Unit 6

Handling Emergency Situations during Paddy Crop Production

Introduction

Paddy crop mostly faces aberrant weather conditions in different parts of the country. The south-west monsoon rains, which are seasonal, erratic and highly variable in nature with respect to region and time, are a major source of water for the crop. The crop yields are considerably affected due to the vagaries of monsoon rains in different parts of the country every year. Therefore, knowledge related to weather conditions is essential for rice growers. Besides, they must know the ways and means to tackle these situations.

Managing Aberrant Monsoon Conditions

Aberrant monsoon

- Delayed arrival or onset of monsoon
- Timey onset of monsoon followed by prolonged dry spell
- Early withdrawal of monsoon
- Extended monsoon

Delayed onset of monsoon

When monsoons are delayed, the variety to be grown differs from normal. A delay of up to 10 days

may not warrant a change in variety. But a delay of more than 20 days will demand that a relatively early maturing variety replaces the existing one. If it is further delayed, then an early variety will be an ideal choice for planting.

Provision for irrigation at weekly interval and other normal needs of nursery rising should be adequately managed so as to raise the nurseries successfully. Long duration variety (>140 days at three to four weeks old) seedlings stage must be transplanted by the first fortnight of July. In case monsoon is delayed for up to four weeks, the second nursery should be taken. For medium duration, cultivars (125–135 days) of three to four week–old may be used and transplanting may be done in the third or fourth week of July. If further delay is anticipated, the third nursery must be used. Short duration varieties (<110 days) are also used for transplanting. A three to four week–old seedling must be transplanted in the first fortnight of August.

Early withdrawal of monsoon

Suspension of *Rabi* crop after paddy is cultivated is one essential outcome, if monsoon is below average. However, moisture conservation is integral to effective and efficient utilisation of available resources. The following moisture conservation practices are beneficial.

- Plant density must be reduced and adjustment of plant population be done before 30–35 days after sowing.
- Surface mulches can be used to conserve moisture in the crop.
- Protective irrigation must be carried out at 55–56 days of growth.
- The frequency of interculture must be increased (prevent loss of moisture).

Extended monsoon

The timing of harvesting paddy becomes tricky under continued rainfall conditions. One must try to harvest the

crop on a dry day and the crop bundle after harvesting must be moved to a covered but open area for early threshing. Do not pile the harvested paddy bundles too high. Turn them to provide an airy environment. However, this practice is rarely experienced. Double cropping must, preferably, be adopted in medium deep soils. The choice of additional crops depends on the soil and weather conditions, as well as, the best commodity market at hand.

Aberrant monsoon conditions

Monsoon sets into effect due to seasonal reverse in the wind direction during the monsoon season. Historical analysis of rainfall distribution pattern in India depicts the following features.

- Monsoon rains over the years and rainfall pattern in different regions in India are known to be highly variable in nature and often erratic.
- There is large variation in the onset dates of south-west monsoon every year across different locations in the country.
- Being extended and prolonged in time and space, monsoon rains are beset with dry spells, ranging from few days to weeks with intermittent wet spells.
- Just like onset, a large yearly variation occurs in the dates of cessation of south-west monsoon in different parts of the country. Often, an early withdrawal of monsoon is experienced in some parts of the country.
- The quantum of individual precipitation and cumulative rainfall also varies with space and time across the country.
- Run-off and drainage problems often follow cyclones and depressions, accompanied by high intensity rainfall.

Effects of aberrant rains on crops

The unfavourable changes in rainfall pattern create different kinds of drought *viz.*, early season, mid-season, late season, chronic and apparent, which have been discussed as follows.

Early drought condition

Delayed onset of monsoon is referred to as early season drought. This is aggravated later by a prolonged dry spell soon after the onset of monsoon. This drought causes seedling mortality, poor crop stands and poor crop growth. There is reduced water availability for crop growth, which hampers vegetative growth of crop plants, as well as, reproductive performance of the crop.

Mid–season drought

This phenomenon is characterised by insufficient soil moisture between successive or sequential rainfall events during peak crop growth period. The impact of mid–season drought depends on the crop growth stage, and duration and intensity of the drought spell.

Terminal or late season drought

Cessation of monsoon much before the normal time with or without late commencement or weak monsoon activity leads to terminal or late season drought. This is critical as it adversely affects the reproductive stage of the crop, even in case of wetland rice.

Chronic drought

This type of drought is common in arid areas, where rainfall and stored soil moisture are inadequate to meet the crop's water requirement during most of the year. The crop growing period in these areas is hardly six to seven weeks.

Apparent drought

Mismatching moisture needs of the crop in time, relative to rainfall pattern, is responsible for the incidence of apparent drought. Such drought conditions occur in medium to low rainfall regions.

Tackling aberrant weather conditions

Crop management practices

The following measures must be followed to tackle aberrant weather conditions.

- Conservation of water and its efficient utilisation towards crop management

- Effective weed management during critical phase
- Mulching and increased inter culture operation
- Crops like millets, red gram and castor are drought resistant in nature. Such crops must be selected, so that they are able to sustain longer dry spells.

Practical Exercise

Activity

Enumerate some measures that you would take to tackle aberrant weather conditions in case of paddy cultivation.

Material required: practical file and writing material

Procedure

- Collect information about aberrant weather conditions that hamper paddy crop cultivation.
- Write some measures that you would take to manage aberrant weather conditions in case of paddy cultivation.

Check Your Progress

A. Fill in the Blanks

1. _____ monsoon rains are a major source of water for paddy.
2. Rainfall over different regions in India is known to be highly _____ in nature.
3. Delayed onset of monsoon is referred to as _____ drought.
4. Insufficient availability of soil moisture during peak crop growth period is known as _____ drought.
5. Chronic type of drought is found in _____ areas.

B. Multiple Choice Questions

1. Early withdrawal of monsoon affects suspension of _____ crop.
   (a) *Kharif*
   (b) *Rabi*
   (c) *Zaid*
   (d) Summer
2. At which crop growth stage, protective irrigation should be carried out?
   (a) 55–60 days
   (b) 75–80 days
   (c) 25–30 days
   (d) 95–100 days

3. Under which monsoon condition, double cropping is possible in medium deep soils?
   (a) Extended
   (b) Early
   (c) El-Nino
   (d) La-Nina
4. The frequency of inter culture helps in _____.
   (a) preventing loss of insects–pests
   (b) preventing loss of diseases
   (c) preventing loss of moisture
   (d) All of the above
5. Short duration varieties of paddy must be transplanted during the _____.
   (a) first fortnight of July
   (b) second fortnight of July
   (c) first fortnight of August
   (d) second fortnight of August

C. Subjective Questions

1. Explain aberrant monsoon conditions.
2. Describe the types of aberrant monsoon.
3. Describe the effect of aberrant monsoon on crops.
4. Write a brief note on tackling aberrant weather conditions.
5. Differentiate between the following.
   (a) Early and terminal drought
   (b) Chronic and terminal drought

D. Match the Columns

A	B
1. Run-off	(a) Late season drought
2. Terminal drought	(b) By mulching
3. Apparent drought	(c) High intensity rainfall
4. Preventing moisture loss	(d) Medium to low rainfall regions