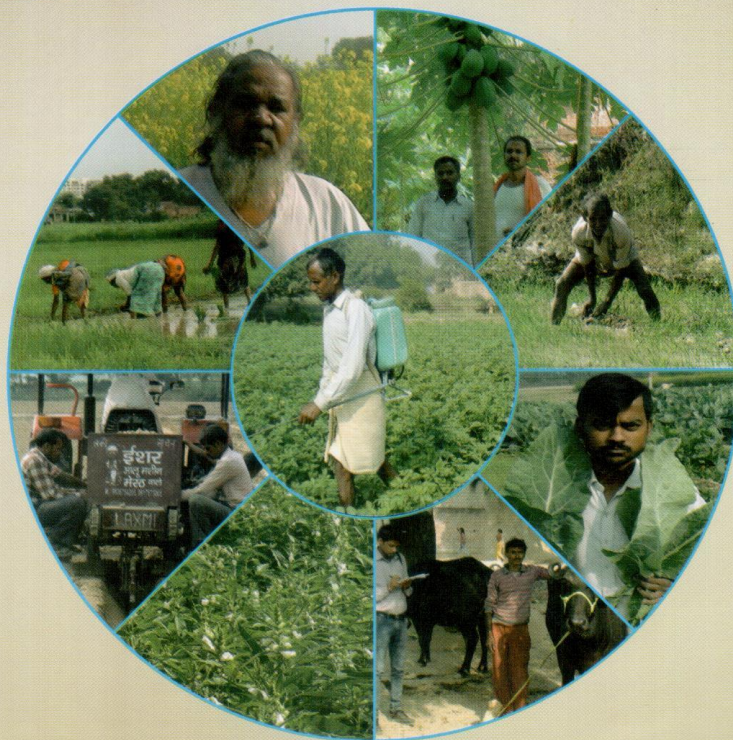


Success Stories of Farmers in Climate Resilient Agriculture

under
National Innovations on Climate Resilient Agriculture



Department of Agronomy

**CHANDRA SHEKAR AZAD UNIVERSITY OF AGRICULTURE
& TECHNOLOGY, KANPUR-208002**

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All India Coordinated Research Project on Agrometeorology

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Foreword

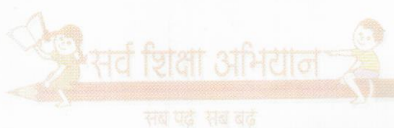


Enhancing the National innovations on climate resilient Agriculture to cope with climate variability and climate change is imperative to the livelihood security of millions of large, small and marginal farmers across the country. Devising appropriate adaptation strategies will enable farmers to cope with various climate risks, promote efficient use of natural resources to bring sustainability of farm production and stability to their incomes. The Indian Council of Agricultural Research (ICAR) has responded to this challenge of climate change on Indian agriculture and launched National Innovations on Climate Resilient Agriculture (NICRA) in the year 2011. The project has major aim of evolving climate resilient agricultural technologies to address the concerns of climate change scenarios and to demonstrate the best bet practices that can help farmers to cope with current climate variability. Technology Demonstration component is the lifeline of NICRA and is being implemented through Krishi Vigyan Kendras (KVKs). The basic aim is to build the resilience among the farming community, so as avoidance of extreme weather events such as droughts, floods, cyclones, unseasonal rains, heat and cold wave.

Development and demonstration of climate resilient agro techniques/cropping systems are the need of the hour to address the issues of climate change needed for sustainable agriculture production. Agro advisory bulletin and innovative knowledge generated by the scientists were taken up by farmer in participatory mode. This knowledge broadly falls into the natural resource management, crop production, livestock and institutional interventions. Some of the adaptation technologies have potential co-benefits to contribute towards reduction in Green House Gasses emission. The villages adopted under NICRA have become hubs of learning on climate resilient agriculture in a short span of five years, which opened up opportunities for horizontal and vertical diffusion of the successful experiences in other parts of the districts.

The impact of climate resilient agro techniques in farmers' field has been documented into a form of success stories. This publication documented the climate resilient practices and technologies that were successful in farmers' fields with potential up-scaling under the National Innovations on climate resilient Agriculture (NICRA). I compliment all the NICRA farmers and KVKs for their excellent field work. I also complement to PI NICRA Dr. Naushad Khan & his entire team for compiling these success stories of farmers in the form of a technical bulletin publication. I hope the efforts of the authors in form of publication will go a long way towards transformation of the other farmers of the region.

(Sushil Solomon)
Vice Chancellor



PREFACE

The National Innovations on Climate Resilient Agriculture (NICRA) is a multi-disciplinary network project launched by All India Coordinated Research Project on Agrometeorology in year, 2011. The project aim was to enhance resilience of Indian agriculture to climate change and climate variability through strategic research and technology demonstrations. On-farm participatory demonstrations of available technologies are being implemented in adopted village-Daleep nagar and Saibas, Kanpur Dehat districts under NICRA project. Climatic vulnerabilities like drought, flood, cyclone, heat wave and cold wave etc were tried to address in adopted villages. Various interventions included were resource conservation practices, crop diversification, inclusion of improved varieties/hybrids, inclusion of fodder for livestock management incorporated into agromet advisory bulletin and the same has been disseminated to farmers, biweekly.

The overall focus of technology demonstrations was to enhance resilience in farming practices against climate change risks, so, as to ensure sustainable production over a period of time. Enhancing resilience was the key to achieve sustainability in agriculture production especially in context of climate vulnerability. Thus, the focus was on adaptation to climate variability and entails appropriate responses to contingency situations. Sustainability is the immediate goal in highly intensive production systems facing natural resource degradation. Therefore, the main focus of technology demonstrations in adopted NICRA villages was to enhance productivity with interventions related to coping with vulnerability as well as improvement of natural resource use efficiency for sustaining the agricultural productivity.

The impacts of interventions in farmers' field were gathered and transform into a publication success stories in climate resilient agriculture. This publication technical bulletin on success stories in climate resilient agriculture will be helpful to other farmers of the region for enhancing their income. This publication attempted to capture highlights some of the key interventions that were successful in participatory demonstrations and have the potential for further up-scaling.

We the authors hope that this publication on "Success stories of farmers in climate resilient Agriculture" will be helpful for readers and extension workers to words enhancing income through interventions cope up with climate change.

Authors
Naushad Khan & Others

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National Innovations on Climate Resilient Agriculture

Introduction

The frequency, intensity and duration of extreme weather events is on the rise for past few decades. India is becoming more vulnerable to climate change as major chunk of population depends on agriculture and allied sectors. Depending on the magnitude and distribution of warming, climate change projections for the mid-term (2012-2039) period in India indicated 4.5 to 9% reduction in agricultural production, which may roughly amounts to 1.5% of GDP per year. Realizing the impact of climate change, the Government of India has prioritized the climate change research and a major project ‘National Innovations on Climate Resilient Agriculture (NICRA)’ has been initiated in 2010-2011 with the following objectives-

Objectives:

- To enhance the resilience of Indian agriculture covering crops, livestock and fisheries to climatic variability and climate change through development and application of improved production and risk management technologies.
- To demonstrate site specific technology packages on farmers’ fields for adapting current climate risks.
- Capacity building of scientists and other stakeholders in climate resilient agricultural research and its application.

In the vulnerable regions, the outcome from the project is expected to bring enhanced resilience of agricultural production systems to climate variability. The project is comprised of four components, viz.,

- Strategic research on adaptation and mitigation.
- Technology demonstration on farmers’ fields to cope with current climate variability.
- Sponsored and competitive research grants to fill critical research gaps.
- Capacity building of different stake holders.

It is a known fact that variable weather plays a dominant role in year to year fluctuation in crop production, both in rainfed or irrigated agriculture. Though complete avoidance of farm losses due to weather is not possible but losses can be minimized to a considerable extent by making adjustment through timely agricultural operations and accurate weather forecasts. Generalized forecasts, however, have limited use in farming. Weather

information for agricultural operations shall be a tailored product that can effectively be used in crop planning and management. A comprehensive weather based farm advisory is an interpretation of how the weather parameters at present and in future will affect crops, livestock and farm operations and suggests actions to be taken. In order to make the agro advisory services more meaningful and continuous process, it should be supported with agro-meteorological database, crop conditions, real time weather, research results on crop-weather relationships, skilled manpower in multi-disciplinary resources and users interface. AICRPAM-NICRA project was thus initiated to address these issues with following aims.

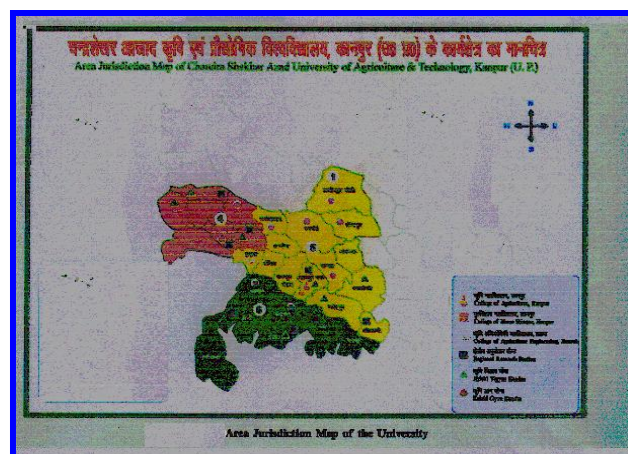
- To create weather and crop information acquisition and monitoring system through AWS and Field Information Facilitators (FIF) network.
- Delineating hotspots for weather anomalies at micro level through benchmark survey and climatic analysis at selected Districts/villages/sites for principal cropping/farming systems.
- Quantification of crop responses to weather and its extremes by integrating statistical and dynamic modeling.
- Customizing micro-level agromet advisories and their dissemination through ICTs.
- Development of strategies to combat weather extremes through field research.
- Conduct awareness/training programs on climate change, and workshops for capacity building on agro-met advisories.

Project area:-

Central Plain Zone of Uttar Pradesh:

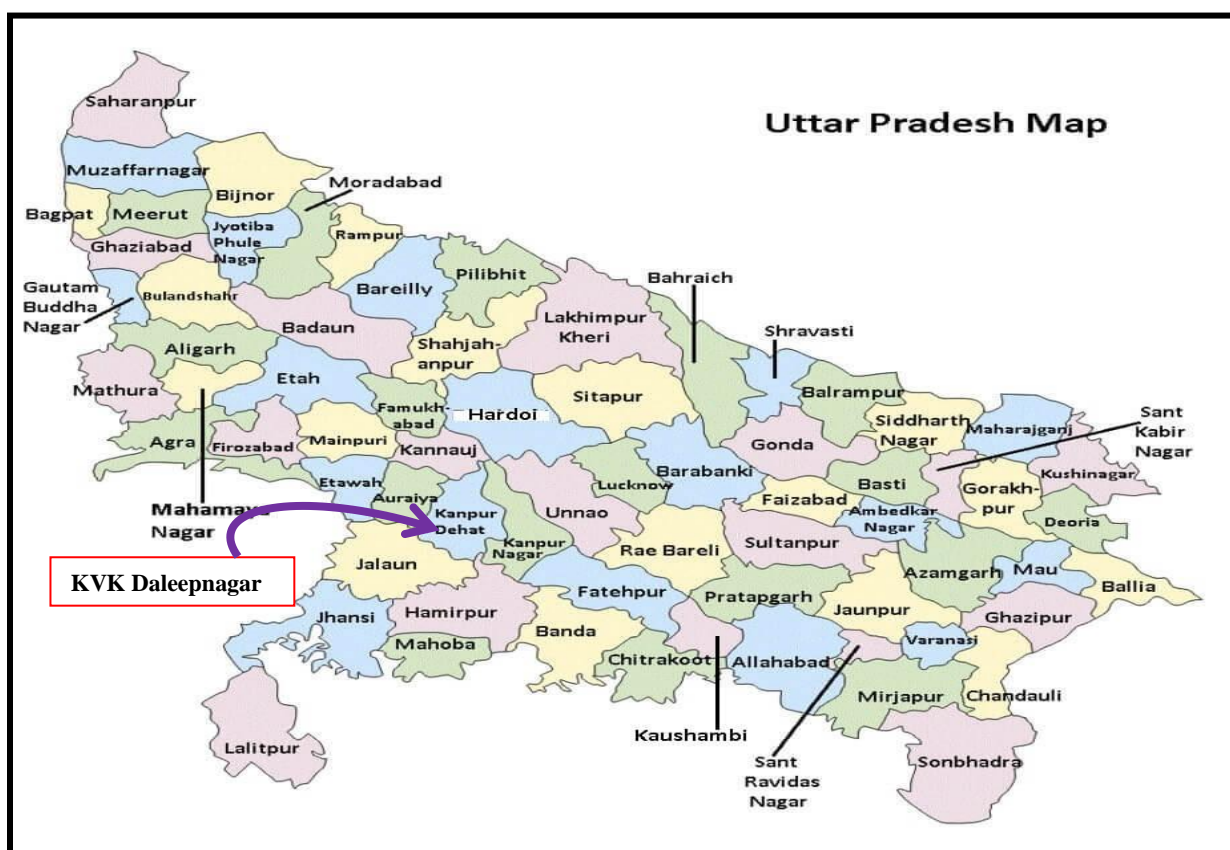
The central plane zone of U.P. comprises of 14 districts viz. Kanpur Nagar, Kanpur dehat Kannauj, Farukhabad, Aurriya, Etawah, Unnao, Lucknow, Hardoi, Sitapur, Fatehpur, Raibarely, Lakhimpur Kheri and Allahabad. Most of the cultivated area under these districts is under Sandy loam, bunded and have very good irrigation potential with normal slope. In this

Fig.-1



Zone, a large portion of uncultivable land of saline or alkali soil needs proper reclamation. The zone is relatively more humid as compared to other two zones. It comes under the university Jurisdiction area i.e. South West semi arid and Bundelkhand Zone. The normal annual rainfall of CPZ zone is 792.7mm. More than 88.5 percent of the total rainfall is received comes during South- west monsoon (June to Sep.). Winter monsoon (Dec. to Feb.) contributes 4.6 % followed by 4.1 % in Post monsoon (Oct. to Nov.) and the lowest 2.9 % occurs in summer monsoon (March to May).

Fig:2 Map of Uttar Pradesh



Rainfall characteristics of Central Plain Zone of U.P.

Distribution of rainfall in this area is erratic in nature. The CPZ zone receives the highest normal rainfall (1105 mm annual) among all the 3 agro climatic zones of Central U.P. Among the districts of CPZ region, Lakhimpur kheri, receives the highest rainfall. Future rainfall scenario indicates that frequency of terminal drought will be in decreasing trend over normal of 65% with increase in early and intermittent drought in the zone (Table:1). In CPZ,

increase in post monsoon rainfall is projected in coming years. Frequency of drought occurrence in the region changed from once in 7-8 years to once in 3-4 years.

Table: 1 Rainfall characteristic of Central Plain Zone of U.P.

Parameters	CPZ
i) Average Annual Rainfall (mm)	792.4
a. South- west monsoon (June to Sep.)	88.4 %
b. Rainfall during Post Monsoon (Oct. – Nov.)	4.1 %
c. Summer rainfall (April - May)	2.9 %
d. Winter rainfall (Dec. to March)	4.6 %
Onset of monsoon	18 June
Number of rainy days	43 (37 years)
Length of Monsoon season	94 days
(i) Early stage & Mid stage frequency of Drought	Increasing trend
(ii) Terminal Drought	Decreasing trend

Village adoption and Implementation of Technical Programme (2011-12 to 2016-17)

- Selected two NICRA villages-Daleep Nagar, under the Block-Shivrajpur, and Village-Saibas, Block- Bilhaur District- Kanpur Dehat representing different cropping pattern under area jurisdiction of KVK, Daleep Nagar, District-Kanpur Dehat (U.P.).
- Selected 60 farmers from both the NICRA villages comprising 10 marginal (0.5- 1.0 ha.) 10 small (1.0-2.0 ha.), and 10 large farmers (2-4 ha.) in each village.
- Benchmark survey of both the villages was made on village profile, individual farmer profile, perception of farmers on changes in the rainfall, temperature, exposure and vulnerability of agricultural crops to climate change, adaptation strategies/measures taken up by farmers (especially crop adaptation strategies, means of crop insurance and farmers expectations to mitigate the ill effects of climate change). Individual farmer's perception was added in Agro-met Advisory Services.
- Individual farmers were categorized on the basis of family size, age group and educational status.

- Meteorological drought has been calculated over the last 41 years, and found no drought for 20 years, Mild drought for 14 years, Moderate drought for 6 years and severe drought for 1 year only.
- Weather forecast outreach to the farmers is in the order: Radio > TVs > Print media and through other means such as Telephonic Talk, SMS, Agro advisory and through FIF personals of NICRA Project.
- Agro advisory outreach to the farmers is in the order: Radio > Print media > TVs> Physical appearance and others mean were Telephonic Talk, SMS and through FIF personals of NICRA Project.
- Amount of rainfall and Number of rainy days decreased while temperature has increased during reproductive period of *Kharif* crop. Summer temperature experienced moderate variation while variation in winter temperature was found to be low in recent years.
- Soil nutrient status decreased due to climate change. Sowing of the crops during past five years was delayed due to climate change and variability. The maximum post harvest losses occurred in recent years. Weed infestation in the agricultural crops has also increased in recent years due to erratic nature of rainfall which resulted increased in cost of cultivation and reduction in farm income.
- Early warning was found to be most important tool to mitigate the ill effects of climate change.

Profile of adopted village-Daleep Nagar, District- Kanpur Dehat (U.P.)

1.	Name of C.D. Block	:	Shivrajpur	
2.	Name of the District	:	Kanpur Dehat	
3.	Name of the Village	:	Daleepnagar	
4.	No. of farm households in village	:	315	
5.	Total population in the village (No.)	:	Male [1050]	Female [950]
a.	SC population in the village (No.)	:	Male [61]	Female [42]
b.	ST population in the village (No.)	:	Male [nil]	Female [nil]
6.	Farmers in the village (No.)	:	Marginal [200]	Small [45]
7.	Landless labourers in the village (No.)	:	60	
8.	Gross cropped area in the village (ha)	:	142.983	
9.	Sources of irrigation and percentage of area irrigated	:	Pumping set / Tube well,	53.4%
	Irrigation area (ha)	:	76.26 ha	
10.	No. of households engaged in crop production	:	305	

11. Existing cropping pattern in the village with variety (HYV / Local), area coverage (ha) and yield (q/ha) under different crops

Crop	<i>Kharif</i>			<i>Rabi</i>			Summer		
	Variety	Area (ha)	Av. Yield (q/ha)	Crop/Variety	Area (ha)	Av. Yield (q/ha)	Crop/Variety	Area (ha)	Av. Yield (q)
Paddy	-	-	-	Wheat	--	-	Maize	-	-
Dry seeded	-	-	-	HUW-234					
Wet seeded	-	-	-	PBW-343					
Transplanted	NDR-359	47.19	50.00 q/ha	PBW-154, K-7903 and K-9423	46.23	37.5	-	-	-
Maize	Azad uttam, Pragti	18.59	30.00 q/ha	-	-	-	-	-	-
-	-	-	-	Mustard	3.57	16.0	-	-	-
				Varuna, Kranti or Vardhan		Or Wheat 39.00			

12.	No. of farm implements available in the village	:	
	Tractors	:	7
	Power tillers	:	6
	Pump sets	:	28
	Sprayers	:	5
	Mould ploughs	:	-
	Wooden ploughs	:	5
	Threshers	:	3
13.	No. of farm units engaged in	:	X
	Dairy	:	172
	Poultry (No. of birds per unit)	:	X
	Goat farming	:	4
	Piggery	:	X
	Bee keeping(Honey bee units-No. of Boxes/unit- average)	:	X
	Mushrooms	:	X
	Fishery	:	X
	Others, if any (specify)	:	x
14.	Occurrence of Meteorological drought during last 10 years (No. of years)	:	3
15.	Extent of damage due to drought	:	22
	Percent area of the village affected	:	19

	Percent loss occurred	:	25
16.	Occurrence of flood during last 10 years (No. of years)	:	No
17.	No. of farm knowledge centres, if any, in the village / near village	:	KVK
	Distance of farm knowledge centre	:	1.5
	Nature of farm knowledge provided		Agriculture training/FLDs
	Agencies involved in providing farm knowledge	:	KVK Daleep Nagar/NICRA Scientists
18.	No. of Self Help Groups (SHG) operating in the village	:	-
a.	No. of women SHG operating in / near the village	:	-
b.	Nature of agricultural activities covered by the SHG in the village	:	-
19.	Whether Kisan Club is present? If yes, its name	-	
20.	Frequency of Village Level Worker visits (VAW/VLW)	:	-
21.	No. of farmers recognized the VAW/VLW in the village	:	-
22.	Mass media outreach in the village	:	
a.	No. daily news papers subscribed	:	15
b.	No. of Radios	:	55
c.	No. of TVs	:	30
d.	No. of printed bulletins/magazines reaching in a week	:	30

Table :2 Farmer's Profile

Farmer Profile (Values in %)			
	Marginal	Small farmers	Rich farmers
Family size			
Up to 4 membres	60	20	50
Up to 5 to 8	40	50	50
Above 8	0	30	0
Age group			
Up to 40 years	30	20	30
41-60 years	50	30	50
> 60 years	20	50	20
Education			
Illiterate	0	60	0
Up to 10 th passed	70	10	10
Inter médiat passed	20	30	20
Graduate	10	0	70

Profile of adopted village- Saibas, district- Kanpur Dehat (U.P.)

1.	Name of C.D. Block	:	Bilhaur		
2.	Name of the District	:	Kanpur Dehat		
3.	Name of the Village	:	Saibas		
4.	Farming households in the village (No.)	:	430		
5.	Total population in the village (No.)	:	Male [1580]		Female [1120]
	a- SC population in the village (No.)		Male [200]		Female [150]
	b- ST population in the village (No.)		Male [0]		Female [0]
6.	Farmers in the village (No.)	:	Marginal [150]		Small [160]
7.	Landless labourers in the village (No.)	:	75		
8.	Gross cropped area in the village (ha)	:	237.645		
9.	Sources of irrigation and percentage of area irrigated	:	Tube well	84.5%	
	Source of irrigation	:	Tube well		
	Area (ha)	:	200.79		
10.	No. of households engaged in crop production	:	398		

11. Existing cropping pattern in the village with variety (HYV / Local), area coverage (ha) and yield (q/ha) under different crops

Crop	<i>Kharif</i>			<i>Rabi</i>			<i>Summer</i>		
	Variety	Area (ha)	Yield (q/ha)	Variety	Area (ha)	Yield (q)	Variety	Area (ha)	Yield (q/ha)
Paddy	-	-	-	Wheat					
Dry seeded	-	-	-				x	x	X
Wet seeded	-	-	-	x	x	X			
Transplanted	NDR-359, Sarjoo-52, Pant-10, Pant-12 & Indrasan Deshi	45.00	25.00 q/ha	Wheat HUW-234 PBW-343, K-7903	65.00	34.00 q/ha	-	-	-
Maize	Desi	20.00	15 q/ha	-	-	-	-	-	-
Sorghum	Desi	15.00	10 q/ha	Mustard – Varuna, Kranti, Vardhan	25.00	10.00	-	-	-

12.	No. of farm implements available in the village	:	
	Tractors	:	14
	Power tillers	:	3
	Pump sets	:	35
	Sprayers	:	240
	Mould ploughs	:	-
	Wooden ploughs	:	2
	Threshers	:	12
13.	No. of farm units engaged in	:	X
	Dairy	:	253
	Poultry (No. of birds per unit)	:	X
	Goat farming	:	5
	Piggery	:	X
	Bee keeping(Honey bee units–No. of Boxes/unit-average)	:	X
	Mushrooms	:	X
	Fishery	:	X
	Others, if any (specify)	:	Horticultural plants (Banana, Papaya)
14.	Occurrence of Meteorological drought during last 10 years (No. of years)	:	3
15.	Extent of damage due to drought	:	25
	Percent area of the village affected	:	22
	Percent loss occurred	:	30
16.	Occurrence of flood during last 10 years (No. of years)	:	No
17.	No. of farm knowledge centers, if any, in the village / near village	:	KVK Daleep Nagar
	Distance of farm knowledge centre	:	25.0 km
	Nature of farm knowledge provided	:	Agriculture training
	Agencies involved in providing farm knowledge	:	KVK, C.S.A.U. Kanpur
18.	No. of Self Help Groups (SHG) operating in the village	:	-
a.	No. of women SHG operating in / near the village	:	-
b.	Nature of agricultural activities covered by the SHG in the village	:	-
19.	Whether Kisan Club is present? If yes, its name	:	-
20.	Frequency of Village Level Worker visits (VAW/VLW)	:	Once in a month
21.	No. of farmers recognized the VAW/VLW in the village	:	20
22.	Mass media outreach in the village	:	
a.	No. daily news papers subscribed	:	100
b.	No. of Radios	:	70
c.	No. of TVs	:	200
d.	No. of printed bulletins/magazines reaching in a week	:	x

Agromet-Advisory Services

The main objective of Agro-meteorological Advisory Services under National Innovation in Climate Resilient Agriculture (NICRA) is to provide weather based agro-met advisories to the farming community. NICRA units received weather forecast from regional Center, IMD, Lucknow, bi-weekly or weekly basis. The forecast issued for six parameters such as rainfall(mm), cloud cover (Okta), wind speed (kmph) and direction (degree), maximum and minimum temperature ($^{\circ}\text{C}$) and relative humidity (%) morning and afternoon in quantitative terms for next five days. The cumulative weekly rainfall is also available in the forecast. The project in-charge of the NICRA unit, an agro-meteorologist, with the co-operation and suggestions from inter-disciplinary group of agricultural and extension specialists viz; Plant pathologist, Entomologist, Agronomist, Horticulturist, Soil scientists and Animal scientists formulate the agromet advisories. These advisories contained location and crop specific farm level information prepared in Hindi (Local language) having the description of prevailing weather, soil and crop condition and suggestions for appropriate measures to be taken to minimize the loss and optimize the inputs viz; excessive field preparation, Fertilizer, Seed, Pesticides and insecticide etc. A bulletin basically contains information on prevailing weather stress which is helpful for the preparation of advisories having adaptative measures. The content of bulletin is varied with location, season, weather condition, crop stages and local practices of farmers. It helps in timely irrigation and fertilizer application etc. The advisories also served as an early warning function, alerting producers about the implications of various weather events such as extreme temperatures, heavy rains, hail storms, frosts, floods and strong winds. The AAS bulletins are being disseminated through personal messenger (SRF/FIF) to all the selected farmers of NICRA villages at their own farms or contact points and also been provided to mass media, radio, TV, phone/fax including extension workers at the same time. The advisories are regularly being sent to print and electronic media too.

Agromet Advisory dissemination to the farmers:

Agro-met advisories are the measures, devised based on the current and future weather conditions to safeguard the standing crop from the likely weather aberrations. The components of agro-met advisories includes weather conditions, land preparation, suitable crop, new seed, varieties, seeding/planting method, weeds and its management, disease and pest control,

irrigation scheduling, manures, fertilizers and their doses, methods and application, pesticides availability and its quantitative application, harvesting and threshing, storage and its marketing.

Process of information access in adopted NICRA villages:-

The preparation of block level agro-met advisory bulletins starts with using block level forecast data issued by IMD from its website www.imd.gov.in by the Agro-meteorologist of AICRPAM with the help of Subject Matter Specialists (SMS) at KVK as the first step. In the next step, collection and compilation of crop information and farmers queries will be done by "Field Information Facilitator (FIF)". The FIF served as the interface between the farmers and Scientists/SMS of AICRPAM and KVK. Further, FIF collected village information (prevailed local weather conditions, crops and their growth stages, vigour, incidence of pests and diseases etc) and disseminated advisories to the farmers. Generally, a young and progressive farmer in the concerned village is identified for this purpose. On the basis of field level crop information collected by FIF and blended block level weather forecast, micro-level agro-met advisories were prepared. Thus, the Agro-meteorologist of the AICRPAM center communicates advisory bulletin to the FIFs by email that immediately passed on to the farmers. The micro-level AAS is generated by Agrometeorologist with the help of multi disciplinary scientists. This AAS will be disseminated by multiple communication modes, viz., mobile text as well as voice SMS, display at public places, personal contact etc. The feedback obtained from the farmers was evaluated for improving as well as expanding agro advisory services for the benefit of farming community.

Impacts of Agro-met Advisory Services

The ultimate aim of weather based AAS is to help the farmers in increasing the economic benefit by suggestive crop management practices suiting the anticipated weather conditions. Impact assessment is an essential tool for assessing the viability of any activity. The impact of AAS issued to farmers of NICRA villages i.e. Daleepnagar, and Saibasus was assessed with respect to economic benefit, farm productivity and benefit cost (BC) ratio etc.

Input Cost Reduction

The application of agro-met advisory services, based on current and forecasted weather is a useful tool for enhancing the production and income of the farmers, who follows the service. The AAS farmers received weather forecast based on agro-advisories, including optimum use of inputs for different farm operations. Due to judicious and timely utilization of inputs, production cost of the AAS farmers was reduced. The increased yield levels and reduced cost of cultivation led to increased net returns. The effectiveness of AAS can only be accessed through economic gain achieved with each and aggregated seasonal advisories.

AAS issued for two villages of Kanpur Dehat districts *viz.*, Daleep nagar and Saibashu resulted in monetary savings of Rs. 350 to Rs. 4000 per hectare.

Table- 1 Impact of Agromet Advisory Services (AAS) on the economy of adopted farmers at NICRA village in 2014

Issuing Date	Crop	Forecast Given	AAS issued	Action taken by farmers in response to AAS	Forecast realized	Benefit/loss
13.06.14	Maize	Light to medium rainfall in next 4 days.	i. Conserve moisture, field should be prepare for kharif maize	Conserved moisture	24.1mm received during these days.	Saved Rs. 960/ha.(L+I) due to skipping of pre irrigation for field preparation
	Urd/ Moong		ii. Keep harvested crop at safer places	Followed		Quality of grain urd & moong seed Saved Rs.450/q as compared to non AAS grain price.
1.07.2014	Maize	Light to moderate rainfall	Stop irrigation	Followed	14.2 mm rainfall received on 2.7.2014	Saved on irrigation amounting to Rs.960/ha.
			Advised farmers not to irrigate the crop	Not Followed		Loss of Rs.600 due to not following the AAS
15.7.2014	Maize	Light to moderate rainfall.	Avoid spraying of insecticide and stop irrigation	Followed	24.6 mm rain fall received on 16.7.2014	Saved labour and pesticide cost charges for irrigation at knee height stage amounting to Rs. 960/ha.
25.7.2014	Rice	40.0 mm heavy rain would occur at few places from 28 th to 30 th July	Farmers were advised to stop spraying of insecticide and irrigation. earthen bunds should be made around the paddy field. Drain out excess water from maize field. Stop sowing of urd & moong.	Followed	70.6 mm rainfall received on 29 to 30 July, 2014	Heavy rainfall observed 10% damage of early sown millet, moong and urd by water logging during emergence. Rs.1000/ha seed lost.
01.08.2014	Rice	moderate to heavy rains during this week	Advised the farmers for no irrigation	Followed	39.0 mm rainfall received on 02 to 06 Aug., 2014	Saved on irrigation amounting to Rs. 1000/ha during tillering stage.
29.8.2014	Rice & Maize	Light to Moderate rainfall	Advised farmers for no irrigation and no spraying of insecticide	Followed	No rainfall	5% loss in rice and maize crop during PI and silking stage, respectively.
05.09.2014	Rice & Maize	Moderate to heavy Rain.	Advised farmers for no irrigation and avoid spraying of insecticide	Not Followed	27.2 mm rainfall received on 07.09.2014	Rain occurred just after spraying the insecticide and irrigation loss of labour & fuel charges amounting Rs. 1500/ha-
09.09.2014	Potato & Toria	Light to Moderate rainfall	Advise for postponing the sowing of Potato and Toria.	Not Followed	Next two days heavy rainfall was received	Potato crop in 3 ha was lost due to heavy rainfall (4000/- ha). Toria in 2.0 ha was not

07.10.2014	Rice, Maize, Urd and Moong	Light to Moderate rainfall	Postpone irrigation in rice and keep moong and urd harvest at safer place	Not Followed	60.4 mm heavy rainfall received with high wind velocity (due to hud hud cyclone)	germinated due to heavy rainfall, Loss of seeds amounting Rs.1500/- Rs. 3000/ha. Loss in rice due to lodging and Rs.1000/ha. Loss in urd & moong been due to deterioration of seed quality
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Table-2 Impact of Agromet Advisory Services (AAS) on the economy of adopted farmers maize crop at NICRA village Saibasus in 2015

Date of Issue	Crop	Forecast	AAS issued	Action taken by farmers in response to AAS	Forecast realized	Benefit/Loss
24.6.15	Maize, Rice	Light to moderate rainfall	Stop irrigation and Conserve moisture	Followed	25.0 mm rainfall received on 30/6/2015	Saved on irrigation amounting to Rs. 1200/ha- and loss of charges for irrigation Rs. 1200/-
8.7.15	Maize, Rice	Light to moderate rainfall	Farmers were advised stop spraying of weedicide and irrigation.	Followed	62.0 mm rainfall received on 11 to 12.7.2015	Saved labour, cost of pests & tube well charges for irrigation amounting to 1700/ha.
14.7.2015	Maize, Rice	moderate to heavy rains	Farmer's advised to stop spraying of insecticide and irrigation.	Followed	3.0 mm rainfall received on 18 July, 2015	Spray insecticide just after sparing on rainfall Rs. 500/ha loss by insect
21.07.2015	Maize, Rice	moderate to heavy rains	Advised farmers to stop spraying of insecticide and stop irrigation or transplanting of rice crop	Followed	25.0 mm rainfall received on 24,25 July 2015	Saved labour, cost of pests & tube well charges for irrigation amounting Rs. 1200/- At knee height stage
04.8.2015	Maize, Rice	heavy rains	Advised farmers for no irrigation and spraying of insecticide	Followed	Nil	No loss and No benefit
15.09.2015	Maize, Rice	Light rains	Advised farmers to irrigate and maintain moisture in the field	Followed	10.0 mm rainfall received on 21/9/2015	Loss of Rs. 1200/ha
22.09.2015	Maize, Rice	Moderate rains	Postpone irrigation and assemble harvested crop at safer place	Followed	No rainfall	Loss of Rs. 568 as labour charge

Table-3 Impact of Agromet Advisory Services (AAS) on the economy of adopted farmers rice crop at NICRA village Daleepnagar in 2015

Date of Issue	Crop	Forecast	Advisory issued	Action taken by farmers in response to AAS	Forecast realized	Benefit/Loss
24.06.15	Maize, Rice	Moderate Rains	Stop irrigation and Conserve moisture	Followed	19.0 mm rainfall received on 29-30/6/2015	Saved from irrigation amounting Rs. 1800/ha and Loss of charges for irrigation Rs. 1800/-
08.07.15	Maize, Rice	Light to Moderate Rains	Field preparation and spray pesticide	Followed	4.0 mm rainfall received during 11 to 12.7.2015	-
14.07.2015	Maize, Rice	Heavy Rains	Farmers are advised to stop spraying of insecticide and irrigation and Conserve moisture.	Followed	27.0 mm rainfall received during 17-19 July, 2015	Saved from irrigation amounting Rs. 1800. and Rs. 500/ha loss by pesticide and Rs.1800 by irrigation
21.07.2015	Maize, Rice	Heavy Rains	Advised farmers to stop spraying of insecticide and stop irrigation and Conserve moisture.	Followed	52.0 mm rainfall received during 22-26 July, 2015	Saved labour charges and cost of pest control & tube well charges for irrigation amounting to Rs. 2300/-
28.07.2015	Maize, Rice	Light Rains	Advised farmers for no irrigation and spraying of insecticide	Followed	Drizzle	-
30.07.2015	Maize, Rice	Heavy Rains	Advised farmers to Conserve moisture in the field	Followed	Nil	Rs. 426.00 as labour charge from preparation of bunds
07.08.2015	Maize, Rice	Heavy rains	Prepare bunds around paddy field	Followed	8.5 mm received on 12 Aug. 2015	-
21.08.2015	Maize, Rice	Light rains	Top dressed Urea at PI stage	Followed	Nil	-

Table-4: Impact of Agromet Advisory Services (AAS) on the economy of adopted farmers at NICRA village, Saibasuru in 2016

Issuing Date	crop	Forecast Given	AAS issued	Action taken by farmers in response to AAS	Forecast realized	Benefit
14.6.2016	Rice Nursery, Maize, Urd/Moong	Light to moderate rainfall.	Stop harvesting, harvested crop should be kept at safer place, stop irrigation, conserve moisture and spraying of pesticides, and use 5.0 kg ZnSO ₄ + 2% Urea in rice nursery during clear day .	Followed	10.0 mm rainfall occurred on 16.6.2016	Saved Rs.2000/-per quintal by maintaining quality seed in zaid urd and Rs.550/q from moong seed and Rs. 1500/ha by from irrigation of nursery
12.7.2016	Rice, Maize, Urd and Moong	Light to medium rainfall	Advised farmers to stop irrigation and spraying of insecticide Stop sowing of urd & moong	Followed	25.2 mm rainfall received during ,14 to 16 July, 2016	Saved labour and seed cost of pulses Rs. 1500/ha cost of pesticide Rs. 350/ha & tube well charges for irrigation amounting to Rs.1500/ha.
26.07.2016	Rice, Maize, Urd and Moong	Moderate to heavy Rain.	Advised farmers to skip irrigation, drain out excess rain water and avoid spraying of insecticide	Followed	19.4 mm rainfall received during 28 to 30 july.2016	Saved on labour, cost of spraying of insecticide, irrigation and fuel charges amounting to Rs.1800/ha.
09.8.2016	Rice, Maize, Urd and Moong	Light to medium rainfall	Advise to the farmers to skip irrigation, spraying of insecticide and drain out excess rain water from urd and moong fields, prepare damaged bunds of rice field	Followed	55.3 mm rainfall received on 12 to 14 Aug.2016	Saved on labour and irrigation cost and cost of pesticide amounting to Rs.1800/ha.
30.08.2016	Rice, Maize, Urd and Moong	Light to moderate rainfall in this week	Avoid irrigation and spraying of insecticide	Followed	16.0 mm rainfall received during 1 Sept.,2016	Saved Rs.670/ha on labour charges and cost of insecticide
16.9.2016	Rice, Maize, Urd and Moong	Light to moderate rainfall	Avoid irrigation, drain out excess water and stop spraying of insecticide, stop harvesting of moong and urd, harvested crop to be kept in safer place, conserve moisture in rice field	Followed	62.5 mm rainfall received on 18 and 19 Sept.2016	Saved Rs.3350/ha from irrigation, labour charges and spraying of insecticide.
20.09.2016	Rice, Urd, and Moong,	Light to moderate rainfall	Avoid irrigation, and Insecticide/pesticide	Followed	24.4 mm rainfall received on 22 and 24 sept.,2016	Saving due to labour, fuel charges and cost of pesticides amounting to Rs. 670/ha

Table-5: Impact of Agromet Advisory Services (AAS) on the economy of adopted farmers at NICRA village, Daleepnagar in 2016

Issuing Date	crop	Forecast Given	AAS issued	Action taken by farmers as per AAS	Forecast realized	Benefit
14.06.2016	Rice/Nursery, Zaid Urd/Moong and Maize	Light rainfall	Stop harvesting and harvested Zaid crop should be kept at safer place, stop irrigation, conserve moisture and spraying of pesticides, preparation of fallow field	Followed	8.1 mm rainfall received during 16 and 19 June, 2016	Benefited by Rs.2000/-per quintal from quality of seed in zaid urd and Rs.550/q in moong.
18.6.2016	Rice, Maize, Urd and Moong, Chilli, Cauliflower and Brinjal	Light to Medium rainfall	Advised farmers to stop irrigation to keeled harvest Zaid crop at safer place, and conserve moisture by preparing bunds around rice field Raising nursery for Chilly, Cauliflower and Brinjal	Followed	94.0 mm rainfall received during 20 to 23 June, 2016	Benefited by Rs.2000/-per quintal from quality of seed in zaid urd and Rs.550/q in moong.
24.6.2016	Rice, Maize, Urd and Moong	Light to Moderate rainfall	Advised the farmers to skip irrigation, drain out excess rain water and avoid spraying of insecticide	Followed	11.0 mm rainfall received during 27 and 29 June 2016	Saved Rs.670/ha on labour charges and cost of insecticide
05.07.2016	Rice, Maize, Urd and Sorghum, Chilli, Cauliflower and Brinjal	Light to Moderate rainfall	Advise to the farmers to stop irrigation and spraying of insecticide Stop sowing of urd, Sorghum, and conserve moisture, preparation of rice field and transplanting	Followed	67.1mm rainfall received during 6 to 9 July, 2016	Saved Rs.3350/ha from irrigation, labour charges and spraying of insecticide.
12.07.2016	Rice, Maize, Urd, Sorghum, Chilli, Cauliflower and Brinjal	moderate to heavy rains during this week	Advise to the farmers to stop irrigation and spraying of insecticide Stop sowing of urd, Sorghum, conserve moisture, preparation of rice field and transplanting	Followed	109.1mm rainfall received during 13 to 17 July, 2016	Saved Rs.3350/ha from irrigation, labour charges and spraying of insecticide.
26.7.2016	Rice, Maize Urd, Moong Sorghum, Chilly, Cauliflower	Moderate to heavy Rain.	Skip irrigation, drain out excess rain water from Urd, moong & Sorghum and avoid spraying of insecticide, conserve moisture, of rice field, transplanting of Chilli, Cauliflower at optimum moisture	Followed	36.9 mm rainfall received during 28 to 30 July, 2016	Saved labour, cost of spraying of insecticide, irrigation and fuel charges amounting Rs.2170/ha.
09.09.2016	Rice, Maize, Urd and Moong	Light rainfall	Avoid irrigation and spraying of insecticide and top dressing of Urea	Followed	27.1 mm rainfall received on 14 Sept., 2016	Saved Rs.2170/ha from irrigation due to labour charges and spraying of insecticide

Impact of Agro advisories in adopted NICRA Villages

Adopted farmers in NICRA village Daleepnagar, Block- Shivrajpur, and Village- Saibas, of Block- Bilhaur under Kanpur Dehat were doing traditional farming. After adoption in 2011-12, they gained guidance of scientist and SRF of NICRA Project regularly. These advisories were communicated to the FIFs by email that passed on to farmers immediately. The micro-level AAS were disseminated also by multiple communication modes, viz., and mobile text as well as voice SMS, display at public places and personal contact etc. The feedbacks obtained from the farmers were evaluated more often for improving as well as expanding Agromet Advisory services for the benefit of farming community.

The success stories of farmers from the village Daleepnagar of Shivrajpur block and village Saibas of Bilhaur block under Kanpur Dehat district are a good example in increasing the farm productivity by following the agro-met advisory. The farmers were provided agro-met advisories on weather conditions, land preparation, crops, seeds, varieties, seeding/planting method, weeds and its control, disease and pest control, number of irrigation, manures and fertilizers with its dose, method and time of application, pesticides availability and its quantitative application, harvesting and threshing, storage and marketing of the produce etc.

As a part of scientific farming many of the village farmers got their soils analyzed for available soil nutrients and applied nutrients as per requirement. Due to application of balanced nutrition, the farmers obtained good crop production with superior yield quality.

Before agromet advisory intervention, the village farmers obtained low yield and income with traditional cultivation practices. After adoption of agro-met advisory services, inputs were saved, which resulted in increased yield of Rice and Maize in *Kharif* and wheat in *Rabi*. Annual income from crops and Dairy was improved due to interventions based on agromet advisories.

The agro-met advisory adopted farmers were able to reduce input cost due to follow up of advisory with respect to cultivation practices i.e. land preparation, sowing time, crop/varieties, cropping system, fertilizer application, Irrigation scheduling, plant protection, threshing and marketing of produce.

Success Stories of Farmers

Under

Village - Daleep Nagar

Block - Shivrajpur

District - Kanpur Dehat

Success Story-1

Name of the farmer : Shri Parsu Ram Yadav

Age : 56

Family Size: 4

Education : 12th

Village : Daleep Nagar

Block: Shivrajpur

District: Kanpur Dehat

Land holdings : 1.5 ha

Theme : Agro met. advisory services



Sri Parsu Ram Yadav, a medium farmer residing at village Daleep Nagar located in Shivrajpur block under Kanpur dehat district of Uttar Pradesh was selected under NICRA Project during 2010-11. Four members family was deriving livelihood from 1.5 ha land. The selected farmer under the NICRA adopted village was doing traditional rice, wheat and mustard cultivation before intervention and no crop was grown in summer fallow land .

During the bench mark survey in 2011, it was found that Shri Parsu Ram Yadav was growing rice in *Kharif* and wheat and mustard in *Rabi*. The productivity of all crops was low as compared to potential yield. The major constraints for low productivity identified were non following of agromet advisories services, improved cultivation practices and crop diversification. The total annual income of Rs.78200.00 was obtained only from three crops.

On the basis of block level forecast, agromet advisory bulletin is seeing prepared by agrometeorologist with the help of subject matter specialist, which was disseminated to the farmer through FIF. The advisory contained improved specific agronomic practices, crop diversification, appropriate plant protection measures for different pest and diseases, Soil and water conservation measure, threshing, storage and marketing of produce. The knowledge on vegetable crops and dairy was also included in advisory bulletin. Sri Parsu Ram Yadav reduced input cost and increased his income due to following up of advisory services in his farming practices and included new crop like *kharif* maize, cauliflower and cabbage in *Rabi* season and Green gram and Maize in summer fallow land. He benefited with enhanced income of Rs. 207382.8 during the year 2016-17

Improved income after intervention

Name of Farmer	Land Holding (ha.)	Yield and income per Annum								
		(Before intervention 2011-12)					(After Intervention)			
Sri Parsu Ram Yadav	1.5 ha.	Season	Crop	Area (ha)	Yield (q)	Net Income (Rs)	Crop	Area (ha.)	Yield (q)	Net Income (Rs)
		Kharif	Rice	1.5	38.3	32300.0	Rice	1.0	55.8	38247.6
							Kharif maize	0.5	24.5	15943.0
		Rabi	Wheat	1.0	33.5	40900.0	Wheat	1.0	36.75	49523.3
							Mustard	0.3	7.5	20969.7
			Mustard	0.2	2.0	5000.0	Cauliflower/ Cabbage	0.2	70.0	48250.0
		Zaid	Nil				Maize	0.5	22.6	23899.2
							Green gram	0.8	3.7	10550.0
Total Annual Income					78200.0	207382.8				

Field Photo Graph



Success Story-2

Name of the farmer : Shri Chhunuwa

Age : 72

Education : 12th

Village : Daleep Nagar

District: Kanpur Dehat

Theme : Agro met. advisory services,

Family Size : 4

Block: Shivrajpur

Land holdings : 0.8 ha



Sri. Chhunuwa is a marginal farmer belonging to village Daleep Nagar, Block – Shivrajpur, District-Kanpur Dehat in Uttar Pradesh. He has only 0.8 hectare farm land for his family survival. His soaring economic demands forced him to earn livelihood through improved farming. Her courage to take initiative to follow agromet advisory and choosing new varieties and crops for farming changed her life forever.

As other fellow farmers who were doing cauliflower/cabbage, onion & Potato (vegetable production) farming in their village, he also took-up cauliflower/cabbage, onion & Potato cultivation but it could not contribute much to his income. Meanwhile, a group of Agrometeorologist & agriculture scientists from Krishi Vigyan Kendra (KVK) visited his village for interaction with farmers during 2010-11 after adoption under NICRA Project. Agrometeorologist & scientists of KVK, Daleep Nagar provided him informations regarding work done at Department of Agronomy (AICRPAM-NICRA Project), CSAUT, Kanpur. It was decided that a first line demonstration will be organized in *Kharif*, *Rabi* and *Zaid* season for the benefit of farmer's income.

As per schedule, scientists demonstrated the first line demonstration of *Kharif*, *Rabi* and *Zaid* in the field of selected farmers. This demonstration encouraged him to do some experiments with his traditional farming techniques. Second step in this direction was another first line demonstration in *Kharif*, *Rabi* and *Zaid* season by the SRF & scientists. The scientists came to know that farmers are not having knowledge of off-seasonal vegetables which can contribute to their income significantly. This area had the model ecological conditions for growing off-season vegetables. Farmer's enthusiasm encouraged scientists to provide him the technical know-how for off season vegetables.

Improved income after intervention

Name of Farmer	Land Holding (ha.)	Yield and income per Annum									
		(Before intervention 2011-12)					(After Intervention)				
Sri. Chhunuwa	0.8 ha.	Season	Crop	Area (ha)	Yield (q)	Net Income (Rs)	Crop	Area (ha.)	Yield (q)	Net Income (Rs)	
		Kharif	Rice	0.8	36.3	18300.0	Hybrid Rice	0.5	31.0	19400.0	
			Hybrid Maize	0.3	11.2	10560.0					
		Rabi	Wheat	0.6	21.5	21500.0	Wheat	0.2	12.2	10548.0	
			Mustard	0.2	2.0	3000.0	Potato	0.15	38.0	16465.0	
							Cauliflower	0.1	14.3	10700.0	
							Cabbage	0.1	23.35	13700.0	
			Broccoli	0.05	5.2	5236.0					
		Zaid	Nil					Onion	0.3	60.5	65750.0
		Urd/Moong	0.5	6.3	8970.0						
Total Annual Income					42800.0				161329.0		

Under this programme, he along with other farmers were trained for raising a good nursery of hybrid seeds (cauliflower/cabbage/broccoli), use of vermicompost and organic fertilizers. Mr. Chhunuwa was one of the beneficiaries of this programme. He got 9876 plants for farming in 0.1 ha. He invested merely Rs 15750.0 for cauliflower/cabbage farming but the income was much more than the invested money. He earned Rs. 13600.00 by selling 3670 Kg cabbage at the rate of 15 Rs/kg rate. He saved another 20 kg cauliflower/cabbage for his household consumption. Thus, he could get a bumper crop of 500 quintal/hectare of cauliflower/cabbage. He has grown onion in 0.3 ha. He invested merely Rs. 25000.0 for onion farming but the income was much more than invested money. He earned Rs 65750 by selling 6050 kg onion at the rate of 15 Rs/kg. He saved another 50 Kg onion for his household consumption. Thus, he could get a bumper crop of 180 quintal/ hectare of onion crop. This is the first time that Chhunuwa earned money from vegetable farming. He is grateful to the scientists/agrometeorologist for showing him a new way of economic independence.

Economics of off-seasonal cauliflower/cabbage and onion crop farming was very attractive for the farmers. Now, many more farmers are approaching scientists/agrometeorologist to get their help in this report. Thanks to initiatives taken by Chhunuwa.

Field Photo Graph



Success Story-3

Name of te farmer : Shri Pramod Shukla

Age : 52

Family Size : 4

Education : 12th

Village : Daleep Nagar

Block: Shivrajpur

District: Kanpur Dehat

Land holdings : 1.3 ha

Theme: Agro met. advisory services



Shri Pramod Shukla is a medium farmer of District Kanpur Dehat. He is having 1.3 ha of land which is the only source of living for 4 family members. Before intervention, he was growing rice in *Kharif* season and wheat in *Rabi* season, traditionally. His income during 2010-11 was Rs. 53729.0/year before any intervention in his traditional farming. But due to lack of technical knowledge and prevailing adverse weather, he has not been getting the desirable output with his land holding for his existence. Later on, after the start of NICRA project, he came in contact of Krishi Vigyan Kendra (KVK), Kanpur Dehat in the year 2011-12. Agrometeorologist, along with different KVK scientists and SRF provided training and technical guidance along with agro advisory bulletin to Shri Pramod Shukla. He followed Agromet Advisory services, regularly in his farm operation to grow rice, maize and vegetable crops. In *Kharif*, he cultivated advised crops was hybrid variety of maize (D-7074) and rice (PHB-71) in his field. He also planted vegetable crops in small area for his family consumption and income enhancement. He also included hybrid maize in *Kharif* and potato and onion in *Rabi* and Tomato in *Zaid* Season.

By adopting Agro met. Advisory services, he saved yield losses due to adverse weather condition and was more benefited with crop intensification than non AAS farmers. He was benefited with enhanced income of Rs. 257115.0 during the year 2016-17. He is one of the successful farmers of the locality and well known among the non AAS farmers of the village. He is now a source of inspiration for all the other farmers of the locality who are learning the things for improving their livelihood.

Improved income after intervention

Name of Farmer	Land Holding (ha.)	Yield and income per Annum								
		(Before intervention 2011-12)					(After Intervention/New crop introduce)			
Pramod Shukla	1.3 ha.	Season	Crop	Area (ha.)	Yield (q)	Net Income (Rs)	Crop	Area (ha.)	Yield (q)	Net Income (Rs)
		Kharif	Rice	1.3	38.5	22865.0	Hybrid Rice	0.8	25.0	27500.0
							Hybrid Maize	0.5	11.4	14820.0
		Rabi	Wheat	1.3	32.3	30864.0	Wheat	0.6	28.2	26830.0
							Potato	0.5	100.0	50000.0
								Onion	0.2	48.0
		Zaid	Nil				Tomato	0.5	80.0	41965.0
		Total Income					53729.0			

Field Photo Graph



Success Story-4

Name of the farmer : Smt. Geeta Devi

Age: 48

Education : 8th

Village : Daleep Nagar

District: Kanpur Dehat

Theme : Agro met. advisory services

Family Size: 5

Block: Shivrajpur

Land holdings : 2.0 ha



Shrimati Geeta Devi is a farmer of District Kanpur Dehat. She hold 2.0 ha of land for maintaining family of 5 members. Before intervention, she was growing rice in *Kharif* season and wheat and mustard in *Rabi* season, traditionally along with one cow. Her income during 2010-11 was Rs. 72269/year before any intervention in crops and live stock. But due to lack of technical knowledge, she was not getting the desirable output even with her sufficient land holding for her existence. Later on, after the start of NICRA project in her village, she came in contact with Krishi Vigyan Kendra (KVK) Kanpur Dehat in the year 2011-12. Principal Investigator, NICRA Project, along with KVK scientists and SRF provided technical knowledge about crop production, live stock management and the strategies to cope with prevailing adviser weather to Smt. Geeta Devi. She practiced Agro met. Advisory services and improved cultivation practices in her farm. She introduced new crops like hybrid maize, potato, cauliflower and cabbage in her farm to get higher income. She replaced local varieties of rice and maize with popular hybrids. She also planted vegetable crops in large area for her family consumption and income generation. Due to green fodder availability and enhanced income level, she purchased on more cow and two buffaloes for higher milk production.

Due to adoption of Agro met. Advisory services and improved crop management practices, she was benefited with enhanced income of Rs. 192898.0 during the year 2016-17. She is now a source of inspiration to all the other farmers of the village.

Improved income after intervention

Name of Farmer	Land Holding (ha.)	Yield and income per Annum									
		(Before intervention 2011-12)					(After Intervention)				
Smt. Geeta Devi	2.0 ha.	Season	Crop	Area (ha.)	Yield (q)	Net Income (Rs)	Crop	Area (ha.)	Yield (q)	Net Income (Rs)	
		Kharif	Rice	2.0	47.5	27842.0	Rice	1.2	53.0	32000.0	
			Hybrid Maize	0.8	21.3	17455.0					
		Rabi	Wheat	1.5	38.6	31582.0	Wheat	0.8	30.0	19600.0	
							Berseem	0.2	fodder		
			Potato	0.8	150	42754.0					
		Mustard	0.5	5.5	9187.0	Cauliflower/ Cabbage	0.2	75.0	56365.0		
		Other	1 Cow		547.5	3658.0	2 buffalo 1 Cow milk production		1825	24724.0	
Total Income					72269.0	192898.0					

Field Photo Graph



Success Story-5

Name of the farmer : Shri Meva Lal

Age : 62

Education: 8th

Village : Daleep Nagar

District: Kanpur Dehat

Theme : Agro met. advisory services

Family Size: 8

Block: Shivrajpur

Land holdings : 1.2 ha



Shri Meva Lal is a hard working farmer of District Kanpur Dehat. He was having 1.2 ha of land for survival of 8 family members. Before intervention, he was growing rice in *Kharif* season and wheat and mustard in *Rabi* season. His income during 2010-11 was Rs. 45816/year before any intervention in crops and live stock. Due to lack of technical knowledge , he was not getting the desirable income even with his sufficient land holding. After the beginning of NICRA project, he came in contact with Krishi Vigyan Kendra (KVK), Kanpur Dehat in the year 2011-12. Principal Investigator of NICRA Project, along with KVK scientists and SRF provided training and technical knowledge on improved crop management, Agroadvisory adoption to Shri Meva Lal. After the intervention made, he followed Agromet Advisory services and crop management practices in his farm for growing rice, wheat, maize and vegetable crops like potato, cauliflower, tomato and ladysfinger. In *Kharif and Rabi*, he cultivated advised varieties hybrid rice and maize in his field.

Due to adoption of Agro met. Advisory services and crop diversification, he achieved higher income of Rs. 229015.0 during the year 2016-17. By adopting agromet advisory sevices and crop diversification, the farmer achieved self dependency and inspiring non AAS farmers to emulate his way of farming.

Improved income after intervention

Name of Farmer	Land Holding (ha.)	Yield and income per Annum								
		(Before intervention 2011-12)					(After Intervention)			
Mava Lal	1.2 ha.	Season	Crop	Area (ha)	Yield (q)	Net Income (Rs)	Crop	Area (ha.)	Yield (q)	Net Income (Rs)
		Kharif	Rice	1.2	35	22236.0	Hybrid rice	0.7	36.0	23635.0
							Hybrid maize	0.5	25.0	24700.0
		Rabi	Wheat	1.0	22.2	21080.0	Wheat	0.5	23.9	28460.0
							Potato	0.5	100.0	37635.0
		Zaid	Mustard	0.2	1.2	2500.0	Cauliflower	0.2	60.0	57635.0
			Nil				Tomato	0.2	50.0	26735.0
							Lady'sfinger	0.2	13.5	10965.0
						Zaid maize	0.5	22.6	19250.0	
Total Income					45816.0				229015.0	

Field Photo Graph



Success Story-6

Name of the farmer : Shri Rakesh Yadav

Age: 38

Education: 9th

Village : Daleep Nagar

District: Kanpur Dehat

Theme : Agro met. advisory services

Family Size : 5

Block: Shivrajpur

Land holdings : 1.4 ha



Shri Rakesh Yadav is a farmer of village Daleep Nagar, District Kanpur Dehat having 1.4 ha of land for the livelihood of his 5 family members. Before intervention, he was growing rice in *Kharif* season and wheat and mustard in *Rabi* season, traditionally like other farmers of the village. His income during 2010-11 was Rs. 47189/year before any intervention. Due to lack of technical knowledge about improved crop cultivation practices and agromet advisories, he was getting lower yield and suffered heavy yield loss due to adverse weather condition. Later on, after the adoption under NICRA project during the year 2011-12, he came in contact with agrometeorologist and scientists of Krishi Vigyan Kendra (KVK), Kanpur Dehat and was educated about agroadvivory services and improved crop cultivation practices to save the crop from weather adversaries. Now, he is following Agromet Advisory services in his farm for growing existing crops in his field and included new crops like hybrid maize in *Kharif* and potato in *Rabi* and brinjal, lady's finger and maize in *Zaid*. He also has choser hybrid varieties of rice and maize in place of local one.

By adopting Agro met. Advisory services, improved cultivation practices and crop diversification, he earned enhanced income of Rs. 197604.0 during the year 2016-17. He proved himself as one of the successful farmers of the locality.

Improved income after intervention

Improved income after intervention											
Name of Farmer	Land Holding (ha.)	Yield and income per Annum									
		(Before intervention 2011-12)					(After Intervention)				
Shri Rakesh Yadav	1.4 ha.	Season	Crop	Area (ha)	Yield (q)	Net Income (Rs)	Crop	Area (ha.)	Yield (q)	Net Income (Rs)	
		Kharif	Rice	1.4	37	24431.0	Hybrid Rice	0.8	39.0	26347.0	
			Hybrid Maize	0.6	23.0	17544.0					
		Rabi	Wheat	0.9	19.5	17664.0	Wheat	0.5	21.3	19590.0	
			Potato		0.7	100.0	28346.0				
		Mustard	0.5	3.5	5094.0	Brinjal	0.2	100.0	72432.0		
		Zaid	Nil					Ladyfinger	0.6	18.5	12965.0
								Maize	0.7	22.6	17380.0
Total Income					47189.0					194604.0	

Field Photo Graph



Success Story-7

Name of the farmer : Shri Suresh Awasthi

Age: 36

Family Size: 4

Education : 10th

Village : Daleep Nagar

Block: Shivrajpur

District: Kanpur Dehat

Land holdings : 2.0 ha

Theme : Agro met. advisory services



Shri Suresh Awasthi is residing in village Daleep nagar of District Kanpur Dehat having 2.0 ha of land for the maintaining survival of 4 family members. Before intervention, he was growing rice in *Kharif* season and wheat and mustard in *Rabi* season, traditionally. His income during 2010-11 was Rs. 56189/year before any intervention.

Due to lack of technical knowledge on improved crop cultivation, crop diversification and weather based agro advisory, he was not getting the desired income even with sufficient land holding. Later on, after the adoption under NICRA project, he came in contact with Agrometeorologist and scientists of Krishi Vigyan Kendra (KVK), Kanpur Dehat in the year 2011-12. Agrometeorologist along with KVK scientists and SRF provided technical knowledge on improved crop cultivation, selection of suitable crops/varieties and weather based agro advisory services to Shri Suresh Awasthi. He followed Agromet Advisory services and technical guidance in his farm for growing rice, wheat, maize and vegetable crops. In *Kharif and Rabi*, he cultivated the advised crop variety of hybrid Maize and rice crops in his field. He also planted vegetable crops in small area for his family consumption and income enhancement.

By adopting Agro met. Advisory services, crop diversification and hybrid varieties, he was benefited more from cereals and vegetable crops than non AAS farmers. He was benefited with enhanced income of Rs. 244047.0 during the year 2016-17. He is one of the successful farmers of the locality and well known among the AAS farmers of the village.

Improved income after intervention

Name of Farmer	Land Holding (ha.)	Yield and income per Annum								
		(Before intervention 2011-12)					(After Intervention)			
Shri Suresh Awasthi	2.0 ha.	Season	Crop	Area (ha)	Yield (q)	Net Income (Rs)	Crop	Area (ha.)	Yield (q)	Net Income (Rs)
		Kharif	Rice	2.0	65.6	29431.0	Hybrid Rice	1.5	55.0	22347.0
			Hybrid maize	0.5	23.0	17544.0				
		Rabi	Wheat	1.5	28.5	21664.0	Wheat	1.2	35.3	19590.0
			Mustard	0.5	9.2	19581.0				
		Zaid	Mustard	0.5	3.5	5094.0	Cauliflower	0.2	27.5	23560.0
			Nil				Ladyfinger	0.5	34.5	12965.0
							Chili	0.2	12.0	42437.0
							Brinjal	0.2	93.0	62432.0
		Hybrid Maize	0.8	35.6	23591.0					
Total Income					56189.0	244047.0				

Field Photo Graph



Success Story-8

Name of the farmer : Shri Sone Lal Yadav

Age: 50

Education: 8th

Village : Daleep Nagar

District: Kanpur Dehat

Theme : Agro met. advisory services

Family Size: 5

Block: Shivrajpur

Land holdings : 1.5 ha



Shri Sone Lal Yadav is a medium farmer of village Daleepnagar, District Kanpur Dehat who is deriving his lively hood of 5 family members from 1.5 ha of land. Before intervention, he was growing rice in *Kharif* season and wheat in *Rabi* season, traditionally along with one cow. His income during 2010-11 was Rs. 65748.5/year before any intervention. Due to lack of technical knowledge and weather based advisory, he was not getting the desirable output with his land holding. After selection under NICRA project, he came in contact with Krishi Vigyan Kendra (KVK), Kanpur Dehat in the year 2011-12. Principal Investigator, NICRA Project, along with KVK scientists and SRF provided training on weather based advisory and technical knowledge on crop cultivation to Shri Sone Lal Yadav. He followed Agromet Advisory services in his farm for growing rice, wheat, maize and vegetable crops. In *Kharif*, *Rabi* and *Zaid*, he cultivated the advised hybrid varieties of rice and maize in his field. He also planted vegetable crops in small area for his family consumption and income enhancement. Due to year round green fodder availability, he reared one more cow and two buffaloes and achieved higher income from milk production.

Improved income after intervention

Name of Farmer	Land Holding (ha.)	Yield and income per Annum									
		(Before intervention 2011-12)					(After Intervention)				
Shri Sone Lal Yadav	1.5 ha.	Season	Crop	Area (ha)	Yield (q)	Net Income (Rs)	Crop	Area (ha.)	Yield (q)	Net Income (Rs)	
		Kharif	Rice	1.5	58.6	29431.0	Hybrid Rice	1.0	52.0	21247.0	
			Hybrid maize	0.5	22.0	17844.0					
		Rabi	Wheat	1.5	40.5	32486.0	Wheat	1.0	35.3	18390.0	
							Mustard	0.4	5.2	15281.0	
			Berseem	0.1	Fodder						
		Zaid	Nil					Ladyfinger	0.5	36.5	13965.0
								Hybrid Maize	0.8	35.6	23591.0
								MP Chari	01	Fodder	
		Animal	1 Cow		537.5	3831.5	2 buffalo 2 Cow milk production		2920 lit. Milk	45234.0	
Total Income					65748.5				155552.0		

He was benefited with enhanced income of Rs. 155552.0 during the year 2016-17 due to adoption of agromet advisory and crop diversification suggested by scientists of various discipline. He is now a source of inspiration for all the other farmers of the locality who's are learning the things for improving their livelihood.

Field Photo Graph



Success Story-9

Name of the farmer : Shri Ram Singh Yadav

Age : 57

Family Size: 3

Education: 12th

Village : Daleep Nagar

Block: Shivrajpur

District: Kanpur Dehat

Land holdings : 1.0 ha

Theme : Agro met. advisory services



Shri Ram Singh Yadav is a farmer of District Kanpur Dehat and he was having 1.0 ha of land for the maintaining of 3 family members. Before intervention, he was growing rice in *Kharif* season and wheat in *Rabi* season, traditionally along with one buffalo. His income during 2010-11 was Rs. 53209/year before any intervention was made. Due to lack of technical knowledge on crops cultivation and agromet advisories services, he was not getting the desirable income for his existence. After adoption under NICRA project, he came in contact with Krishi Vigyan Kendra (KVK), Kanpur Dehat during the year 2011-12. Principal Investigator, NICRA Project, along with KVK scientists and SRF provided training and technical knowledge on crop cultivation, crop diversification and provided biweekly agro advisory bulletins to Shri Ram Singh Yadav. He followed Agromet Advisory services in his farm for growing rice, wheat maize, and vegetable crops. In *Kharif, Rabi and Zaid*, he cultivated hybrid variety of rice and maize in his field. He also planted vegetable crops in small area for his family consumption and income enhancement. Due to green fodder availability, he purchased three more buffaloes to exceed his income.

Improved income after intervention

Name of Farmer	Land Holding (ha.)	Yield and income per Annum								
		(Before intervention 2011-12)					(After Intervention)			
Shri Ram Singh Yadav	1.0 ha.	Season	Crop	Area (ha)	Yield (q)	Net Income (Rs)	Crop	Are a (ha.)	Yield (q)	Net Income (Rs)
		Kharif	Rice	1.0	38.6	23235.0	Hybrid rice	0.6	32.0	18247.0
			Hybrid maize	0.4	18.0	13400.0				
		Rabi	Wheat	1.0	30.5	24285.0	Wheat	0.6	28.3	23290.0
							Mustard	0.15	2.5	6281.0
							Berseem	0.05	Fodder	
		Potato	0.2	35.6	12435.0					
		Zaid	Nil				Chili	0.3	15.5	51814.0
							MP chri	0.05	Fodder	
							Green gram	0.5	3.5	13007.0
		Animal	1 buffalo		525.0	5689.0	Others 4 buffalo		2520 lit. Milk	45234.0
Total Income					53209.0				183708.0	

Due to adoption of Agro met. Advisory services and crop diversification, he was benefited with enhanced income of Rs. 183708.0 during the year 2016-17. He proved himself as successful farmer.

Field Photo Graph



Success Story-10

Name of the farmer : Shri Chabi Lal Yadav

Age-62

Education : 8th

Village : Daleep Nagar

District: Kanpur Dehat

Theme : Agro met. advisory services

Family Size: 7

Block: Shivrajpur

Land holdings : 0.6 ha



Shri Chabi Lal Yadav, is a hard working marginal farmer of District Kanpur Dehat having 0.6 ha of land for supporting the livelihood of 7 family members. He was growing rice in *Kharif* season and wheat in *Rabi* season, traditionally, besides having one desi cow. His income during 2010-11 was Rs. 52976.5/year before any intervention. Due to non availability of technical knowledge and agromet advisories services, he was not getting the desired output with his marginal land holdings. After the start of NICRA project, he came in contact with NICRA project scientists and Krishi Vigyan Kendra (KVK), Kanpur Dehat during in the year 2011-12. Principal Investigator, NICRA Project, along with KVK scientists and SRF provided training, technical knowledge on crop cultivation and biweekly agromet advisory bulletins to Shri Chabi Lal Yadav. He applied agromet advisory services and technical knowledge in his farm for growing rice, wheat and maize and vegetable crops. In *Kharif*, *Rabi* and *Zaid*, he cultivated hybrid variety of maize and rice in his field. He also planted vegetable crops in small area for his family consumption and income generation.

Improved income after intervention

Name of Farmer	Land Holding (ha)	Yield and income per Annum									
		(Before intervention 2011-12)					(After Intervention)				
Shri Chabi Lal yadav	0.6 ha	Season	Crop	Area (ha)	Yield (q)	Net Income (Rs)	Crop	Area (ha.)	Yield (q)	Net Income (Rs)	
		Kharif	Rice	0.6	27.6	22600.0	Rice	0.4	21.2	15200.0	
							Hybrid maize	0.2	10.0	8000.0	
		Rabi	Wheat	0.6	23.5	25664.0	Wheat	0.3	8.6	5517.0	
							Mustard	0.15	1.5	2950.0	
							Potato	0.1	20.6	7300.0	
							Berseem	0.05	fodder		
		Zaid	Nil					Brinjal	0.1	80.6	56944.0
								Tomato	0.1	25.0	10000.0
								MP Chari	0.05	Fodder	
								Black gram	0.15	2.3	12768.0
								Green gram	0.2	2.5	10602.0
Animal	1 Desi Cow		547.5	4712.5	Milk production 2 buffaloes		1460 lit. Milk	41100.0			
Total Income					52976.5				170381.0		

He was benefited with enhanced income of Rs. 170381 during the year 2016-17. He is one of the successful farmers of the locality and well known among the AAS farmers of the village. His standard of living was much improved during the span of five years.

Field Photo Graph



Success Stories of Farmers

under

Village - Saibas

Block - Bilhaur

District - Kanpur Dehat

Success Stories-1

Name of the farmer : Shri Santosh Tiwari

Age-54

Education : Post Graduate

Village : Saibasau

District: Kanpur Dehat

Theme : Agro met. advisory services

Family Size: 6

Block: Billhaur

Land holdings : 3.3 ha



Shri Santosh Tiwari, is a large farmer of the village saibasau, District Kanpur Nagar having 3.3 ha of land and 6 family members. He was growing rice in *Kharif* season and wheat and mustard in *Rabi* season, besides having two cows. His income during 2010-11 from crops and live stock was Rs. 74530.5/year before any intervention. Due to lack of technical knowledge on agromet advisories, crop diversification and agronomic practices, he was not getting the appropriate income. After adoption under NICRA Project, he came in contact with NICRA scientist and Krishi Vigyan Kendra (KVK), Kanpur Dehat in the year 2011-12. Principal Investigator, of NICRA Project, along with KVK scientists and SRF provided him appropriate technical knowledge on agromet advisory services to cope up with weather. He followed agromet advisory services, crop diversification and suitable crop management practices in his farm for growing rice, wheat, maize along with vegetable crops. In *Kharif, Rabi and Zaid*, he used hybrid variety of maize and rice and grew year round green fodder for milch animals to enhance milk production. He also planted vegetable crops in small area for his family consumption and income enhancement.

By adopting timely Agro met. Advisory services, including new crops/varieties including, he was benefited more than non AAS farmers. He earned enhanced income of Rs. 232145.0 during the year 2016-17. He is also one of the successful farmers of the village.

Improved income after intervention

Name of Farmer	Land Holding (ha)	Yield and income per Annum									
		(Before intervention 2011-12)					(After Intervention)				
Shri Santosh Tiwari	3.3 ha	Season	Crop	Area (ha)	Yield (q)	Net Income (Rs)	Crop	Area (ha.)	Yield (q)	Net Income (Rs)	
		Kharif	Rice	3.3	70.6	34972.0	Hybrid Rice	1.0	45.2	18972.0	
							Hybrid maize	2.0	70.0	44342.0	
							Sorghum	0.3	Fodder		
		Rabi	Wheat	2.3	50.5	29414.0	Wheat	1.0	35.6	14198.0	
							Mustard	0.2	1.5	3742.0	
								Mustard	1.0	5.0	4932.0
		Onion	0.5	85.0	32811.0						
			Berseem	0.1	Fodder						
		Zaid	Nil					Hybrid Maize	1.0	35.2	20491.0
								Green gram	1.0	8.0	17341.0
								Black gram	1.0	6.5	11402.0
								MP chari	0.3	Fodder	
		Animal	2 Desi Cow		547.5	5212.5	3 buffalo & 1 cow milk production		2920 lit. Milk	38314.0	
		Total Income					74530.5				232145.0

Field Photo Graph



Success Stories-1

Name of the farmer : Shri Sushil Tiwari

Age: 52

Education : Post Graduate (MA)

Village : Saibasau

District: Kanpur Dehat

Theme : Agro met. advisory services

Family Size: 6

Block: Bilhaur

Land holdings : 2.5 ha



Shri Sushil Tiwari, is a farmer of village-Saibasau, District Kanpur Dehat having 2.5 ha of land and 6 family members. Earlier, he was growing rice in *Kharif* season and wheat and mustard in *Rabi* season like other farmers, traditionally along with two desi cow. His income during 2010-11 was Rs. 88861.5/year from crop and live stock before any intervention. Lack of technical knowledge on improved crop cultivation/crop diversification and non availability of agromet advisories services, he was not getting the desired income even with sufficient land holding.

After the start of NICRA project, he came in contact with Krishi Vigyan Kendra (KVK), Kanpur Dehat in the year 2011-12. Principal Investigator, NICRA Project, along with KVK scientists and SRF provided knowledge on crop cultivation/diversification and agromet advisory bulletins to counteract the effect of adverse weather condition. After interaction, he implemented agromet advisory services and technical knowledge in his farm. He introduced new crops like maize in *Kharif*, potato and berseem in *Rabi* and green gram and maize in *Zaid*. He also applied new innovation of papaya + Onion inter cropping in his field. He cultivated the advised hybrid variety of rice and maize for higher production. Due to round the year green fodder availability, he sold out two desi cows and purchased one jersey cow for higher milk production.

Due to adoption of Agro met. Advisory services, best agronomic practices and crop diversification, he achieved enhanced income of Rs. 450125.8 after the span of five year (2016-17). He is now a source of inspiration to all other farmers of the village.

Improved income after intervention

Name of Farmer	Land Holding (ha)	Yield and income per Annum									
		(Before intervention 2011-12)					(After Intervention)				
Shri Sushil Tiwari	2.5 ha	Season	Crop	Area (ha)	Yield (q)	Net Income (Rs)	Crop	Area (ha.)	Yield (q)	Net Income (Rs)	
		Kharif	Rice	2.5	65.6	41235.0	Hybrid Rice	1.0	38.2	18200.0	
				Hybrid maize	1.5	50.0	32317.0				
		Rabi	Wheat	2.0	52.5	39414.0	Wheat	1.3	35.6	2172.0	
				Mustard	0.2	2.0	3742.0				
				Potato	1.0	120.0	30532.0				
		Other					Berseem	0.1	Fodder		
				Horticulture				Papaya+ Onion	1.0	600+150	321100.8
				Nil				Hybrid Maize	1.0	35.2	20491.0
		Zaid					Green gram	0.4	1.5	6765.0	
							MP chari	0.1	Fodder		
Animal	2 Desi Cows	547.5	5212.5	1 Jersey cow milk production	1095 lit. Milk	14806.0					
Total Income					88861.5				450125.8		

Field Photo Graph



Success Stories-3

Name of the farmer : Shri Suresh Chandra Tiwari

Age-63

Family Size: 5

Education : (MA, B.Ed)

Village : Saibasau

Block: Bilhaur

District: Kanpur Dehat

Land holdings : 3.0 ha

Theme : Agro met. advisory services



Shri Suresh Chandra Tiwari, is large farmer of village- Saibasau, District Kanpur Dehat having 3.0 ha of land and a family of 5 members. Before intervention, he was growing rice in *Kharif* season and wheat and mustard in *Rabi* season, traditionally. His income during 2010-11 from crops only was Rs. 69942.0/year. He was unable to get sufficient income due to conventional crop cultivation and suffering from weather abnormalities. After the start of NICRA project in his village, he came in contact with Principal Investigator, NICRA Project and scientists of Krishi Vigyan Kendra (KVK), Kanpur Dehat in the year 2011-12. Agrometeorologist, along with KVK scientists and SRF provided agromet advisory to save his crops from adverse weather. He followed agromet advisory bulletins in his farm operations. He started growing new crops like maize in *Kharif*, potato and garlic in *Rabi* and maize and green gram in *Zaid*. He replaced local variety of rice and maize with hybrid for higher production.

After adoption of agromet advisory services and crop diversification he was benefited with enhanced income of Rs.271631.0 during the year 2016-17. He is one of the successful farmers among the AAS farmers of the village.

Improved income after intervention

Name of Farmer	Land Holding (ha)	Yield and income per Annum								
		(Before intervention 2011-12)					(After Intervention)			
Shri Suresh Chandra Tiwari	3.0 ha	Season	Crop	Area (ha)	Yield (q)	Net Income (Rs)	Crop	Area (ha.)	Yield (q)	Net Income (Rs)
		Kharif	Rice	3.0	68.6	35911.0	Hybrid Rice	1.0	45.2	27654.0
				Hybrid maize	2.0	72.0	57902.0			
		Rabi	Wheat	2.5	50.5	30031.0	Wheat	0.5	22.6	19640.0
				Mustard	0.2	1.0	1700.0			
			Mustard	0.5	2.5	4000.0	Potato	2.3	250.0	59107.0
			Garlic	1.0	95.0	72500.0				
		Zaid	Nil				Hybrid Maize	1.0	45.2	20491.0
			Green gram	0.5	4.5	12637.0				
Total Income (Rs.)					69942.5				271631.0	

Field Photo Graph



Success Stories-4

Name of the farmer : Shri Madan Chandra Dixit

Age : 65

Family Size: 7

Education : 5th

Village : Saibasau,

Block: Bilhaur,

District: Kanpur Dehat

Land holdings : 0.6 ha

Theme : Agro met. advisory services



Sri Madan Chandra Dixit, a marginal farmer residing in a village Saibasau located in Bilhaur block under Kanpur Dehat district of Uttar Pradesh was selected under NICRA Project. Seven members of his family were deriving their livelihood from 0.6 ha land. The selected farmer under the NICRA adopted village-Saibasau, Block-Bilhaur, Kanpur dehat was practicing traditional condition of rice, wheat and mustard.

During the bench mark survey in 2011, it was found that Shri Madan Chandra Dixit was growing rice in *Kharif* and wheat and mustard in *Rabi*. The productivity of all crops was low as compared to potential yield. The major constraints for low productivity were identified as, non practicing of agromet advisories services, suitable crops/varieties and crop diversification to cope up with climate change. The total annual income from his traditional farming was Rs.23388/year.

After adoption under NICRA project, he was provided biweekly agromet advisory bulletins prepared by agrometeorologist and subject matter specialists of KVK. The advisory contained improved specific agronomic practices, plant protection measures for different pest and diseases, land and water conservation measures, threshing, storage and marketing of produce. The knowledge on vegetable crops and dairy was also included in advisory bulletin. Shri Madan Chandra Dixit reduced input cost and increased his income due to implementation of advisory services and crop diversification in his farming and inclusion of new cash crops like potato and onion in Rabi season and maize in *Kharif* and *Zaid*. He was benefited with enhanced income of Rs. 136030 during the year 2016-17

Improved income after intervention

Name of Farmer	Land Holding (ha.)	Yield and income per Annum								
		(Before intervention 2011-12)					(After Intervention)			
Shri Madan Chandra Dixit	0.6 ha.	Season	Crop	Area (ha)	Yield (q)	Net Income (Rs)	Crop	Area (ha.)	Yield (q)	Net Income (Rs)
		Kharif	Rice	0.6	20.3	11641.0	Hybrid Rice	0.2	10.8	7240.0
							Hybrid Maize	0.4	18.5	15482.0
		Rabi	Wheat	0.5	15.5	9947.0	Wheat	0.2	8.2	4580.0
							Potato	0.4	60.2	19531.0
		Mustard	0.1	70kg	1800.0	Onion	0.4	80.0	84000.0	
						Zaid	Nil			Hybrid Maize
Total Annual Income					23388.0				136030.0	

Field Photo Graph



Success Stories-5

Name of the farmer : Shri Ram Niwas Mishra s/o Ram Autar Mishra
Age-45
Education : Post Graduate
Village : Saibas
District: Kanpur Dehat
Theme : Agro met. advisory services

Family Size: 6

Block: Billhaur

Land holdings : 3.3 ha



Shri Ram Niwas Mishra, is a hard working large farmer of District Kanpur Dehat and he was having 3.3 ha of land for maintaining family of six members. Earlier he was growing rice in *Kharif* season and wheat and mustard in *Rabi* season, traditionally. His income during 2010-11 was Rs. 67453.0/year before any intervention. Due to lack of technical knowledge about agromet advisories and crop diversification, he was not getting the desirable output with his land holdings. Later on, after the start of NICRA project, he came in contact with Krishi Vigyan Kendra (KVK), Kanpur Dehat in the year 2011-12. Principal Investigator, NICRA Project, along with KVK scientists and SRF provided training and technical knowledge about agro advisory bulletin and crop diversification to Shri Ram Niwas Mishra. He followed agromet advisory services and included hybrid maize and sorghum in *kharif* and potato, onion and berseem in *Rabi* and hybrid maize, green gram and MP chari in *Zaid* in his farm. He replaced local varieties of rice and maize with advised hybrids in cultivation. Due to availability of round the year green fodder, he is rearing three cows for milk production.

After adoption of agro met advisory services, inclusion of new crops/hybrid and milch cows, he got benefits more than non AAS farmers. He earned enhanced income of Rs. 272321 during the year 2016-17. He is one of the successful farmers of the locality.

Improved income after intervention

Name of Farmer	Land Holding (ha)	Yield and income per Annum								
		(Before intervention 2011-12)					(After Intervention)			
Shri Ram Niwas Mishra	3.3 ha	Season	Crop	Area (ha)	Yield (q)	Net Income (Rs)	Crop	Area (ha.)	Yield (q)	Net Income (Rs)
		Kharif	Rice	3.3	70.6	34975.0	Hybrid Rice	0.5	23.2	12965.0
							Hybrid maize	2.6	82.0	55775.0
							Sorghum	0.2	Fodder	
		Rabi	Wheat	2.3	50.5	27946.0	Wheat	1.5	42.6	23998.0
							Mustard	0.2	1.5	3542.0
			Mustard	1.0	5.0	4532.0	Potato	1.5	150.0	29318.0
		Onion					1.0	145.0	71768.0	
		Zaid	Nil	Berseem	0.1	Fodder				
				Hybrid Maize	0.7	25.2	20295.0			
				Green gram	1.0	10.2	27342.0			
		Animal	Nil	MP chari	0.3	Fodder				
				3 cow milk production		2920 lit. Milk	27318.0			
Total Income					67453.0				272321.0	

Field Photo Graph



Success Stories-6

Name of the farmer : Shri Bhulai Yadav

Age: 58

Education : (BA)

Village : Saibasau

District: Kanpur Dehat

Theme : Agro met. advisory services

Family Size: 7

Block: Bilhaur

Land holdings : 0.8 ha



Shri Bhulai Yadav, is a marginal farmer of District Kanpur Dehat having 0.8 ha of land for maintaining of a big family of 7 members. Before intervention, he was growing rice in *Kharif* season and wheat and mustard in *Rabi* season, traditionally and rearing one cow. His income during 2010-11 was Rs. 28383/year before any intervention. Due to lack of technical knowledge about crop cultivation and no awareness on agromet advisory services, he failed to obtain desired income from his small land holding. After the start of NICRA project, he came in contact with Krishi Vigyan Kendra (KVK), Kanpur Dehat in the year 2011-12. Principal Investigator, NICRA Project, along with KVK scientists and SRF provided him knowledge on agromet advisory services, crop cultivation practices and inclusion of new crops in his farm. After interaction with scientists, he followed agromet advisory services in his farm for growing rice, wheat, maize and vegetable crops. In *Kharif, Rabi and Zaid*, he cultivated the recommended/advised hybrid variety in his field. He also planted vegetable crops in smaller area for his family consumption and income generation. Due to green fodder availability, he sold one desi cow and purchased three buffaloes for higher milk production.

Due to adoption of agromet advisory services and crop/live stock diversification, he was benefited with enhanced income of Rs.112484.0 during the year 2016-17.

Improved income after intervention

Name of Farmer	Land Holding (ha)	Yield and income per Annum									
		(Before intervention 2011-12)					(After Intervention)				
Shri Bhulai Yadav	0.8 ha	Season	Crop	Area (ha)	Yield (q)	Net Income (Rs)	Crop	Area (ha.)	Yield (q)	Net Income (Rs)	
		Kharif	Rice	0.8	24.0	12356.0	Hybrid Rice	0.2	9.8	5468.0	
				Hybrid maize	0.6			22.5	16356.0		
		Rabi	Wheat	0.6	18.0	11600.0	Wheat	0.3	10.6	8544.0	
			Mustard	0.2	1.0	1378.0	Potato	0.2	32.0	7538.0	
							Berseem	0.1	Fodder		
		Zaid		Nil				Onion	0.2	40.0	23665.0
							Hybrid Maize	0.1	4.2	3604.0	
							MP chari	0.1	Fodder		
							Green gram	0.2	1.5	3044.0	
Animal	1 Cow	374 lt.milk		3049.0	3 Buffalo	3650 lt. milk		44265.0			
Total Income					28383.0				112484.0		

Field Photo Graph



Success Stories-3

Name of the farmer : Shri Vimal Shanker Mishra

Age-59

Family Size: 10

Education : 10th

Village : Saibasus

Block: Bilhaur

District: Kanpur Dehat

Land holdings : 1.5 ha

Theme : Agro met. advisory services



Shri Vimal Shanker Mishra is a small farmer residing in a village Saibasus located in Bilhaur block under Kanpur Dehat district of Uttar Pradesh was selected under NICRA Project. His ten member family is deriving their livelihood from 1.5 ha land. After the start of NICRA project, he came in contact with Krishi Vigyan Kendra (KVK) Kanpur Dehat in the year 2011-12. Principal Investigator of NICRA Project, KVK scientists and SRF provided training and technical guidance to Shri Vimal Shanker Mishra about improved crop management & crop diversification for better adaptation to climate change. He followed Agro met advisory services in his farm to grow rice, maize and vegetable crops. In *Kharif*, he cultivated advised variety of hybrid maize and rice in his field along with vegetables like potato and onion. He also grew green fodder crop for milch animals.

During the bench mark survey in 2011, it was found that Shri Vimal Shanker Mishra was growing rice in *Kharif* and wheat and mustard in *Rabi* along with one cow. The productivity of all crops and live stock was low as compared to potential yield. The major constraints identified for low productivity were non adoption of agromet advisory services and crop diversification. Total annual income of Rs.52912.5 was obtained from crops and live stock during the year 2010-11 for his livelihood.

After adoption of agromet advisory services and improved crop cultivation techniques, he was more benefited from crops than non AAS farmers. Due to year round green fodder availability, he reared two buffaloes in place of one cow and obtained higher milk. He is one of the successful farmers of the locality and well known among the non AAS farmers of the village. He benefited with enhanced income of Rs. 198707.0 during the year 2016-17 from crops and animals.

Improved income after intervention

Name of Farmer	Land Holding (ha)	Yield and income per Annum									
		(Before intervention 2011-12)					(After Intervention)				
Shri Vimal Shanker Mishra	1.5 ha	Season	Crop	Area (ha)	Yield (q)	Net Income (Rs)	Crop	Area (ha.)	Yield (q)	Net Income (Rs)	
		Kharif	Rice	1.5	38.6	22965.0	Hybrid Rice	0.5	28.2	15388.0	
							Hybrid maize	1.0	45.0	39547.0	
		Rabi	Wheat	1.0	30.5	22235.0	Wheat	0.3	20.5	19089.0	
							Mustard	0.1	1.5	2689.0	
				Mustard	0.5	2.0	2500.0	Potato	1.0	110.0	26744.0
								Onion	0.8	105.0	56438
		Berseem (Fodder)						0.1			
		Hybrid Maize						0.2	8.2	4962.0	
		Zaid	Nil				Green gram	0.1	1.5	5200.0	
							MP chari (Fodder)	0.1			
		Animal	1 Desi Cow		547.5	5212.5	2 Buffalo milk production		2190 lit. Milk	28650.0	
Total Income					52912.5	198707.0					

Field Photo Graph



Success Stories-8

Name of the farmer : Shri Ramakant Shukla

Age-45

Education : 12th

Village : Saibas

District: Kanpur Dehat

Theme : Agro met. advisory services

Family Size: 4

Block: Bilhaur

Land holdings : 2.0 ha



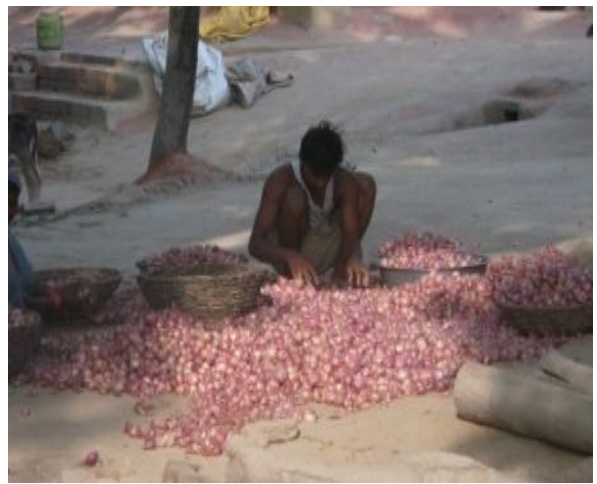
Shri Ramakant Shukla, is a medium farmer of District Kanpur Dehat having 2.0 ha of land for the livelihood of four family members. Earlier, he was growing rice in *Kharif* season and wheat and mustard in *Rabi* season, traditionally. His income during 2010-11 was Rs. 69942.0/year before any intervention. Due to lack of technical knowledge on crop cultivation and non availability of agromet advisories services, he was not getting the desirable output. Later on, after the start of NICRA project, he came in contact with Krishi Vigyan Kendra (KVK), Kanpur Dehat in the year 2011-12. Principal Investigator of NICRA Project, along with KVK scientists and SRF provided knowledge on agromet advisory services, improved crop cultivation techniques and crop diversification to Shri Ramakant Shukla. Now, he is following agromet advisory services in his farm for growing rice, wheat, maize and vegetable crops. In *Kharif*, *Rabi* and *Zaid*, he cultivated the advised hybrid varieties of rice and maize in his field. He also planted vegetable crops in small area for his family consumption and income generation.

By adopting Agro met. Advisory services and crop diversification, he saved crop loss due to adverse weather and was benefited with enhanced income of Rs.280766.0 during the year 2016-17. He is one of the successful farmers of the locality and source of inspiration to other farmers of the village to improve their livelihood.

Improved income after intervention

Name of Farmer	Land Holding (ha)	Yield and income per Annum								
		(Before intervention 2011-12)					(After Intervention)			
Shri Ramakant Shukla	2.0 ha	Season	Crop	Area (ha)	Yield (q)	Net Income (Rs)	Crop	Area (ha.)	Yield (q)	Net Income (Rs)
		Kharif	Rice	2.0	68.6	35911.0	Hybrid Rice	0.5	45.2	27654.0
			Hybrid maize	1.5	72.0	57902.0				
		Rabi	Wheat	1.5	50.5	30031.0	Wheat	0.5	22.6	19640.0
			Mustard	0.5	2.5	4000.0	Mustard	0.2	1.0	1700.0
							Potato	2.3	250.0	59107.0
		Onion	1.0	120.0	81635.0					
		Zaid	Nil				Hybrid Maize	1.0	45.2	20491.0
		Green gram	0.5	4.5	12637.0					
Total Income					69942.5					280766.0

Field Photo Graph



Success Stories-9

Name of the farmer : Shri Ganaga Prakash Mishra

Age-65

Family Size: 5

Education : MA B.Ed

Village : Saibasus

Block: Bilhaur

District: Kanpur Dehat

Land holdings : 2.0 ha

Theme : Agro met. advisory services



Shri Ganaga Prakash Mishra is a medium farmer residing in a Village Saibasus, Block- Bilhaur under Kanpur Dehat district of Uttar Pradesh was selected under NICRA Project. Five member families was deriving their livelihood from 2.0 ha land. The selected farmer under the NICRA adopted village was cultivating traditional rice and wheat and toria along with rearing of one milch animal before intervention.

During the bench mark survey in 2011, it was found that Shri Ganaga Prakash Mishra was growing rice in *Kharif*, wheat and Toria in *Rabi* and no crop in *Zaid*. The productivity of all crops was low as compared to potential yield. The major constraints for low productivity were identified as non following of the agromet advisory services and crop diversification. The total annual income of Rs.72467.0 was obtained only from crop and one animal for his livelihood.

On the basis of block level forecast, agro met advisory bulletins prepared by agrometeorologist with the help of subject matter specialist was disseminated to the farmers through FIF. The advisory contained improved specific agronomic practices, plant protection measures for different pest and diseases, land and water conservation measures, threshing, storage and of marketing of produce. The knowledge on vegetable crops and dairy was also included in advisory bulletin. Shri Ganaga Prakash Mishra reduced input cost and increased his income due to adoption of advisory services and crop diversification in his farming and included new crops like hybrid maize in *Kharif*, potato and berseem, in *Rabi* season and green gram, maize and MP chari in summer fallow land. Due to availability of round the year green fodder, he purchased one more buffalo so as to enhance milk production. He got benefited with enhanced income of Rs. 215093.0 during the year 2016-17.

Improved income after intervention

Name of Farmer	Land Holding (ha)	Yield and income per Annum								
		(Before intervention 2011-12)					(After Intervention)			
Shri Ganaga Prakash Mishra	2.0 ha	Season	Crop	Area (ha)	Yield (q)	Net Income (Rs)	Crop	Area (ha.)	Yield (q)	Net Income (Rs)
		Kharif	Rice	2.0	50.6	31650.0	Hybrid Rice	0.5	32.2	16575.0
							Hybrid maize	1.5	54.0	44508.0
		Rabi	Wheat	1.5	36.2	27745.0	Wheat	0.5	22.6	1531.0
							Toria	0.2	1.6	3235.0
			Toria	0.5	2.3	3792.0	Potato	1.2	110.0	29307.0
							Berseem	0.1	Fodder	
		Zaid					Onion	0.6	93.2	60631.0
							Hybrid Maize	0.5	25.2	17134.0
							Green gram	0.2	1.5	3231.0
							MP chari	0.1	Fodder	
		Animal	1 Buffalo		1095.0	9280.0	2 Buffalo milk production		2190 lit. Milk	38941.0
Total Income					72467.0				215093.0	

Field Photo Graph



Success Stories-10

Name of the farmer : Shri Ramesh Chandra Yadav
Age-50 **Family Size:** 5
Education : B.A
Village : Saibasau **Block:** Bilhaur
District: Kanpur Dehat **Land holdings :** 0.5 ha
Theme : Agro met. advisory services



Shri Ramesh Chandra Yadav is a marginal farmer of District Kanpur Dehat having 0.5 ha of land for the maintenance of 4 family members. Earlier, he was growing rice in *Kharif* season and wheat and mustard in *Rabi* season, traditionally along with one desi cow. His income during 2010-11 was Rs. 21227.0/year before any intervention. Due to lack of technical knowledge on crop cultivation and non availability of agromet advisories services, he was not getting the desirable output from the meager land holding. Later on, after the start of NICRA project, he came in contact with Krishi Vigyan Kendra (KVK), Kanpur Dehat in the year 2011-12. Principal Investigator, NICRA Project, along with KVK scientists and SRF provided knowledge on agromet advisory services, improved crop cultivation techniques and crop diversification to Shri Ramesh Chandra Yadav. After intervention, he followed agromet advisory services in his farm to make resilience against weather anomaly. He included new crops in cropping system like maize in *Kharif*, potato and berseem in *Rabi* and maize and MP chari in *Zaid*. In *Kharif*, he cultivated advised hybrid variety of Rice and Maize in his field. He also planted vegetable crops in small area for his family consumption and income generation. He introduced green fodder crop in his field for milch animal. Due to availability of round the year green fodder, he replaced *Desi* cow with Friesian cow to get higher milk production.

By adopting Agro met. Advisory services, new crops/hybrids and crop diversification, he was benefited with enhanced income of Rs.89484.0 during the year 2016-17. He is one of the successful farmers of the locality and well known among the AAS farmers of the village.

Improved income after intervention

Name of Farmer	Land Holding (ha)	Yield and income per Annum								
		(Before intervention 2011-12)					(After Intervention)			
Shri Ramesh Chandra Yadav	0.5 ha	Season	Crop	Area (ha)	Yield (q)	Net Income (Rs)	Crop	Area (ha.)	Yield (q)	Net Income (Rs)
		Kharif	Rice	0.5	15.6	9065.0	Hybrid Rice	0.2	10.2	5719.0
				Hybrid maize	0.3	32.5	26898.0			
		Rabi	Wheat	0.4	12.2	8998.0	Wheat	0.2	8.5	7125.0
				Mustard	0.05	58kg	1200.0			
				Potato	0.2	35.0	9000.0			
		Zaid	Barseem	0.05	Fodder					
				Hybrid Maize	0.2	9.5	6661.0			
				Green gram	0.05	1.0	2631.0			
		Animal	MP chari	0.05	Fodder					
Animal	1 Cow desi	273.0	2039.0	1 Friesian Cow milk production	1825 lit. Milk	30250.0				
Total Income					21227.0	89484.0				

Field Photo Graph



CONCLUSION

The farmer residing at village Daleep Nagar & Saibas located in Shivrajpur and Billhaur block under Kanpur Dehat district of Uttar Pradesh was selected under NICRA Project during 2010-11. But due to lack of improved technical knowledge and prevailed adverse weather, they failed to get the desirable income from their small land holding. The sixty farmers of both the adopted villages were selected with the help of KVK Daleepnagar under project running under the department of agronomy CSAUT, Kanpur. Agrometeorologist/ Principal Investigator NICRA project along with SRF and multidisciplinary scientists of KVK identified the major constraints of the farmers and provided ready solution to them. Based on block level forecast, agro advisory bulletins were prepared by the multidisciplinary scientists and disseminated directly to the farmers by FIF. The agro advisory contained past and present weather, crop management practices as per the phenological stages, plant protection measures, crop diversification, water conservation measures, threshing, storage and marketing. Animal and post harvest management measures were also included in Agromet advisory.

Farmers who adopted the Agromet advisory were benefited by mitigating the impact of climate change and reducing their input cost. The income of selected farmer was exceeded 17 to 42% during the span of 6 year (2011-16).

It was also noticed that 10 to 15% of the farmers under both the villages were benefited from the AAS services and 24% farmers were through aware but not followed agromet services.

Still no doubt that Agromet advisory services not only increase production but help to raise the income of farmers and reducing their input cost. It is challenging task for government, IMD as well as the other stake holders to expand the coverage of Agromet advisory services to whole of the country.

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