



CRITICAL GROWTH STAGES AND WATER MANAGEMENT

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Critical Growth Stages of the Crops:

Depending on the stage of crop growth, different soil moisture levels are ideal for plant growth. Compared to other times throughout crop growth and development, some are more vulnerable to soil moisture stress. These times are referred to as moisture-sensitive times. The time of growth when plants are most vulnerable to water scarcity is usually referred to as the "critical period." The yield will be irreversibly decreased by inadequate water delivery at moisture-sensitive times, and the yield lost cannot be recovered by adequate water and other management techniques during other growth phases.

Although they absorb less water when they are young, vegetables require a stress-free moisture environment due to their weak root system, which is thinly distributed and found in the top 15 to 20 cm of soil that dries up rapidly. Later in growth, when moisture stress significantly lowers production, vegetable crops need and transpire more water.

The critical growth stages of different crops are;

Name of the Crop	Crop growth stages	Days after Sowing/Transplanting (DAS/T)
Cereals		
Paddy (Transplanting)	Tillering	25-35
	Heading	40-50
	Flowering	65-75



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	Milking	80-85
Millets	Tillering	25-35
	Flowering	50-55
	Milking and Dough	70-75
Maize	Tesseling	40-60
	Milking and Silking	70-75
Legumes		
Pigeon pea	Flowering	70-90
	Pod Formation	100-110
Black Gram	Flowering	35-40
	Grain Formation	50-60
Green Gram	Pre-Flowering	30-35
	Grain Formation	40-45
Oil Seeds		
Groundnut	Flowering	35-40
	Peg initiation	55-60
	Pod development	70-80
Sesame	Flowering	30-40
	Capsule formation	50-60
Fiber		
Cotton	Flowering	60-70
	Boll formation	90-100
	Boll opening	105-135

Water Management:

- ❖ Rainwater may be stored for life-saving irrigation. Rainwater is collected for protective irrigation by on-farm water gathering facilities (farm ponds) coated with 6:1 soil: cement mortar that is 6 cm thick and occupies 10% of the land.
- ❖ Carry out inversion-type off season plowing (summer ploughing) to preserve moisture, lessen weed and insect issues, and enable early planting.



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- ❖ To create a ridge and furrow land arrangement that effectively conserves soil moisture and helps the area withstand drought for a longer amount of time, plough and plant crops across the slope.
- ❖ Use the broad bed and furrow (BBF) planting technique to grow vegetables, ginger, turmeric, and groundnuts. This will let the extra water drain away during heavy rainstorms.
- ❖ Contour farming, cover crops, graded trenching and bunding, terracing, and the ridge and furrow planting technique are examples of in situ soil and water conservation techniques.
- ❖ In un-bunded highland areas, install vegetative barriers (Vetiver filter strips) to prevent soil erosion and save rainfall.
- ❖ Control waterways by storing water in check dams, stone structures, and brushwood constructions on natural streams and nallahs.
- ❖ Make use of collected water by using drip or sprinkler micro-irrigation techniques.
- ❖ Conserving moisture with mulching (soil, such as light hoeing and pebble mulching, chemical, such as polyethylene, and organic, such as straw).
- ❖ Gully blocking across waterways by piling locally accessible stones in empty cement bags. Reducing soil erosion is another benefit of growing grasses in waterways.
- ❖ Plant crops that resist erosion (black gram, cowpea, rice bean, and green gram) and those that allow it (maize and arhar) in alternating strips of the required width for different slopes.
- ❖ In light-textured soils, build a number of percolation tanks for additional irrigation and profile recharging.
- ❖ For the safe disposal of surplus water in medium and low lands, construct appropriate waste weir structures in the rice field bunds.



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- ❖ To encourage involvement, fortify village institutions.

The following advice is especially designed to help with water management during the Kharif season:

- Selection of Crop
- Harvesting of Rain water
- Monitoring of Soil Moisture

