

## MANDATE

- To conduct coordinated long term fertilizer experiments in different soil types under diversified cropping systems
- To collate information on long term soil fertility trials.

## MISSION

Soil Fertility Management through Integrated Plant Nutrient Supply for Enhancing and Sustaining Crop Production and Maintaining Soil Quality

## OBJECTIVES

- To study the effect of continuous application of plant nutrients, singly and in combination, in organic and inorganic forms including secondary and micronutrient elements (as per the need) on crop yield, nutrient composition and uptake in multiple cropping systems;
- To study the effect of application of secondary and micronutrients (as per the need) on crop yield and also on the assessment of **the need for these elements** under an intensive cropping programme;
- To work out the amount of nutrient removal by the crops;
- To monitor the changes in soil properties as a result of continuous manuring and cropping with respect to the physical, chemical and microbiological characteristics of the soil in relation to its productivity;
- To investigate the effect of intensive use of biocidal chemicals (weedicides and pesticides) on the build up of residues and soil productivity;
- To make an assessment of the incidence of soil borne diseases and changes in pests and pathogens under the proposed manuring and cropping programme.

## SIGNIFICANT ACHIEVEMENTS

- Balanced use of chemical fertilizer did not have any adverse effect on soil organic carbon rather resulted in increase in SOC.
- Studies on carbon sequestration proved that application of chemical fertilizer in right way led

to carbon sequestration and it varies from 50 to 300 kg ha<sup>-1</sup> depending on soil and nutrient management.

- The threshold carbon (minimum amount of carbon required to maintain initial carbon) content in different soils found were 2200, 2500, 1800, 3600, 3700 and 2000 kg ha<sup>-1</sup> yr<sup>-1</sup> respectively in soils of Jabalpur, Akola, Ranchi, Bangalore, Delhi and Ludhiana, respectively. The threshold carbon determined for Pantnagar soil was 7000 kg ha<sup>-1</sup> which is due to its initial very high content (1.48%).
- To assess soil quality soil indicators identified varied with soil type Like Soil pH, K, Ca, Mg and microbial biomass C for Alfisols, bulk density and infiltration rate for Vertisols whereas nutrients (N, P, Zn & S) for Inceptisols are important soil indicators to be taken care off for improving soil quality
- External supply of nutrient not sustained productivity but also improved soil quality in terms of chemical, physical and biological terms.
- A predictive model using the data generated over the years in AICRP has been developed to predict Carbon and N fractions in different soil, cropping system and nutrient management.
- During last one year 300 FLD were conducted at tribal farmers' fields under TSP programme. The interventions made by the scientists on nutrient management and the training resulted increase in their crop productivity to extent of 20 to 60 percent and also their income and profit to a great extent.
- Studies of changing climate on crop productivity revealed mixed reaction. For instance, increase in minimum temperature during August and rain fall distribution. Whereas increase in wheat productivity is due to decrease in minimum temperature during December and January.

## FIVE BEST TECHNOLOGIES/PRODUCTS

- Reutilization of P accumulated due to continuous use of phosphates fertilizer
- Continuous use of organic is better than lime to sustain productivity of acid soils.
- In western Ghat growing of green manure on residual moisture saved 50% chemical fertilizer and increased profit of farmer by Rs. 5000/

**NEW INITIATIVES**

- Effect and mechanism of organic in controlling the acidity in acid soil
- Impact of changing climate on soil health

**COLLABORATION WITH OTHER INSTITUTES**

AICRP LTFE has collaboration with 15 SAUs and three ICAR Institutes. The AICRP Agro-metrology collaborated in assessment of impact of climate change on crop productivity and soil health.

**Publications**

Research Paper (April 2015 to March 2016)  
 No of research papers NAAS Rating > 6 = 03 no.  
 No of research papers NAAS Rating < 6 = 04 no.

**Externally funded projects/consultancy**

A contractual project on ‘Response of crops to applied potassium in Vertisols of India’ sponsored by M/s Potash Research Institute of India (PRII), Gurgaon (India)

**Staff Strength**

	<b>AICRP on LTFE</b>
Scientific	02
Technical	-
Administrative	-
Supporting	01
Contractual (RA)	01
<b>TOTAL</b>	<b>04</b>

**THRUST AREAS**

Assessment of impact of changing climate on crop productivity and identifications of soil health indicators

**FINANCIAL OUTLAY (Rs. in lakh)**

Particulars	XI Plan Actual expenditure	XII Plan Proposed	Last Year Budget (2015-16)		
			RE	Actual expenditure	% Utilization
Plan	1061.64	2701.87	560.00	560.00	100%
Non Plan	-	-	-		
<b>Total</b>	<b>1061.64</b>	<b>2701.87</b>	<b>560.00</b>	<b>560.00</b>	<b>100%</b>

**Project Coordinator: Dr. Muneshwar Singh**

Tel: 0755-2733370, 09893183725

Email: [muneshwarsingh@gmail.com](mailto:muneshwarsingh@gmail.com)