

## **ACTION PLAN FOR KHARIF 2021 TRIALS UNDER CSISA PROJECT**

**Name of Project** : On –farm evaluation of crop response to Zn in paddy in Odisha

**Location** : Krishi Vigyan Kendra, PURI

One on farm trial is proposed to be conducted in farmers' field under CSISA project during kharif 2021 through KVK, Puri.

### **Trial 1: On-farm evaluation of crop response to Zn fertilizer application in Odisha**

#### **Rationale**

Zinc is an essential plant nutrient required for several biochemical processes in the rice plant, including chlorophyll production and membrane integrity. Thus, Zn deficiencies affect plant growth and significantly reduce the yield when the soil supply of Zn is low or adverse soil conditions (such as continuous flooding) prevent plant uptake of Zn. Zinc deficiency in submerged rice soils is very common owing to the combined effect of increased pH,  $\text{HCO}_3^-$  and  $\text{S}^{2-}$  formation. About 40 to 50% of soils are reported to be deficient in available Zn, and soil application of Zn ( $\text{ZnSO}_4$ ) or foliar spray of  $\text{ZnSO}_4$  has been in recommendation. But crop response to Zn fertilizer application is governed by many factors including wide soil variability and management practices which are not properly documented or not accessible.

CIMMYT and ICAR through CSISA and SIS projects in collaboration with SAUs are implementing on-farm evaluation of crop response to Zn fertilizer to provide new insights into the association between soil variability and crop response to Zn fertilizers with big data analytics. Villages with low soil Zn and medium/high soil Zn from each district have been identified using first version of digital soil map (DSM) created through geo-spatial predictive mapping that combines legacy soils data with satellite-derived environmental covariates. To understand the intersection of site factors, crop management, and yield outcomes, open digital data collection (ODK based) on production practice will be conducted from all the trials farmers during harvest. The study aims to test the effect of Zn-enriched variety and Zn fertilizer application on grain yield, profit, and grain quality through 6 KVKs in Kharif 2021 in Odisha.

#### **Objective:**

1. To test the effect of Zn-enriched variety and Zn fertilizer application on grain yield, profit, and grain quality in rice.

- Location: Puri
- Total 24 farmers' fields (12 for medium soil Zn and 12 for high soil Zn) of puri district.
- Rice variety: Farmer's existing variety and DRR Dhan 49
- Plot size: At least 500 m<sup>2</sup> for each treatment

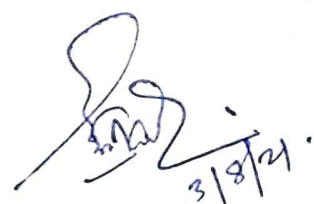
**Treatments:**

	<b>Medium soil Zn status villages</b>	<b>High soil Zn status villages</b>
Set 1	2 farmers field in a village	2 farmers field in a village
T1	Farmer variety without Zn application	Farmer variety without Zn application
T2	Farmer variety with soil application of Zn sulphate @25 kg/ha	Farmer variety with soil application Zn sulphate @25 kg/ha
T3	Farmer variety with 0.5% Zn sulphate foliar spray	Farmer variety with 0.5% Zn sulphate foliar spray
T4	Farmer variety with Zn-coated DAP/MOP/Urea + 0.5% Zn sulphate foliar spray	Farmer variety with Zn-coated DAP/MOP/Urea + 0.5% Zn sulphate foliar spray
Set 2	Other 2 farmers in the same village	Other 2 farmers in the same village
T5	Zn-enriched variety without Zn application	Zn-enriched variety without Zn application
T6	Zn-enriched variety with basal dose of Zn-coated DAP/MOP/Urea	Zn-enriched variety with basal dose of Zn-coated DAP/MOP/Urea
T7	Zn-enriched variety with 0.5% Zn sulphate foliar spray	Zn-enriched variety with 0.5% Zn sulphate foliar spray
T8	Zn-enriched variety with basal dose of Zn-coated DAP/MOP/Urea + 0.5% Zn sulphate foliar spray	Zn-enriched variety with basal dose of Zn-coated DAP/MOP/Urea + 0.5% Zn sulphate foliar spray

**Note:** Best management practices as recommended to be followed under each method of establishment in all treatments. We can replace Zn coated urea/DAP with Zn sulphate in set 2 and T4 in set 1 if Zn coated urea or Zn coated DAP not available.

**Observations:**


1. Soil samples before and after cropping
2. Yield attributes (number of panicles/m<sup>2</sup>, grains (filled and chaffy) per panicle, 1000-grain weight, and yield (grain yield and straw yield))
3. Cost of cultivation with details on cost of Zn fertilizer, cost of labour used for Zn fertilizer application
4. GPS coordinates of the locations where trial is being conducted



**Senior Scientist and Head**  
**Krishi Vigyan Kendra, OUAT, PURI**

**Breakup plan for the year 2021-22**

<b>SL.NO</b>	<b>PARTICULARS</b>	<b>QUANTITY (Kg.)</b>	<b>PRICE (APPROX.) (Rs.)</b>
<b>1</b>	Zinc sulphate	30	3000
<b>2</b>	Urea	672	4000
<b>3</b>	DAP	420	11000
<b>4</b>	MOP	336	6500
<b>5</b>	Plant protection chemical		
<b>a.</b>	Tebuconazole 50%+ Trifloxystrobin 25% w/w WG (75 WG)	0.672	6000
<b>b.</b>	Chlorantraniliprole 20 % + Thiamethoxam 20 %	18	5700
<b>6</b>	Crop cutting		8000
<b>7</b>	Literature/flex		1600
<b>8</b>	Hiring of vehicle/POL		30000
<b>9</b>	Honorarium		13000
<b>10</b>	Audit		1200
<b>Total</b>	<b>(Rupees Ninety thousand only)</b>		<b>90000</b>

 2/8/21

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