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on
**CROPS – CLIMATE RESILIENCE
OPTIMIZATION FOR PRODUCTIVITY
AND SUSTAINABILITY**

9th - 11th December 2025

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Organized by
School of Agriculture
MOHAN BABU UNIVERSITY





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on**

**“Climate Resilience Optimization for Productivity and
Sustainability (CROPS)”**

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Enhancing HDPS Cotton Performance Using Compact Cotton Varieties and Nitrogen Management under Deficit Subsurface Drip Irrigation

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Abstract

Cotton (*Gossypium* spp.) is an economically important fibre crop cultivated in tropical and subtropical regions, serving as a primary raw material for the global textile industry. A field experiment was conducted during the 2024-25 summer and winter seasons at Wetland Farm, TNAU, Coimbatore, to investigate efficient irrigation and nitrogen approaches to maximize growth and yield of cotton under HDPS conditions. The trial, designed as a split-split plot with three irrigation levels in the main plots (1.0, 0.8 and 0.6 ETc), two varieties in the sub-plots (CO 17, VPT 2) and three nitrogen management strategies in the sub-sub plots (Control, 100 % RDN through granular urea, 50 % RDN through granular urea + 20 % N through nano urea @ 25 DAS + 20 % N through nano urea @ 45 DAS + 10 % N through nano urea @ 65 DAS), each replicated three times. Results revealed that the 1.0 ETc irrigation regime significantly enhanced plant height, LAI, CGR, RLWC, stomatal conductance, lint yield and seed cotton yield. The compact variety CO 17 demonstrated superior performance in terms of growth and yield under an HDPS condition compared to VPT 2. Regarding nitrogen management, application of 50 % RDN through granular urea + 20 % N through nano urea @ 25 DAS + 20 % N through nano urea @ 45 DAS + 10 % N through nano urea @ 65 DAS significantly increased the yield. For high-density cotton cultivation in semi-arid regions, the CO 17 variety under 1.0 ETc sub-surface drip irrigation, combined with the nitrogen strategy, is recommended to maximize productivity and profitability.

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