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CICR-Dada Lad Cotton Production Technique

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Cotton plays a pivotal role in India's economy, employment generation, textile industry, cultural heritage, and rural development. In the past one decade, cotton yields in India have been stagnated. Addressing cotton yield stagnation requires a holistic approach that includes improved agronomic practices, better pest and disease management strategies, enhanced soil and water management techniques, and greater farmer access to technology and extension services. In cotton plants, the removal of monopodia can be a technique used to manage the plant's growth and improve its productivity. This physical canopy management technique known as CICR-Dada Lad Cotton Production technique has emerged as a game changer in improving cotton productivity.

Major components of CICR-Dada Lad Cotton Production technique include monopodia (vegetative branch) removal at 40-45 days after sowing (DAS), removing regrowth at sympodial branches (fruiting branches) and de-topping of terminal growing part of the plant (top 10 to 15 cm). The major changes in cotton agronomy using this technology are explained below:

Soil

Medium deep to deep fertile soil with good drainage.

Sowing

Sow aggressively growing BG II hybrids/ varieties with a spacing of 90 cm between rows and 30 cm between plants after receiving at least 70 mm of cumulative monsoon rainfall. For irrigated fields, utilizing drip irrigation with polymulch on raised beds can result in better yields.

Removal of Monopodia

Monopodia removal in cotton is the process of pruning unproductive vegetative branches (monopodia) to enhance growth and yield. This involves cutting off the monopodia at around 40-45 DAS to redirect the plant's energy toward fruiting branches (sympodial). This practice helps manage

the plant's growth, ensuring better light penetration, better boll retention and air circulation, which can lead to higher productivity and improved boll quality.

- Farmers can manually perform this task preferably using garden secateurs/ sharp scissors
- Correctly identify the monopodial branches and cut them 2-3 cm away from the main stem to prevent injury.
- Typically, 2-4 monopodial branches are present.
- Remove leaves with long petioles on the main stem along with the monopodia.
- Nipping of sympodial branches should be done once the desired number of bolls has been set.



Removal of monopodia



Demonstration - Technique of pruning monopodia



Cotton plant after removal of monopodia



Cotton crop under drip irrigation with polymulch on raised beds

Removing regrowth

After removing the monopodial branches, regrowth occurs at each node within 15-20 days. This regrowth should be removed either by hand if it's tender or with sharp scissors or garden secateurs.

De-topping

De-topping, also known as topping, is a practice in cotton cultivation where the terminal portion of plant growth is removed after attaining targeted sympodial branch number and crop age/stage. De-topping helps in preventing apical dominance, vegetative growth and promote the development of



Cotton plant after de-topping

fruiting branches. The primary goals are to improve the plant's structure, enhance air circulation, and increase sunlight penetration, which can lead to better boll setting and higher yields. Typically, de-topping is performed in cotton plant when it attains a height of 120 cm (4 feet) and top 10 to 15 cm terminal growing part is removed with sharp scissors or garden secateurs to ensure the best outcomes for cotton production. Depending on season, crop age for de-topping in general is around 90 days after good boll set on plants.

Reasons for removal of monopodia and de topping:

1. **Promoting lateral growth:** By removing the monopodia, the plant is encouraged to divert its energy towards sympodial branches. This lateral growth can lead to increased flowering and ultimately higher cotton production.
2. **Improving microclimate, air circulation and light penetration:** Dense foliage due to excessive growth of monopodia restrict airflow and sunlight penetration within the plant canopy. Removing monopodia improve these conditions, reducing the risk of diseases and optimizing photosynthesis.
3. **Managing plant density:** Removal of monopodia helps to regulate the spacing and density of cotton plants in the field. This can prevent overcrowding, which impact negatively nutrient uptake and overall plant health.

Implementation and Considerations:

1. **Timing:** The timing of monopodia removal and de-topping is crucial and can vary depending on factors such as local climate, soil conditions, and the specific cotton variety being grown. Ideally the timing for monopodia is 40-45 days after sowing. De-topping is to be done when at least 16-18 sympodial branches have developed, ideally at around 90 days after sowing.
2. **Techniques:** Techniques for monopodia removal can vary from farm to farm and may include manual pruning with sharp scissors or garden secateurs or mechanical trimming with

specialized equipment.

- 3. Plant Protection:** At 45 days after sowing, install two pheromone traps/acre and if 8 moths catch per pheromone trap is observed for consecutively 3 days, spray Profenofos 50 EC 30 ml or Emamectin benzoate 5 SG 5g per 10 litre of water at flowering stage.

To manage internal boll rot, give prophylactic spray of carbendazim 12% + Mancozeb 63% WP @ 25-30g per 10 litre of water at 60 days after sowing followed by foliar spray of propiconazole 25 EC @10 ml or carbendazim 50 WP @ 4g in 10 litres of water fifteen days after first spray.

- 4. Impact on Yield:** Properly managed removal of monopodia has the potential to increase cotton yield by optimizing plant resources and promoting healthier growth conditions.

- 5. Crop duration:** Monopodia removal and de-topping promote synchronous boll opening and bring the crop to early maturity and shorten the critical growth window for drought, heat and insect pests.
- 6. Harvest index:** Possible to achieve high seed cotton yield through increasing harvest index.

In conclusion, CICR-Dada Lad cotton production technique (a manual canopy management technique) promotes the removal of monopodia and de-topping, aimed at enhancing the productivity and health of cotton plants by redirecting growth energy, improving light and airflow, and managing plant density for higher harvest index.

Note: Nutrient, weed and integrated pest management to be practiced similarly as in conventional cotton cultivation.



Shri Dada Lad, Dr. Y G Prasad and others at a demonstration plot

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