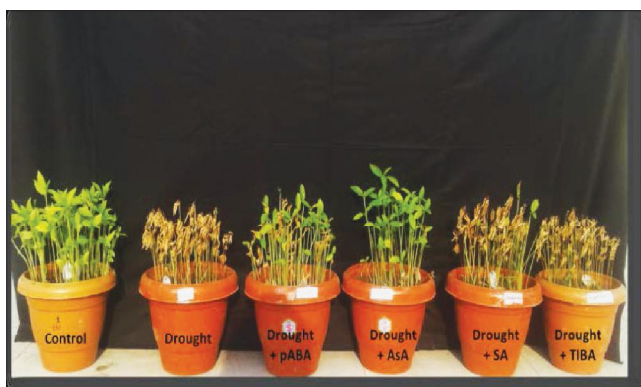


RESEARCH NOTES

Physiological Response of Jute Seedlings to Plant Growth Regulators Under Drought

Twenty-seven day old jute plants were subjected to drought by withholding irrigation. Along with this, above ground part of additional sets of plants were sprayed with five different plant growth regulators/elicitors i.e., ascorbic acid (AsA), p-amino butyric acid (pABA), salicylic acid (SA), tri-iodobenzoic acid (TIBA), Urea + Magnesium sulfate and subjected to drought. Plants could withstand moisture deficit stress upto 6% soil moisture content at 5 cm depth. AsA showed the best performance among the exogenously applied growth regulators in terms of plant height as well as recovery followed by pABA.



Recovery of jute plants on re-watering after seven days moisture deficit stress

Further, seedlings of two jute varieties, JRO-204 and S-19, were subjected to drought/osmotic stress with 8% PEG-6000 at twelve days growth stage. Additional sets of plants were sprayed with 10 mM AsA and 10 μ M pABA separately. Plants under drought showed reduced membrane stability, chlorophyll content, fresh and dry biomass, plant height and increased root length. Exogenous application of AsA and pABA showed better response in seedlings in terms of increased plant height, membrane stability and chlorophyll content under drought. Among both these elicitors, plants with ascorbic acid exogenous application showed better response. JRO-204 showed better performance as compared to S-19 at twelve days growth stage. Exogenous application of AsA seems to be a better source to counteract the drought mediated injury in jute.

Source: L. Sharma, S. Roy, P. Satya, D. Barman,
S. Mitra and J. Mitra
ICAR-CRIJAF, Barrackpore

Effects of Climate Variability on Jute-Based Cropping System as Perceived by the Farmers

A pilot study was conducted taking a random sample of 50 farmers from North 24 Parganas district to identify the

effect of climate variability on jute-based cropping system as perceived by the farmers. The age of the respondents ranged from 30 to 60 years. The major information sources of the farmers were CRIJAF, ADA, KVK, KPS, TV and mobile. Jute-based cropping patterns practiced by them were jute-rice-potato, jute-rice-lentil/gram/pea and jute-rice-mustard. Majority of the farmers (90%) have perceived that climatic components and its occurrences have varied during last 10-15 years.

The effect of climate variability in jute-based cropping system as perceived by the farmers in descending order of weighted mean score (WMS) are: 'Heavy rainfall during harvesting has been causing huge yield losses' (2.16), 'Jute is being affected due to prolonged drought and incidences of heavy rainfall during its early growth stages' (2.04), 'Insect and disease infestation has become virulent and high due to prolonged hot and humid weather' (1.94), 'Heavy fog in day time during winter season has increased insect and disease infestation in potato and mustard' (1.90), 'Desirable soil moisture has become unavailable during sowing time of crops' (1.84), 'Soils have become drier and hard due to increased soil temperature' (1.70), 'Incidences of flower drops have been increased in lentil and pea due to high winter temperature and production suffers due to reduction in winter days' (1.64), 'Water availability during retting period has become scarce' (1.60), 'Water holding capacity of soil has been reduced' (1.52) and 'Duration of traditional cropping seasons has been distorted' (1.50).

Source: M.L. Roy, S.K. Jha, S. Sarkar, A.K. Ghorai,
A.K. Singh, S. Satpathy and A. Chakraborty
ICAR-CRIJAF, Barrackpore

Eddy Covariance Measurement of Net Ecosystem Exchange (NEE) Of CO₂ in Winter Wheat Grown Under Jute-Rice-Wheat Cropping Sequence

The open path eddy covariance (EC) system was installed at Research Farm of ICAR-CRIJAF, Barrackpore to measure CO₂, moisture, and energy fluxes in jute-rice-wheat ecosystem. The EC system can provide a measure of net ecosystem exchange (NEE) of CO₂. The seasonal CO₂ flux under wheat ecosystem was characterised in winter season during December 2017 to March 2018. The first-hand computation of flux data revealed that the average NEEs at the phenological stages of wheat are of -0.88, -1.68, -2.53, -4.34, -3.50, -2.57, -2.20, -0.22, +0.13 g C m⁻² day⁻¹ in seedling, tillering, stem elongation, booting, heading, flowering or anthesis, milk, dough, and ripening stages, respectively (Fig. 1). The negative values showed that the C sequestration in biosphere during all the stages except the ripening stage at which it was opposite. This may be attributed to the higher rates of photosynthesis over respiration in former case, and