

(PROFORMA FOR SUBMISSION OF ANNUAL
PROGRESS REPORT OF RESEARCH PROJECTS)

Part - I: General Information

600 Project Code: OXX01741

6001 Institute Project Code No. :

6002 ICAR Project Code No. :

601 Name of the Institute and Division:

6011 Name & Address of Institute: National Academy of Agricultural Research
Management, Rajendranagar, Hyderabad

6012 Name of Division / Section : Agribusiness management

6013 Location of Project : NAARM

602 Project Title: Enhancing Resilience of Agriculture to Climate Change: Role of Technologies, Institutions and Policies- Sub Project component: Identify adaptation strategies, mitigate climate risks and estimate their potential costs and benefits

603 Priority Area: Institutional Change

6031 Research Approach: **Applied Res. 01**

604 Specific Area:

605 Duration of the Project: 3 years

6051 Date of Start of the Project: **April 2011**

6052 Likely Date of Completion of the Project: **March 2014**

6053 Period for which Report Submitted: April 2012 to March 2013

606 Total Cost of the Project: Rs. 43.83 lakhs

6061 Expenditure to Date:

607 Summary of Achievements:

608 Key Words: climate change, NICRA, risk free returns, losses due to flood, cyclone, and sea water intrusion.

Part-II: Investigator Profile

(Please identify clearly changes, if any, in Project Personnel)

610 Principal Investigator:

6101 Name : **Dr. G. P. Reddy**
6102 Designation : Head I/C ABM
6103 Division/Section : Agribusiness Management
6104 Location : Hyderabad
6105 Institute Address : NAARM, Rajendranagar, Hyderabad

611 Co-investigator:

6111 Name : **Dr. A.Dhandapani**
6112 Designation : Principal Scientist
6113 Division/Section : ICM
6114 Location : Hyderabad
6115 Institute Address : NAARM, Rajendranagar, Hyderabad

612 Co-investigator:

6121 Name : **Dr. N. Sivaramane**
6122 Designation : Sr. Scientist
6123 Division/Section : ABM
6124 Location : Hyderabad
6125 Institute Address : NAARM, Rajendranagar, Hyderabad

613 Co-investigator:

6131 Name : **Dr. P.D.Sreekanth**
6132 Designation : Scientist (SS)
6133 Division/Section : ICM
6134 Location : Hyderabad
6135 Institute Address : NAARM, Rajendranagar, Hyderabad

613 Co-investigator:

6131 Name : **Mr. K.V.Kumar**
6132 Designation : Technical Officer
6133 Division/Section : ICM
6134 Location : Hyderabad
6135 Institute Address : NAARM, Rajendranagar, Hyderabad

Part - III: Technical Details

620 Introduction and Objectives:

Climate is changing, and a further change in it is inevitable. There is a close nexus between climate, agriculture and livelihood. Agriculture is very sensitive to changes in rainfall and temperature, and change in climate will threaten the agricultural production. Extreme climatic events like droughts, heat waves, floods and cyclones cause considerable loss in production potential of agriculture and depress economic growth. Climate risks have always been a part of agriculture, and farmers have adopted a number of number of ex-ante and ex-post technological, agronomic and institutional strategies, including borrowings, changes in production portfolio in favor of short-duration crops, use of climate-resilient crop varieties, conservation and judicious use of water, diversification into non-farm activities, mortgage or sale of productive assets, and crop insurance among others. The emerging trends in agrarian structure, rainfall and temperature, and demand for agricultural commodities imply a need for greater efforts towards building a climate-resilient resilience through a combination of mitigation and adaptation strategies at various levels including farms, farming community, local governance and institutional structures, agricultural research and development policy.

6201 Immediate Objectives:

- To assess impacts of climate change on agricultural production across different agro-ecologies using historical data; and corroborate these with farmers' perceptions;
- To identify adaptation strategies, including technologies, agronomic and management practices, institutional and infrastructure, to mitigate climate risks; estimate their potential costs and benefits; and suggest investment priorities for adaptation to important climate risks.
- To mainstream climate adaptation strategies and pathways through appropriate social and institutional arrangements and policy interventions to improve welfare of the farm households.

6202 Long-term Objectives:

- To devise strategies for use of proper adaptation method to overcome the adverse effect of climate change.

6203 Specific Objectives for the Year, as Detailed in RPF-I:

“To assess impacts of climate change on agricultural production across different agro-ecologies using historical data; and corroborate these with farmers’ perceptions”.

This objective will be achieved following three major steps: (i) identifying the most important climatic events that impact agriculture and livelihood of farmers in different agro-ecologies (ii) preparation of an inventory of possible adaption strategies, and (iii) estimate costs and benefits of different adaption strategies using appropriate parametric or non-parametric statistical tools. The region specific most important climatic risk (drought, flood, heat wave, insect pests, etc.) will be identified using historical data as well as farmers’ perceptions through surveys or focused group discussions. An inventory of climate adaptation strategies (technological, institutional, behavioural and governance) would be prepared using information through surveys/focused group discussions. This will help identification of a set of feasible adaptation strategies. The economic feasibility of selected adaptation strategies would be determined using the risk stabilization framework and/or using the methodology suggested by the ‘working group for assessing economic impact of climate change’. The results would be corroborated through workshops/ brainstorming session etc.

621 Project Technical Profile:

6211 Technical Programme:

(Indicate briefly plan of procedure, techniques, instruments and special materials, organisms, special environment, etc.)

For achieving the objective “To assess impact of climate change on agricultural production across different agro-ecologies using historical data and corroborate these with farmers’ perceptions”, we utilized both secondary and primary data. Historical data on district-level area, production and yield of different crops; and weather parameters were obtained from various published and unpublished sources. The data were used to examine trends in climate variables, identify extreme weather events and their impacts on agricultural production at national and region level using suitable econometric tools. The results obtained from preliminary analysis showed the extent of damage caused by climatic extreme events in the selected districts for major crops grown in this region. The annualized risk free returns showed that a majority of crops were yielding low and

unsustainable profit levels. The districts in the country will be classified into broad ecological zones that is, Irrigated, Semi-arid, Arid, Hills and Mountains and Coastal. These results will be corroborated with extensive and intensive farmers' surveys or focused group discussions and expert consultations in different agro-ecological zones. These results will serve as baseline for predicting the climate changes and its impacts.

The objective "Identify important adaptation strategies, including technologies, agronomic and management practices, institutional and infrastructure, to mitigate climate risks; estimate their potential costs and benefits; and suggest investment priorities for adaptation to important climate risks" will be achieved following three major steps: (i) identifying the most important climatic events that impact agriculture and livelihood of farmers in different agro-ecologies (ii) preparation of an inventory of possible adaptation strategies, and (iii) estimate costs and benefits of different adaptation strategies using appropriate parametric or non-parametric statistical tools. The region specific most important climatic risk (drought, flood, heat wave, insect pests, etc.) will be identified using historical data as well as farmers' perceptions through surveys or focused group discussions. An inventory of climate adaptation strategies (technological, institutional, behavioral and governance) would be prepared using information through surveys/focused group discussions. This will help identification of a set of feasible adaptation strategies. The economic feasibility of selected adaptation strategies would be determined using the risk stabilization framework and/or using the methodology suggested by the 'working group for assessing economic impact of climate change'. The results would be corroborated through workshops/ brainstorming session etc.

6212 Man-months Involvement of Component Project Workers for the Specified Year:

622 Progress of Work: (Report Enclosed)

Focus group discussions were held at two states- Andhra Pradesh , Odisha& Maharashtra . The East Godavari district was chosen for the study as it was frequently tormented by cyclones and flooding. The mandals, namely, Amalapuram, Gollaprolu and Uppada Kothapalle were selected. On the whole, 27 villages were randomly selected for the group discussions in these mandals. Similarly, in Odisha state, three districts namely, Jegathsingpur (Mandal: Erasama), Puri (Mandal: Brahmagiri) and Khurda (Mandal: Adallabad) were selected based on the extent of incidence of natural calamities. A total of 22 FGDs were conducted in different villages. Preliminary analysis

was conducted on the data collected to estimate the extent of damage caused by the climatic extreme events. The analysis was performed crop-wise and for different levels of incidence of climatic adversity. At mandal Amalapuram, the frequency of incidence of cyclone with flood is once in four years with severe and moderate cyclones occurring alternatively. The average cost of cultivation of paddy was Rs.25000 per acre. During severe cyclone, the 100% damage was witnessed in this crop while low intensity cyclone results in 20% damage. The annualized average damage expected due to cyclone worked out to be Rs.3750 resulting in a risk free annualized net return of Rs.2750 per acre. While for banana crop in the same mandal, the expected annualized risk free net returns turned out to be negative (- Rs.250) which shows that cultivation of banana crop is unsustainable in this region. Similar results were obtained for chili (mandal: Chebrolu), kharif paddy (mandal: Uppada Kothapalle) and rabi paddy (mandal: Uppada Kothapalle). However, at Nagulapalle, the paddy and black gram cultivation were profitable with annualized risk-free return of Rs.6211 and Rs.3547. In Odisha, the annualized risk-free return for paddy crop was positive, but, very low (less than Rs.2000) in all the selected districts.

623 Publications and Material Development:

(One copy each to be supplied with this Proforma)

6231 Research Papers: NIL

6232 Popular Articles: NIL

6233 Reports: NIL

6234 Seminars and Workshops (Relevant to the Project) in which the Scientists have Participated:

Scientists of this project participated in a workshop to discuss the progress of this project and future action plans at the lead centre of this project NCAP, New Delhi on 28-29 May 2012.

625 Infrastructural Facilities Developed:

Part - IV: Project Expenditure

(Summary)

Year _____

630 Recurring Expenditure

6301 Salaries : (Designation with pay scale)

- i) Scientific
- ii) Technical
- iii) Supporting
- iv) Wages

Sub-total

6302 Consumables :

- i) Chemicals
- ii) Glasswares
- iii) Others

Sub-total

6303 Travel :

6304 Miscellaneous :
(Other costs)

6305 Sub-total

(Recurring)

631 Non-recurring Expenditure :
(Equipment)

i)

632 Total

(630 and 631)

Part – V: DECLARATION

This is to certify that:

- the research work proposed in the Scheme/Project does not in any way duplicate the work already done or being carried out in the Institute on the subject ;
- the same Project has been/has not been submitted to any other Agency(ices) for financial support (if already submitted, identify Project & Agency) ; and
- the Investigator/Co-investigators have been fully consulted in the development of the Project and have fully undertaken their responsibility to carry out the programme as per the technical programme.

Signature of the Project Investigator:

1. G.P.Reddy

G.P.Reddy
25/12/2014

Co-investigators

2. A.Dhandapani

A.Dhandapani

3. N. Sivaramane

on foreign tour

4. P.D.Sreekanth

5. K.V.Kumar

K.V.Kumar

Signature & Comments of the Head of the Division/Section:

G.P.Reddy
25/12/2014

Signature & Comments of the Joint Director (Research):

R. Kalpana Sastry
डॉ. अर. कल्पना शास्त्री
Dr. R. Kalpana Sastry
संयुक्त निदेशक/Joint Director
राष्ट्रीय कृषि अनुसंधान प्रबंध अकादमी
National Academy of Agricultural Research Management
राजेन्द्रनगर/Rajendranagar, हैदराबाद/Hyderabad-500 407.A.P.

Signature & Comments of the Director:

S.L. GOSWAMI
डॉ. एस.एल. गोस्वामी
Dr. S.L. GOSWAMI
निदेशक/DIRECTOR
राष्ट्रीय कृषि अनुसंधान प्रबंध अकादमी (भा.कू.अ.प.)
National Academy of Agricultural Research Management (ICAR)
राजेन्द्रनगर/Rajendranagar, हैदराबाद/Hyderabad-500 407.A.P.