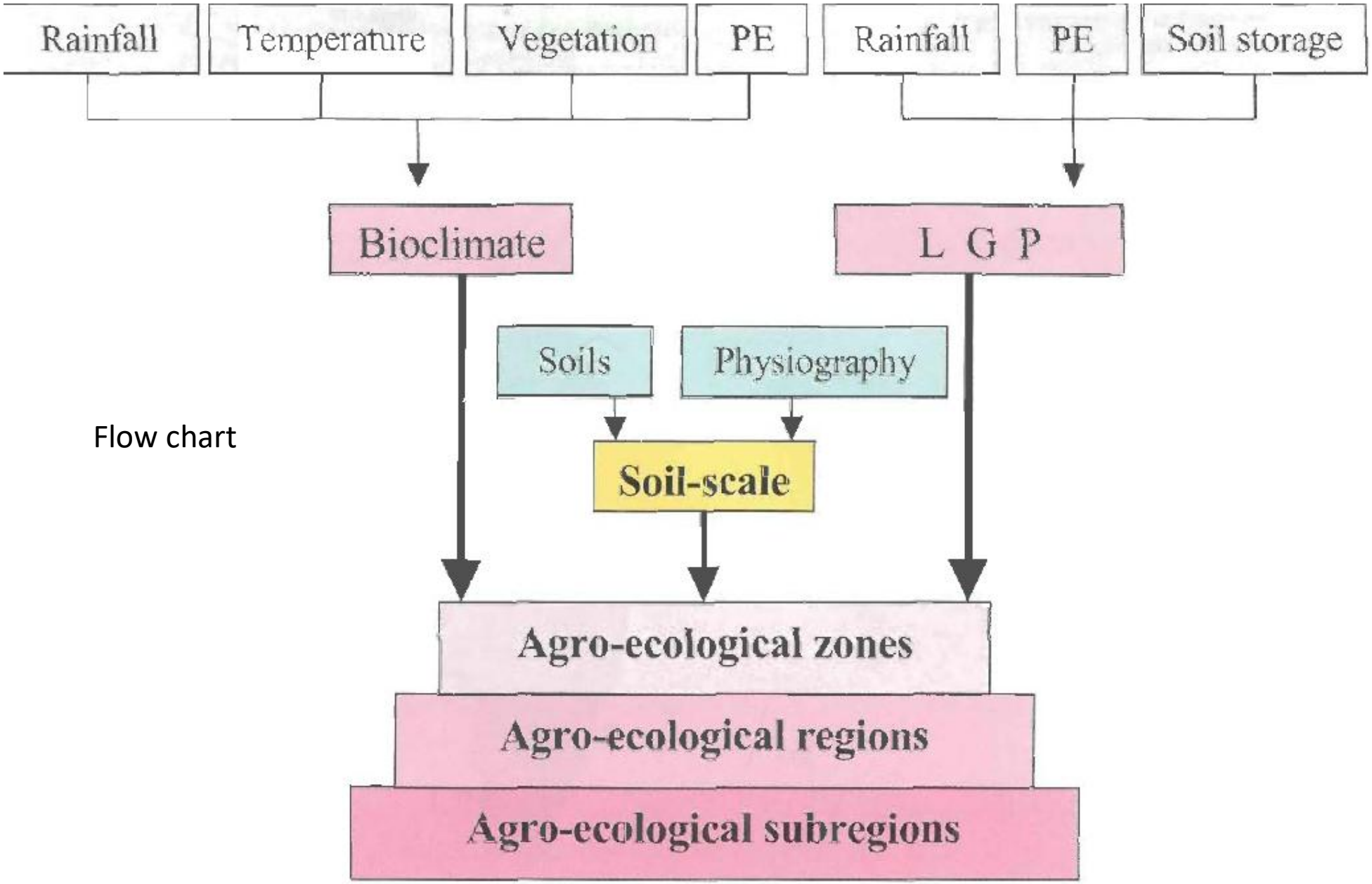
Kerala formed part of Region 19–Western Ghats and Coastal Plain, hot humid per humid eco-region with red, laterite and alluvium derived soils and growing period of 210 + days

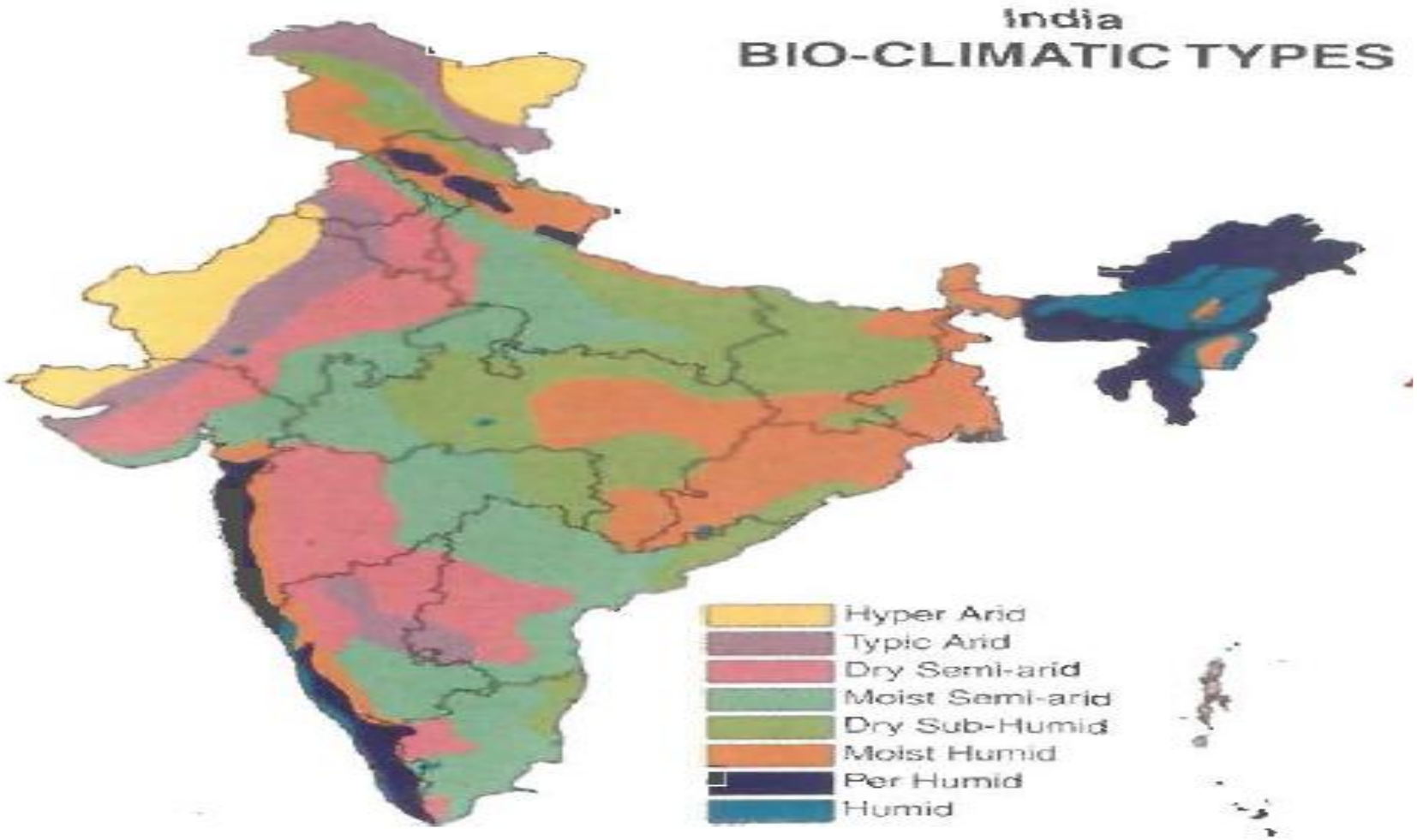
The two Sub Regions are

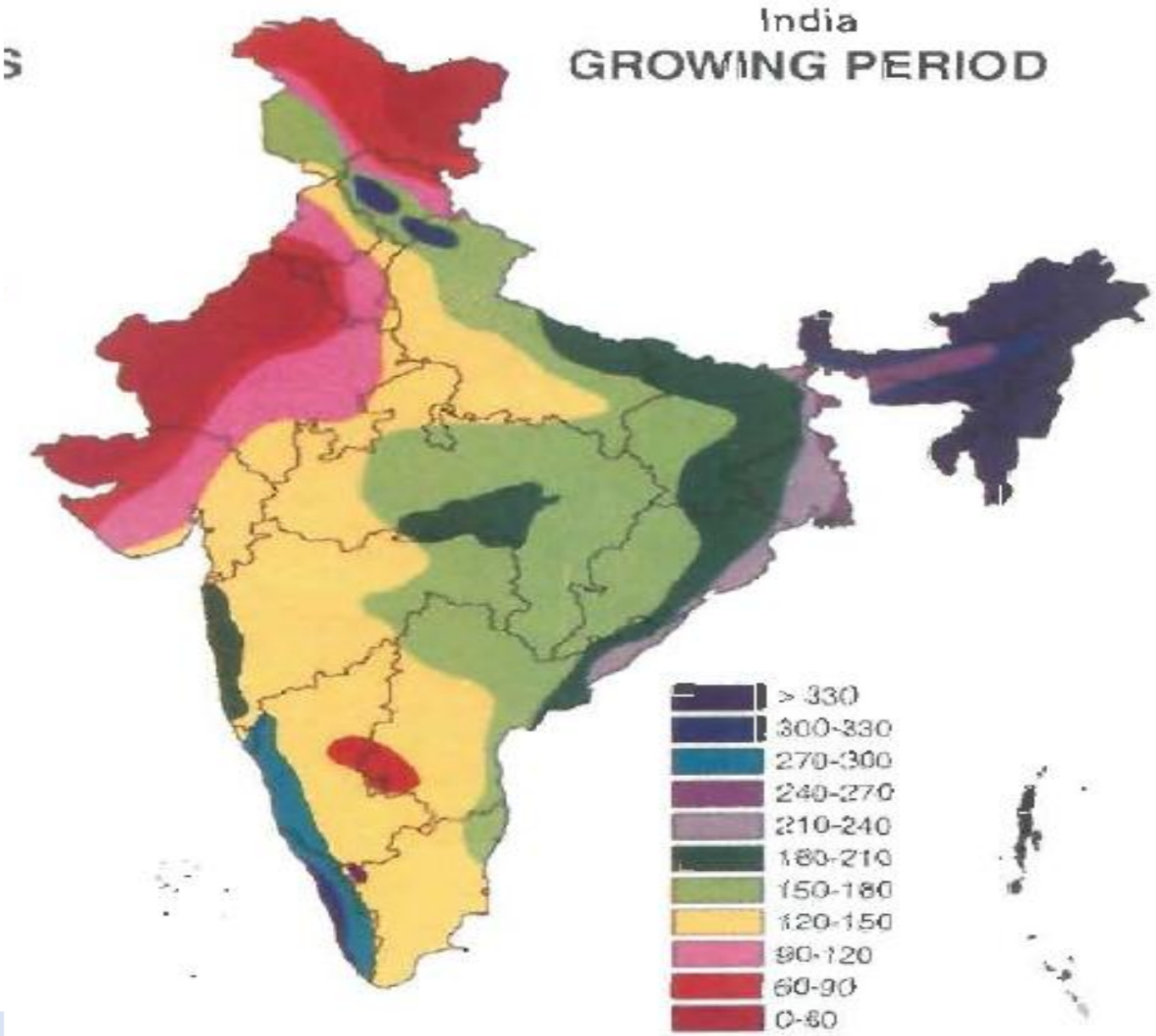
19.2 - Central and South Sahyadiri, hot, moist sub humid to humid

19.3 - Coastal Plain hot humid to per humid.

Flow chart


Rainfall
Temperature
Vegetation
PE
Rainfall
PE
Soil storage
Bioclimate
L G P
Soils
Physiography
Soil-scale
Agro-ecological zones
Agro-ecological regions
Agro-ecological subregions


India
BIO-CLIMATIC TYPES
Hyper Arid
Typic Arid
Dry Semi-arid
Moist Semi-arid
Dry Sub-Humid
Moist Humid
Per Humid
Humid


India
GROWING PERIOD
> 330
300-330
270-300
240-270
210-240
180-210
150-180
120-150
90-120
60-90
0-60


Thank You