

Application for Agri-CRP Project

1.	Title of Platform	:	Conservation Agriculture (CA) Platform
2.	Title of the Platform Project	:	Conservation agriculture for enhancing resource-use efficiency, environmental quality and productivity of sugarcane cropping system
3.	Location:		
	Institute's Name	:	ICAR-National Institute of Abiotic Stress Management
	Place	:	Malegaon Khurd, Baramati-413 115
	District	:	Pune
	State	:	Maharashtra, India
4.	Principal Investigator (PI):		
	Name	:	Dr. R.L Choudhary
	Designation	:	Scientist (Agronomy)
	Date of Birth	:	05 October 1984
	Experience: (Years)	:	04
5.	Co-Principal Investigator (PI):		
	Name	:	Dr. P. S. Minhas
	Designation	:	Director, ICAR-NIASM
	Date of Birth	:	05 April 1954
	Experience: (Years)	:	36
	Number of Scheme handled	:	~350
	Number of important research publications	:	105
	Number of other Research Schemes (being carried out by PI)	:	NIL
	Title of Scheme (s)	:	NA
	Name of the funding Agency	:	NA
	Period from __ to __ Grant: Rs.	:	NA
6.	Collaborative Investigator (s) (separate set for each):		
	Sr. No.	Name	Dr. Mahesh Kumar

		Designation	:	Scientist (Plant Physiology)
		Date of Birth	:	15 January 1981
		Experience: (Years)	:	04
		Number of Scheme handled	:	Institute projects: PI-1; Co-PI-03
		Number of important research publications	:	08
		Number of other Research Schemes (being carried out by PI)	:	PI-1
		Title of Scheme (s)	:	Contractual project
		Name of the funding Agency	:	Geolifeagritech India Ltd., Mumbai
		Period from__to__Grant: Rs.	:	2014-2016; 11.34 lakhs
		Name	:	Dr. SunayanSaha
		Designation	:	Scientist (Agricultural Meteorology)
		Date of Birth	:	10 June 1982
		Experience: (Years)	:	04
		Number of Scheme handled	:	Institute projects: PI-1; Co-PI-02
		Number of important research publications	:	06
		Number of other Research Schemes (being carried out by PI)	:	Nil
		Title of Scheme (s)	:	-
		Name of the funding Agency	:	-
		Period from__to__Grant: Rs.	:	-
7.	Objectives:			
	1.	Development and validation of location specific CA practices for enhancing productivity,profitability and resource use efficiency in sugarcane cropping system		
	2.	Quantification of the impact of CA practices on soil health, carbon sequestration and emission of green-house gases in sugarcane cropping system		
	3.	Capacity building and knowledge management for accelerated adoption of CA		
8.	Practical/Scientific Utility:			
	1. Trash management systems developed for a sustainable soil-environmental health			
	2. Improved resource-use efficiency to reduce environmental footprint of technologies			

	<p>3. Basic information on GHGs from sugarcane cropping system generated for addressing climate change issues</p> <p>4. Water-productivity improvements through synergies of trash management and micro-irrigation system.</p> <p>5. New CA equipment made available for efficient and eco-friendly residue management with elimination of trash burning</p> <p>6. Enhanced productivity and profitability of sugarcane cropping systems</p>						
9.	Research work conducted:						
	i. At sponsoring institutions:						
	<p>An institutional research project was initiated in 2012 where different options for improving nitrogen-use efficiency and trash management in sugarcane ratoon crop are being investigated. So far the achievements are:</p> <ul style="list-style-type: none"> • Surface retention of trash was more beneficial than its removal or burning • Application of N through either fertigation or crowbar improved the N-use efficiency vis-a-vis productivity of ratoon sugarcane • A prototype of trash chopper, off bar, root pruner cum fertilizer drill machine has been developed which is being tested in farmers' fields. • Root pruning along with placement of 90 % of recommended N as basal improved the NUE, productivity and profitability of sugarcane ratoon crop 						
	ii. In other institution of the country:						
	<p>Major efforts on adoption and promotion of conservation agriculture (CA) have been made in Indo-Gangetic plains, particularly in rice-wheat cropping system. This has been followed by adoption of CA in rice/maize based cropping in southern/eastern India. However, little attempts have been made with respect to adoption of CA in other crops/cropping systems, particularly sugarcane where large scale burning of trash is still practiced.</p>						
	iii. Other countries:						
	<p>The leading sugarcane growing countries like Brazil, Mexico and Australia have given priorities in green cane harvesting and retaining of trash in the field instead of its pre-harvest burning. However, improving the efficiency of applied fertilizers in trash retained condition continues to be a major challenge for researchers.</p>						
10.	Technical Programme:(activities and timeline in Annexure-II)						
	<table border="1"> <thead> <tr> <th>Sr. No.</th> <th>Objectives</th> <th>Activities</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Development and validation of location specific CA practices for enhancing productivity, profitability and resource use efficiency in sugarcane cropping system</td> <td> <p>1. Studies on tillage, laser leveling, planting methods, green manuring and trash management practices</p> <p>2. Optimization of sub surface fertigation for shallow planting; and fertilizer scheduling in ratoon</p> </td> </tr> </tbody> </table>	Sr. No.	Objectives	Activities	1.	Development and validation of location specific CA practices for enhancing productivity, profitability and resource use efficiency in sugarcane cropping system	<p>1. Studies on tillage, laser leveling, planting methods, green manuring and trash management practices</p> <p>2. Optimization of sub surface fertigation for shallow planting; and fertilizer scheduling in ratoon</p>
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			<p>crop with CA equipment</p> <ol style="list-style-type: none"> 3. Assessment of soil fertility, nutrient uptake, water productivity and energy use efficiency 4. Development/standardization of techniques/ protocols/ spectrum/ colour-image based tools for assessment of nutrient stresses; and impact on root architectural studies
	2.	Quantification of the impact of CA practices on soil health, carbon sequestration and emission of greenhouse gases in sugarcane cropping system	<ol style="list-style-type: none"> 1. Studies on mean C input, C-sequestration, soil physical health, nutrient dynamics and microbiological properties, 2. Monitoring of seasonal flux of important GHGs/ soil micro-climate
	3.	Capacity building and knowledge management for accelerated adoption of CA	<ol style="list-style-type: none"> 1. Capacity building for sugarcane based CA systems. 2. Capacity building on development / modification of CA machinery
11.	Facilities Available:		
	i. Equipment/instruments/ apparatus:		
	Kjeltech auto analyzer, Eddy Covariance system, In-situ root image analysis system, Analytical sieve shaker, Guelph permeameter, UV-Vis Spectrophotometer, ICP-MS, GC, AAS, HPLC, , Infrared imaging system, Fluorescence imaging system, Porometer, IRGA, Leaf area meter, Chlorophyll meter, Flame photometer, Other lab equipment like Environmental shaker, Refrigerator, Hot air oven, Deep freezers, Precision electronic balances)		
	ii. Area of experimental fields (hectares)	~ 18	
	iii. Laboratory:	Central laboratory facility, soil-plant analysis laboratory	
	iv. Other facilities:	Experimental field facilities may be explored from the nearby sugarcane growing farmers	
12.	Additional facilities required:		
	i. Equipment & apparatus:		
	<ol style="list-style-type: none"> 1. Soil moisture measurement equipment (s) 2. Digital cone penetrometer 3. Double ring infiltrometer 		

4. Probe/sensor/thermometers for soil temperature measurement 5. SPAD meter 6. Laser land leveler 7. Portable N ₂ O measurement system 8. Access tubes for root studies 9. Data acquisition, storage and processing systems 10. Other minor equipment/field machinery	
ii. Area of land for Experimentation (hectares)	: Farmers' fields nearby NIASM
iii. Laboratory	: Other institutes
iv. Office facilities	: -

11. **Duration:** 2 years

12. **Staff Requirements** (Scientific, Technical etc.)

13. **Estimation of Costs:**

(i) Sr. Research Fellows: 2

(ii) Other contractual services: As per requirement

14. **Recurring and Non-recurring contingencies: Rs. 20 lakhs (details given below)**

Recurring and Non-recurring contingencies	Year-I (2015-16)#
Capital	
Equipment/ Machinery/ Apparatus/ Misc. items [@]	2.5
Revenue	
Contractual service (SRF 2 & other contractual services)	9.5
TA	1.0
Other recurring contingencies including institutional charges*	7.0
Total	20.0

*Institutional charges @10% of RC for lead institute and 5% of RC for cooperating institutes

As per the new BE (2015-16). Original sanctioned total project budget is 63 crore.

[@]Computer/Air Conditioner/ Furniture as per absolute requirement of the budget.

UNDERTAKING

I. Certified that:

- i. The research work proposed in the Platform Project on Conservation Agriculture (CA) does not in any way duplicate the research work already done and being carried out elsewhere on the subject.
- ii. The present scheme cannot be combined with any scheme financed by the Council, Central and State Governments, Universities or Private Institution of their own funds.
- iii. Necessary financial provision for the platform project will be made in the Institution/ University/ State budget in anticipation of the sanction to the scheme by the council.
- iv. We undertake to abide by the guidelines provided by the Council for the implementation of the Platform Project.

Principal Investigator

Name *R. L. Choudhary*

[Signature]
Signature 01/07/2015

Certified that:

- i. Project is in line with the approved mandate of the implanting institute.
- ii. Platform Project Investigator/ Co-investigators are competent technically to undertake the project.
- iii. Research work will not amount to duplication of efforts and In-house projects, handled by me will not suffer.
- iv. Equipment and other infrastructure proposed under the project are either not available with the institute or the available facility cannot be extended to the project activities.
- v. Basic facilities such as Telephone/ Fax/ photocopies/Generators etc. will be provided by the implementing agency. However, operational cost for these activities will be met from the institutional charges sanctioned under the scheme.
- vi. The cost of equipment and other infrastructure requested for under the project is realistic and based on the prevailing market rates.
- vii. Justifications and clear specifications for the equipment and other infrastructure asked for are reflected in the proposal.
- viii. For collaborative projects with other institutions, the administrative/ financial/ technical issues related to implementation of the project shall be addressed between the two implementing agencies.
- ix. The institutions has already furnished to the ICAR, full accounts and Utilization Certificates in respect of the grants received by it previously, as per the following details:

Communication of Grant by the Institution and date of (Please indicate the Sanctioning Grant number and date of the communication with which ASAs, etc. are sent)

(1) _____ (2) _____ (3) _____

It is certified that the Institution has not received any grant from the ICAR previously.

Date:

[Signature]
Executive Authority of the Institution

डा.पी.एस.मिन्हास

Dr.P.S.Minhas

निदेशक / Director

7 राष्ट्रीय अजैविक स्ट्रेस प्रबंधन संस्थान
National Institute of Abiotic Stress Management
मालेगांव, बारामती-413115 पुणे, महाराष्ट्र
Malegaon, Baramati-413115, Pune-M.S.

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10. Technical Programme: Activities and timeline

Sr. No.	Objectives	Activities	I Yr	II Yr
1.	Development and validation of location specific CA practices for enhancing productivity, profitability and resource use efficiency in sugarcane cropping system	1. Studies on tillage, laser levelling, planting method, green manuring and residue management practices	ç	ç
		2. Optimization of sub surface fertigation for shallow planting; and fertilizer scheduling in ratoon crop with CA equipment	-	ç
		3. Assessment of soil fertility, nutrient uptake, water productivity and energy use efficiency	ç	ç
		4. Development/standardization of techniques / protocols/ spectrum/ colour-image based tools for assessment of nutrient stresses; and impact on root architectural studies	ç	ç
2.	Quantification of the impact of CA practices on soil health, carbon sequestration and emission of greenhouse gases in sugarcane cropping system	1. Monitoring of weather and soil micro-climate	ç	ç
		2. Monitoring of seasonal flux of important GHGs	-	ç
		3. Studies relating to C sequestration	ç	ç
		4. Soil quality indices (physical, chemical and biological parameters)	ç	ç
3.	Capacity building and knowledge management for accelerated adoption of CA	1. Capacity building for sugarcane based CA systems.	ç	ç
		2. Capacity building on development / modification of CA machinery	ç	ç