Model 1: Raised Bed Technology in Cotton for Enhanced Yield, Climate Resilience & Sustainable Farming

About the model

Raised bed cotton cultivation is a climate-smart solution that improves yields and mitigates waterlogging under rainfed conditions. KVK Adilabad introduced and demonstrated this method using a tractor-mounted bed maker, creating raised beds of 30–40 cm height and adjustable widths. With a hiring cost of Rs. 1200/acre, this method improved cotton yields by 43%, enhanced plant growth, and reduced water stress. It also achieved 90% germination, better moisture retention, and lower incidences of boll rot and weed density. Field challenges included machinery access and high initial investment, but awareness campaigns and local adoption helped scale the technology rapidly.

Background & Need

In Adilabad, cotton is grown on over 4 lakh acres by 1.5 lakh small and marginal farmers, mostly under rainfed conditions. The region receives 70% of its rainfall in July and August, leading to waterlogging, stunted plant growth, and boll rot—causing 30–50% yield loss. Recent years, particularly 2022, saw extremely high rainfall, further stressing the need for resilient farming systems.

Details of the Technology Intervention

KVK Adilabad validated raised bed cultivation for cotton from 2017–2022. Based on its success at the KVK instructional farm, the method was promoted through Front Line Demonstrations (FLDs) and training programs in villages with problematic land configurations.

Key Features of Raised Bed Method:

- Beds: 20–40 cm high with 30 cm furrow width
- Spacing: Adjustable (90 to 180 cm between beds)
- Equipment Cost: Rs. 32,000–40,000
- Preparation Time: 45–60 mins per acre
- Hiring Cost: Rs. 1200 per acre

Extension & Capacity Building

KVK conducted:

- Training sessions and group discussions to identify suitable farmers.
- Live demonstrations in waterlogging-prone fields.
- YouTube videos, print, and electronic media campaigns to raise awareness.
- Efforts to improve machinery access through custom hiring centers and farmer-to-farmer sharing.

Reach and Demonstration Results

Over 5000 farmers were exposed to the raised bed method through KVK visits, demonstrations, and training.

Crop Performance in Raised Bed Method v/s. Flatbed method

Parameters	Crop stage at 120 DAS	
	Raised bed	Flatbed
Plant height (cm)	195 – 200	160 -175
Sympodial branches	27 – 33	18 – 22
No. of Bolls / Plant	25 – 48	20 – 25
No. of Squares / Plant	31 – 48	20 – 25

Outcomes and Economic Impact

Average yield and economics of the demonstrations conducted during the year 2022-23 and 2023-24

Particulars	Yield (kg/ha)	Cost of Cultivation (Rs./ha)	Gross returns (Rs./ha)	Net returns (Rs./ha)	B:C ratio
Demo	1800	49787	120690	70903	2.42
Check	1260	46725	84687	37962	1.81

Farmers realized nearly double net returns, motivating wider adoption. By 2024–25, the technology expanded to over 30,000 acres across the district. Tractor owners began investing in bed makers and earning income by preparing fields for others—each averaging 50 acres per season.

Conclusion

Raised bed cultivation in cotton has proven to be a climate-resilient and economically viable practice for rainfed regions like Adilabad. With:

- 43% higher yields,
- Improved plant health and spacing management,
- Reduced waterlogging and pest issues,
- Better aeration and ease of cultivation,

This model enables sustainable intensification for smallholder farmers.

Strategic Recommendations

- Expand access to bed makers through custom hiring centers.
- Subsidize machinery to encourage ownership and reduce costs.

- Conduct mass awareness campaigns showcasing field success stories.
- Provide timely advisory services through digital platforms (e.g., WhatsApp groups).
- Continue monitoring demonstrations and support replication across similar agro-ecologies.

  Raised bed technology is a replicable and scalable model that addresses both productivity and climate adaptability, ensuring better livelihoods for cotton farmers in vulnerable regions.

Cultivation of cotton on raised beds – Adilabad, Telangana