

6<sup>th</sup> International Conference on  
“Agricultural Innovations for Sustainable Development  
Goals with Special Focus on Natural Farming”  
(AISDGONF-2023)

BOOK OF ABSTRACT

September 30  
to  
October 02  
2023



*Organized by*  
**Crop and Weed Science Society (CWSS)**  
at Farmer's Academy & Convention Centre (FACC), BCKV  
Kalyani, Nadia, West Bengal, India

**6<sup>th</sup> CWSS**  
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**BCKV, Kalyani, Nadia, West Bengal, India**  
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AISDGONF/ABS/TB/363

## **Effect of biostimulant (Ratchet) on growth and yield of transplanted *kharif* rice in lower *Gangetic* plains of West Bengal**

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Ratchet is a plant biostimulant which enhances the plant's nutritional capabilities and ultimately increases the crop yield. An experiment was conducted in Randomized Block Design (RBD) with four replications during *kharif* season of 2019 at Jaguli farm of B.C.K.V., Kalyani, West Bengal, India to study the effect of Ratchet on growth and yield of transplanted rice. All the Ratchet sprayed plot (either single or twice application) perform better and gave higher yield over the plot where only recommended fertilizer dose was applied. However, the application of Ratchet twice (at 35-40 and 65-70 DAT) @ 450 ml ha<sup>-1</sup> (T<sub>7</sub>) with the application of standard fertilizer dose recorded higher growth attributes *viz.* plant height at maturity (99.2 cm), tillers m<sup>-2</sup> at 85 DAT (452.4) as well as yield attribute *viz.* highest number of productive tillers (212.3) and 1000 grains weight (21.7 g) over other six treatments and thus gave highest yield of 6.36 t ha<sup>-1</sup>. So, Ratchet @ 450 ml ha<sup>-1</sup> at 35-40 and 65-70 DAT may be applied in transplanted *kharif* rice for better growth, higher productivity.

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## **Growth and yield of sisal (*Agave sisalana*) as affected by planting materials and fertilizer levels**

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Field experiment was conducted during 2019-22 at Sisal Research Station (of ICAR-CRIJAF) at Bamra, Sambalpur Odisha to find out the effect of size of planting material (sucker) at planting and dose of fertilizers on the growth and fibre yield of Sisal (*Agave sisalana*), an important leaf fibre crop of central plateau region of India. It was noted that the mean leaf length and mean leaf breadth of sisalana sisal significantly varied with sucker size at planting and fertilizer dose. Irrespective of fertilizer dose, the longest leaf was produced by large sized sucker at planting (106.19 cm); similarly, irrespective of sucker size, the longest leaf was produced by the highest fertilizer dose (94.98 cm). Similar pattern of variation like leaf length were recorded in case of leaf breadth of sisalana sisal. The broadest leaf was produced by large sized sucker and higher fertilizer dose (9.59 cm). It was observed that the number of leaf production varied significantly due to different size of planting materials at planting and fertilizer doses in Sisalana sisal. Irrespective of nutrients levels, the maximum number of harvestable leaves was produced by the large sized sucker at planting (112.5 x 10<sup>3</sup>/ha) which was statistically at par with the harvestable leaf produced by the medium sucker size (106.3 x 10<sup>3</sup>/ha). Similarly, irrespective of sucker size, the maximum number of harvestable leaves was produced by the highest dose of fertilizer i.e., N, P, K @ 120, 60, 120 kg/ha (109.3 x 10<sup>3</sup>/ha) which was closely followed by and at par with the harvestable leaf produced by medium fertilizer dose (106.1 x 10<sup>3</sup>/ha). In the interaction effect of the size of sucker at planting and fertilizer dose, it was recorded that the maximum number of harvestable leaves

produced either by the large sized sucker x higher fertilizer dose ( $117.8 \times 10^3$ /ha) or with medium sized sucker x higher fertilizer dose ( $111.1 \times 10^3$ /ha). It can be concluded that fibre yield from the 1<sup>st</sup> cutting year, the large sized sucker x high fertilizer dose yielded the highest (1146.7 kg/ha) which was closely followed by and statistically at par with the fibre yield obtained with medium sucker size x high fertiliser dose (1049.1 kg/ha).

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### **Effect of nano-dap on growth, yield and economics of rapeseed**

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Nano-fertilizers have emerged as a promising alternative that ensures high crop production and soil restoration. The effect of Nano-DAP comprising of N and P nano particles was tested on growth and yield of *rabi* rapeseed in 2021 at the Instructional Farm, BCKV, West Bengal, in a randomized block design with ten treatments and three replications. Nano DAP was applied through seed treatment (5 and 10 ml/kg seed) and foliar application at @ 2, 4,6 ml/l at 30 DAS. The soil was sandy clay loam in texture with pH 6.65, organic carbon 5.8 g/kg, available N 163.2 kg, P 42.9 kg and K 104.8 kg/kg of soil. The results revealed that 25 % N & P replacement through Nano DAP seed treatment @ 5ml /kg seed at time of sowing followed by Foliar spray @ 2 ml /litre of water at 25- 30 DAS exhibited maximum plant height (95.95 cm), LAI (3.51), dry matter accumulation (188.81 g/m<sup>2</sup>), CGR (3.17), number of siliqua/plant (60.90), no. of seeds/siliqua (17.12), seed yield (767 kg/ha) .This treatment enhanced 21.38% of seed yield over control (No Basal DAP) and also showed higher net return (Rs. 16224/ha) and benefit-cost ratio (1.54) in comparison with other treatments. The preliminary investigation shows that Nano DAP may be a potential alternative of chemical fertilizers.

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### **Assessing soil quality indices under different land situations in Red and Lateritic Zone of West Bengal**

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Assessment of soil quality of the red and lateritic zone of West Bengal was done by collecting representative soil samples from farmers' field at Bankura-I and Chhatna blocks of Bankura district. The different physical, chemical properties of surface soils were determined and Soil quality index (SQI) was calculated by principal component analysis (PCA) and multiple correlation analysis based Minimum Data Set (MDS) selection. The soils of both the Chhatna and Bankura-I blocks were moderate to slightly acidic, soil organic C content was low to medium, available N was low, available P content was medium to high and the available K was low to medium in both the blocks. The content of DTPA-extractable micronutrients viz. Zn, Cu, Fe, Mn in most of the soils were medium to high and available B was low in both the blocks. The majority of soils are sandy loam. Soil pH, OC, available N, P, K, B, clay content, Zn were screened as key indicators for assessment of soil quality under low land. Under medium land, soil pH, WHC, clay