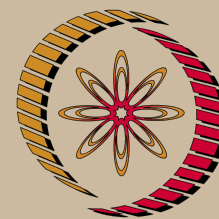


# NOC: Weather Forecast in Agriculture and Agro-advisory (WF) - Video course



NP-TEL

NPTEL

<http://nptel.ac.in>

Agriculture

Additional Reading:

[Resources for the Course on Weather Forecast in Agriculture and Agro advisory](#)

Coordinators:

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## COURSE OUTLINE

Week	Topics
1	<p>a. <b>Basic aspect of atmosphere, climate, weather</b></p> <ul style="list-style-type: none"> <li>◦ Definition on atmosphere – role of atmosphere on the earth – layers of atmosphere – content of atmosphere – definition of weather and climate examples for types of weather and climate.</li> </ul> <p>b. <b>Basic aspect of rainfall and their application in crop production</b></p> <ul style="list-style-type: none"> <li>◦ Rainfall theory – different process – rainfall classification based on the intensity – effective rainfall on crop production.</li> </ul> <p>c. <b>Basic aspect of temperature and their application in crop production</b></p> <ul style="list-style-type: none"> <li>◦ Cardinal temperature – hot wave – cold wave – enzyme activity in plant</li> </ul> <p>d. <b>Basic aspects of relative humidity, cloud cover and their application in crop production</b></p> <ul style="list-style-type: none"> <li>◦ Types of humidity – humidity and crop production – humidity and pest and disease – cloud cover classification and crop production</li> </ul> <p>e. <b>Basic aspects wind, wind direction and their application in crop production</b></p> <ul style="list-style-type: none"> <li>◦ Wind speed and units – wind speed and cyclone – wind direction identification and their crop production.</li> </ul>
2	<p>a. <b>Three weather codes and crop production</b></p> <ul style="list-style-type: none"> <li>◦ Normal weather and crop production; Sub normal weather and crop production; and abnormal weather and crop production.</li> </ul> <p>b. <b>Crop production risks and their management</b></p> <ul style="list-style-type: none"> <li>◦ Inherited risk– transferable risk– risk reduction through technology– definition and management aspects.</li> <li>◦ Drought– floods– extreme rainfall– hot waves– cold waves – thunderstorm– cyclone– pest and disease outbreak– abnormal wind speed under normal weather conditions– fog and mist.</li> </ul> <p>c. <b>Crop weather interactions and definition</b></p> <ul style="list-style-type: none"> <li>◦ Response of crops to different weather elements</li> </ul> <p>d. <b>Weather sensitive crops, stages and farm operations</b></p> <ul style="list-style-type: none"> <li>◦ List of weather sensitive crops– weather sensitive stages and weather sensitive farm operations</li> <li>◦ Basic aspects of crop weather relationships weather sensitive crops weather sensitive crop stages weather sensitive farm operations</li> </ul> <p>e. <b>Wheat, rice, maize and weather</b></p> <ul style="list-style-type: none"> <li>◦ Role of rainfall, temperature, wind and other important weather elements on wheat, rice, maize crop production.</li> </ul>
3	<p>a. <b>Sorghum, groundnut, pigeon pea and weather</b></p>

	<ul style="list-style-type: none"> <li>◦ Role of rainfall, temperature, wind and other important weather elements on sorghum, groundnut, pigeon pea crop production.</li> <li><b>b. Cotton, sugarcane and weather</b> <ul style="list-style-type: none"> <li>◦ Role of rainfall, temperature, wind and other important weather elements on cotton and sugarcane crop production.</li> </ul> </li> <li><b>c. Sugarbeet, chickpea and weather</b> <ul style="list-style-type: none"> <li>◦ Role of rainfall, temperature, wind and other important weather elements on sugarbeet and chickpea crop production.</li> </ul> </li> <li><b>d. Sunflower, mustard and weather</b> <ul style="list-style-type: none"> <li>◦ Role of rainfall, temperature, wind and other important weather elements on sunflower and mustard crop production.</li> </ul> </li> <li><b>e. Genesis of weather forecast in India and abroad</b> <ul style="list-style-type: none"> <li>◦ History of weather service and development over years in India and abroad</li> </ul> </li> </ul>	
4	<ul style="list-style-type: none"> <li><b>a. Types of weather forecast and details</b> <ul style="list-style-type: none"> <li>◦ Present resolutions of weather forecast considering the administrative divisions – Now cast– source of release– lead time– accuracy– clients; short range forecast– – source of release– lead time– accuracy– clients; medium range forecast– source of release– lead time– accuracy– clients</li> </ul> </li> <li><b>b. Types of weather forecast and details –contd.</b> <ul style="list-style-type: none"> <li>◦ Long range forecast– source of release– lead time– accuracy– clients; seasonal climate forecast– source of release– lead time– accuracy– clients; Integrated weather forecast and its usefulness to clients.</li> </ul> </li> <li><b>c. Simple methods of verification of weather forecast with real event</b> <ul style="list-style-type: none"> <li>◦ HK score, HSS score, ratio score or HIT score, correlation, RMSE</li> </ul> </li> <li><b>d. Traditional knowledge on weather forecast and their validity</b> <ul style="list-style-type: none"> <li>◦ Prevailing traditional knowledge on rainfall under short, medium and long range scale– their validity with real event–</li> </ul> </li> <li><b>e. Weather thumb rules and their validity</b> <ul style="list-style-type: none"> <li>◦ using developed thumb rules under prevailing weather parameters for carrying out farm operations to reduce the risks</li> </ul> </li> </ul>	
5	<ul style="list-style-type: none"> <li><b>a. Inviting questions from 1a to 4e</b> <ul style="list-style-type: none"> <li>◦ Presentation of selected question and answer</li> </ul> </li> <li><b>b. Development and component of agro advisory for weather forecast</b> <ul style="list-style-type: none"> <li>◦ Suitability of different weather forecast for the preparation of agro advisories– Agro advisory number and date, summary of the past week weather– summary of present five days weather forecast–</li> </ul> </li> <li><b>c. Development and component of agro advisory for weather forecast – contd.</b> <ul style="list-style-type: none"> <li>◦ Source of information for the collection of crop stages– pest and disease load for the preparation of agro advisory – developing agro advisories.</li> <li>◦ Crop stages and pest and disease role– agro advisory</li> </ul> </li> <li><b>d. Model agro advisories for selected five days weather forecast</b> <ul style="list-style-type: none"> <li>◦ Presenting prepared agro advisory for Indian condition</li> </ul> </li> <li><b>e. Mass communication mode of agro advisories and their effectiveness</b> <ul style="list-style-type: none"> <li>◦ News papers– radios– television– mobile SMS– hosting in the website– social networking– climate manager / monsoon manager at village level –empowering village level climate managers / monsoon manager to mass communicate weather forecast and its related advisories– inviting questions for next lesson for discussion.</li> </ul> </li> </ul>	

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- a. **Discussion on weather forecast and agro advisory from different website**
  - Website of IMD– Website of SAUs – Website of skymet– International weather website
- b. **Role of climate manager on farm management decision based on weather forecast at village level and assignment**
  - Who is climate manager required characteristics of climate manager his responsibility for weather forecast and agro advisory collection and mass communication at the village level
- c. **Development of selected weather window for issuing agro advisory case study from Tamil Nadu**
  - Selection of weather parameters for studying permutation and combination study selection of weather windows for operational purpose.
- d. **Model of agro advisory for 54 selected weather window of Tamil Nadu for rice**
  - Presentation of 54 selected weather window
- e. **Response farming – a type of farm planning being practiced in Australia considering seasonal climate forecast**
  - Definition and its role in Australian farm activities

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- a. **Case study in India on the adoption of weather based crop production crop management**
  - Medium range weather forecast/ Seasonal climate forecast/ Case study on crop production
- b. **Case study in India on the adoption of weather based crop production on pest and disease management**
  - Medium range weather forecast/ Seasonal climate forecast/ Case study on pest and disease management
- c. **Case study in India on the adoption of weather based animal production**
  - Medium range weather forecast/ Seasonal climate forecast/ Case study on animal milk production and poultry feed management
- d. **Cost benefit analysis for the case study done on crop management**
  - Partial budgeting definition – actual exercise for crop management
- e. **Cost benefit analysis for the case study done on animal management**
  - Partial budgeting definition actual exercise for animal management

## COURSE DETAIL

Week	Topic	Speaker
	Introduction to the Course	Dr. TN Balasubramanian
Week1	Basic knowledge on Meteorological Weather Elements	
Lect1	Basic aspects of atmosphere, climate, weather	Dr. TN Balasubramanian

Lect2	Basic aspects of Rainfall and their application in crop production	Dr. TN Balasubramanian
Lect3	Basic aspects of Temperature and their application in crop production	Dr. TN Balasubramanian
Lect4	Basic aspects of Relative humidity, Cloud cover and their application in crop production	Dr. TN Balasubramanian
Lect5	Basic aspects of wind, wind direction and their application in crop production	Dr. TN Balasubramanian
<b>Week2</b>	<b>Crop and Weather I</b>	
Lect1	Three weather codes and crop production	Dr. TN Balasubramanian
Lect2	Crop production risks and their management	Dr. TN Balasubramanian
Lect3	Weather sensitive crops, stages and farm operations	Dr. TN Balasubramanian
Lect4	Cropweather interactions and definition	Dr. TN Balasubramanian
Lect5	CropWeather Interactions: Wheat, Rice and Maize	Dr. TN Balasubramanian
<b>Week3</b>	<b>Crop and Weather II</b>	
Lect1	CropWeather Interactions: Sorghum , Groundnut and Pigeon pea	Dr. R. Nagrajan
Lect2	CropWeather Interactions: Cotton and Sugarcane	Dr. R. Nagrajan
Lect3	CropWeather Interactions: Sugarbeet and Chickpea	Dr. R. Nagrajan
Lect4	CropWeather Interactions: Sunflower and Mustard	Dr. R. Nagrajan
Lect5	Genesis of weather forecast in India and Abroad	Dr. R. Nagrajan
<b>Week4</b>	<b>Weather Forecast</b>	
Lect1	Types of weather forecast and details	Dr. TN

		Balasubramanian
Lect2	Types of weather forecast and detailscontd.	Dr. TN Balasubramanian
Lect3	Simple methods of verification of weather forecast with real event	Dr. TN Balasubramanian
Lect4	Traditional knowledges on weather forecast and their validity	Dr. TN Balasubramanian
Lect5	Weather thumb rules and their validity	Dr. TN Balasubramanian
<b>Week5</b>	<b>Weather Forecast and Advisories I 0</b>	
Lect1	Development and component of agro advisory for weather forecast	Dr. TN Balasubramanian
Lect2	Development and component of agro advisory for weather forecast contd.	Dr. TN Balasubramanian
Lect3	Model agro advisories for selected five days weather forecast	Dr. TN Balasubramanian
Lect4	Mass communication mode of agro advisories and their effectiveness	Dr. R. Nagrajan
Lect5	Inviting questions from W1,L1 to W4,L5	Dr. R. Nagrajan
<b>Week6</b>	<b>Weather Forecast and Advisories II</b>	
Lect1	Discussion on weather forecast and agro advisory from different website	Dr. R. Nagrajan
Lect2	Role of climate manager on farm management decision based on weather forecast at village level and assignment	Dr. TN Balasubramanian
Lect3	Development of selected weather window for issuing agro advisory case study from Tamil Nadu	Dr. TN Balasubramanian
Lect4	Model of agro advisory for 54 selected weather window of Tamil Nadu for rice	Dr. TN Balasubramanian
Lect5	Response farming a type of farm planning being practiced in Australia considering seasonal climate forecast	Dr. TN Balasubramanian
<b>Week7</b>	<b>Case Studies</b>	
Lect1	Case study in India on the adoption of weather based	

	crop production Crop management	Dr. TN Balasubramanian
Lect2	Case study in India on the adoption of weather based crop production Pest and disease management	Dr. TN Balasubramanian
Lect3	Case study in India on the adoption of weather based animal production	Dr. TN Balasubramanian
Lect4	Cost benefit analysis for the case study done on crop management	Dr. TN Balasubramanian
Lect5	Cost benefit analysis for the case study done on animal management	Dr. TN Balasubramanian
<b>Week8</b>	<b>Summary</b>	Dr. TN Balasubramanian
Lect2	Summary of the lessons learned and way forward	Dr. TN Balasubramanian