Available online at
http://currentagriculturetrends.vitalbiotech.org/

ISSN (E): 2583 – 1933

Curr. Agri.Tren.:e- Newsletter, (2023) *2*(8), 14-16

Current Agriculture Trends: e-Newsletter

Article ID: 220

Criteria for Scheduling Irrigation or Approaches for Irrigation Scheduling

Ram Prakash[1]*, Narendra Kumar[2], Subhash Kumar[3]

[1]Department of Agronomy, [2]Department of Livestock Production Management, [3]Department of Crop Physiology, JBIT College of Applied Science Uttarakhand, India

*Corresponding Author
Ram Prakash*

Article History
Received: 12. 08.2023
Revised: 17. 08.2023
Accepted: 26. 08.2023

INTRODUCTION

An ideal irrigation schedule must indicate when to apply irrigation water and how much quantity of water to be applied; several approaches for scheduling irrigation have been used by scientist and farmers.

1. Soil moisture depletion approach:

The available soil moisture in the root is a good criterion for scheduling irrigation. When the soil moisture in a specified root zone depth is depended to a particular level (which is different for different crops) it is too replenished by irrigation.

For practical purpose, irrigation should be started when about 50 percent of the available moisture in the soil root zone is depleted. The available water is the soil moisture, which lies between field capacity and wilting point. The relative availability of soil moisture is not same field capacity to wilting point stage and since the crop suffers before the soil moisture reaches wilting point, it is necessary to locate the optimum point within the available range of soil moisture, when irrigation must be scheduled to maintain crop yield at high level. Soil moisture deficit represents the difference in the moisture content at field capacity and that before irrigation. This is measured by taking into consideration the percentage, availability, tension, resistance etc.

2. Plant basis or plant indices:

As the plant is the user of water, it can be taken as a guide for scheduling irrigation. The deficit of water will be reflected by plants itself such as dropping, curling or rolling of leaves and change in foliage colour as indication for irrigation scheduling. However, these symptoms indicate the need for water. They do not permit quantitative estimation of moisture deficit.

Growth indicators such as cell elongation rates, plant water content and leaf water potential, plant temperature leaf diffusion resistance etc. are also used for deciding when to irrigate. Some indicator plants are also a basis for scheduling irrigation e.g. sunflower plant which is used for estimation of PWP of soil is used in Hawaii as an indicator plant for irrigation sugar cane.

3. Climatological approach:

Evapotranspiration mainly depends up on climate. The amount of water lost by evapotranspiration is estimated from Climatological data and when ET reaches a particular level, irrigation is scheduled. The amount of irrigation given is either equal to ET or fraction of ET. Different methods in Climatological approach are IW/CPE ratio method and pan evaporimeter method.

4) Critical growth approach:

In each crop, there are some growth stages at which moisture stress leads to irrevocable yield loss. These stages are known as critical periods or moisture sensitive periods. If irrigation water is available in sufficient quantities, irrigation is scheduled whenever soil moisture is depleted to critical moisture level. Say 25 or 50 percent of available soil moisture. Under limited water supply conditions, irrigation is scheduled at moisture sensitive stages and irrigation is skipped at non-sensitive stages. In cereals, panicle initiation, flowering, and pod development are the most important moisture sensitive stages.

Moisture sensitive stages of important crops

Sr. No.	Crop	Important Moisture Sensitive Stages
1	Rice	Panicle Initiation, Flowering
2	Wheat	Crown Root Initiation, Jointing, Milking
3	Sorghum	Seedling, Flowering
4	Maize	Silking. Tasseling
5	Bajara	Flowering, Panicle Initiation
6	Nachani	Panicle Initiation, Flowering
7	Ground Nut	Rapid Flowering, Pegging, Early Pod Formation
8	Red Gram	Flowering & Pod Formation
9	Green Gram	Flowering & Pod Formation
10	Black Gram	Flowering & Pod Formation
11	Sugarcane	Formative Stage
12	Sesamum	Blooming stage to Maturity
13	Sunflower	Two weeks before & after flowering
14	Safflower	From rosette to flowering
15	Soybean	Blooming & seed formation
16	Cotton	Flowering & Ball Formation

17	Tobacco	Transplanting to Full Bloom
18	Chilies	Flowering
19	Potato	Tuber Initiation to Tuber Maturity
20	Onion	Bulb Formation to Maturity
21	Tomato	From the Commencement of Fruit Set