

Impact of custom hiring centre among the tribal farmers of Tripura under NICRA project

Dipak Nath and Dipankar Dey

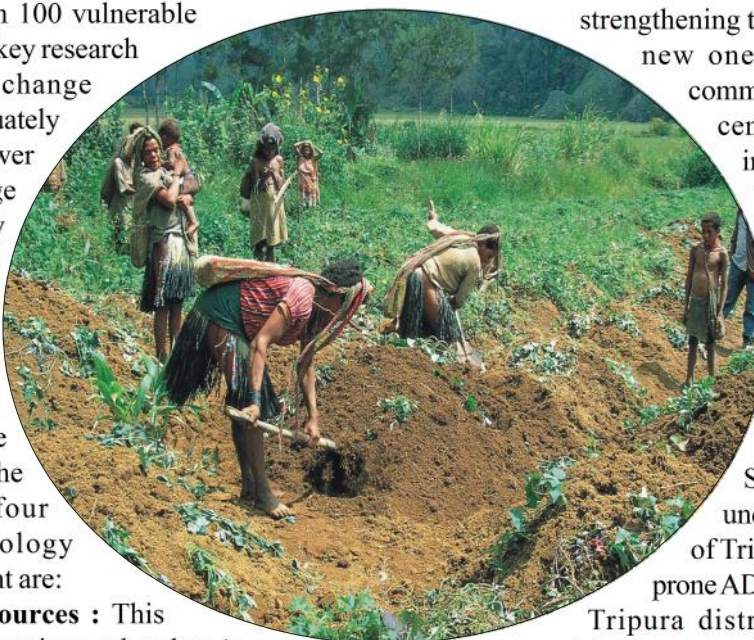
Krishi Vigyan Kendra, Chebri, KHOWAI (TRIPURA) INDIA

(Email : spd020@yahoo.co.in)

NICRA is a network project of the Indian Council of Agriculture Research (ICAR) launched in February; 2011. The project aims to enhance resilience of Indian agriculture to climate change and climate vulnerability through strategic research and technology demonstration. The output of the project is selection of promising crop genotypes and livestock breeds with greater tolerance to climate stress; Existing best bet practices for climate resilient demonstrated in 100 vulnerable district, Infrastructure at key research institutes for climate change research strengthen adequately trained scientific manpower to take up climate change research in the country and empowered farmers to cope with climate variability with the outcome to enhanced resilience of agricultural production in vulnerable region of the country. The intervention cover four modules under technology demonstration component are:

Module I: Natural resources : This module consist of interventions related to *in-situ* moisture conservation, water harvesting and recycling for supplemental irrigation, improved drainage in flood prone areas, conservation tillage where appropriate, artificial ground water recharge and water saving irrigation methods.

Module II: Crop production : This module consist of introducing draught/ temperature tolerant varieties, advancement of planting dates of *Rabi* crops in areas with terminal heat stress, water saving paddy cultivation methods (SRI, direct seeding), frost management in horticulture through fumigation, community nurseries for delayed monsoon, custom hiring centre for timely planting, location specific intercropping system with high sustainable yield index.



Module III: Livestock and fisheries : Use of community lands for fodder production during draught / floods, improved fodder/feed storage methods, preventing vaccination, improved shelters for reducing heat stress in livestock, management of fish pond/tanks during water scarcity and excess water, etc.

Module IV: Institutional intervention : This module consist of either of institutional interventions either by strengthening the existing one or initiating new ones relating to seed bank, commodity groups, custom hiring centre, collective marketing, introduction of weather index based insurance and climate literacy through a village level weather station.

About the village : KVK, West Tripura has been implementing the project in North Pulinpur ADC village; a 100 per cent ST populated village of undivided West Tripura district of Tripura. It is one of the drought prone ADC villages of undivided West Tripura district of Tripura where no perennial streams or rivers are present. Cropping system is mainly rice based and purely rainfed. Water scarcity and unavailability of irrigation facility force farmers towards practice of *Jhumming* which leads to high rate of erosion with rapid loss of top soil.

Name of the village	: North Pulinpur ADC village
District	: West Tripura
Total No. of household	: 806
Total cultivated area	: 250 ha
Major soil types	: Red loamy to sandy loam
Mean annual rain fall	: 2035 mm
Major crops	: Rice, chillies and maize
Climate vulnerability	: Water scarcity and cyclone

North Pulinpur ADC village at a glance			
Name of the village/cluster	North Pulinpur ADC village		
Name of the Gram Panchayat	North Pulinpur		
Name of the Taluka	Mohorcherra		
Name of the district and state	District-West Tripura, State- Tripura		
GPS location and elevation	23°52.836' N, 91°35.275' E Elevation – 47 m		
Agro climatic zone	Humid dissected mount and valleys		
No. of house holds	806		
Population	3681		
Average annual rainfall(mm)	2035 mm		
Soil details	Hill red loamy to plain sandy loamy soil		
Major crop	Paddy, chilli, cowpea, potato, maize, yam, pea, mustard, colocasia, bitter guard, raddish, tomato, cucurbits, pumpkins, fruits like mango, pine apple, citrus, banana etc.		
Total cultivated area(ha)	250 ha		
Rain fed area(ha)	237.5 ha		
Irrigated area(ha)	12.5 ha		
Major climate variability challenge	Water stress during <i>Rabi</i> summer season and cyclone		
Source of irrigation		Number	Area (ha)
	Community water bodies (Tank)	90	8

Existing mechanization status in the village		
Crop	Operations	Existing practices
Paddy	Seed bed preparation	B.O /T.O MB plough, power tiller
	Sowing/planting	Manual
	Irrigation	Flood, furrow
	Weeding/intercultural	Hand tools
	Plant protection	Knap sack sprayer
	Harvesting	Sickle
	Threshing	Manual, bullock
Potato	Seed bed preparation	Manual
	Irrigation	Flood, furrow
	Weeding/intercultural	Hand tools
	Plant protection	Knap sack sprayer
	Harvesting	Desi plough
Winter and summer vegetables	Seed bed preparation	Manual
	Sowing/planting	Hand tools
	Irrigation	Flood, furrow
	Weeding/intercultural	Hand tools
	Plant protection	Knap sack sprayer
	Harvesting	Manual

Village scenario :

Custom hiring centre under NICRA project :

Custom hiring committee: A custom hiring committee was formed for smooth running of the centre under village climate risk management committee (VCRMC) of NICRA project at project site.

Machinery received under NICRA : Different

machineries under CHC are as follows :

Hiring charges of implements : Rate was fixed by the members of Village Climate Risk Management Committee on the basis of capacity of the farmers to borrow and ability to adopt the equipments.

Impact :

Experiences of local people with CHC: Acceptability

Machinery received under NICRA:			
Name of machinery	Receiving date	Suitability	
		Crop	Operation
Power tiller (1 no.)	24/03/2011	Paddy and vegetable	Ploughing
Pump set (2 nos.)	05/08/2011	Vegetable	Irrigation
Thresher (1 no.)	17/02/2012	Paddy	Threshing of paddy
RPT (1 no.)	24/03/2011	Paddy	Transplanting of paddy
Sprayer (10 nos.)	05/08/2011	Paddy and vegetable	Spraying
Wheel hoe (1 no.)	14/02/2012	Pulses	Weeding
Weed cutter (1 no.)	14/02/2012	Vegetable	Cutting
Water cane (25 nos.)	29/11/2011	Vegetable	Irrigation
Khurpi (25 nos.)	23/11/2011	Vegetable	Seed bed preparation
Hand transplanter (25 nos.)	23/11/2011	Vegetable	Planting
Hand fork weeder/rake (25 nos.)	23/11/2011	Vegetable	Weeding
Cono weeder (8 nos.)	31/03/2011	Paddy	Weeding
Digital balance (1 no.)	27/12/2011	All	Weighing
Improved sickle (16 nos.)	23/11/2011	Paddy	Cutting
Rake (2 nos.)	14/02/2012	Vegetable	Collection of weed

Hiring charges of implements						
Sr. No.	Name of machinery	Crop	Operation	Charges		Annual use
				Rs./h	Rs./ha	
1.	Power tiller	Paddy and potato	Ploughing	-	Rs. 2187.5/ha	30.88 ha
2.	Cono Weeder	paddy	Weeding	Rs. 10/day	-	114 days
3.	Water cane	vegetable	Irrigation	Rs. 3/day	-	58 days
4.	Sprayer	Paddy and vegetable	Spraying	Rs. 20/day	-	29 days
5.	Pump set	Paddy and vegetable	Irrigation	Rs. 100/h	-	101 hr
6.	RPT	Paddy	Transplanting of paddy	-	Rs.1875/ha	Nil
7.	Thresher	Paddy	Threshing of paddy	-	Rs.1875/ha	Nil
8.	Wheel hoe	Pulses	weeding	Rs. 10/day	-	Nil
9.	Weed cutter	Vegetable	Cutting	Rs. 3/day	-	Nil
10.	Khurpi	Vegetable	Seed bed preparation	Rs. 3/day	-	Nil
11.	Hand transplanter	Vegetable	Planting	Rs. 3/day	-	Nil
12.	Hand fork weeder/rake	Vegetable	Weeding	Rs. 10/day	-	Nil
13.	Sickle	Paddy	Cutting	Rs. 3/day	-	Nil
14.	Rake	Vegetable	Collecting or gathering	Rs. 3/day	-	Nil

of the CHC by the farmers is satisfactory. Farmers are very much happy with the CHC because after establishment of the centre they are able to follow timely sowing, weeding, intercultural operation, threshing and harvesting operation etc. CHC established in NICRA villages have provided many opportunities in dealing various weather duration during 2011-12, 2012-13 and 2013-14.

Constraints :

Wider adoption of custom hiring: Constraints in wider adoption of CHC were observed in five different heads; viz., technical, financial, social, institutional and Others. They are as follows :

The urgent need :

– Permanent protected shelter shed is essential under the project for protection of instruments as well as daily

Custom hiring centre				
Sr. No.	Name of implement	Year	Farmer benefitted (nos.)	Area covered (ha)
1.	Sprayer	2011- 12	11	4
		2012- 13	24	5.76
		2013-14	17	7.2
		Sub total		52
2.	Power tiller	2011- 12	73	23.36
		2012- 13	37	15.68
		2013-14	35	13.6
		Sub total		145
3.	Pump set	2011- 12	18	7.2
		2012- 13	18	8.8
		2013-14	8	4
		Sub total		44
4.	Cono weeder	2011- 12	22	14.88
		2012- 13	22	13.44
		2013-14	15	10.24
		Sub total		59
5.	Water cane	2011- 12	9	9.12
		2012- 13	10	3.84
		2013-14	3	16.16
		Sub total		22
6.	Sickle	2011- 12	Nil	Nil
		2012- 13	Nil	Nil
		2013-14	7	14
		Sub total		7
7.	Khurpi	2011- 12	Nil	Nil
		2012- 13	Nil	Nil
		2013-14	1	1
		Sub total		1
8.	Hand fork weeder	2011- 12	Nil	Nil
		2012- 13	Nil	Nil
		2013-14	2	5
		Sub total		2
	Grand total		332	177.28

Revenue generated under CHC:				
Revenue generated/ income from CHC during 2011-12 (Rs.)	Revenue generated/ income from CHC during 2012-13 (Rs.)	Revenue generated/ income from CHC during 2013-14 (Rs.)	Expenditure on repairing of implements (Rs.)	Net income (Rs.)
32,271.00	21,074.00	13,970.00	17,900.00	49,415.00

– maintenance to improve the performance of CHC.
 – Demonstration on implements which save the other input like fertilizer or chemical.

– More training and exposure are required to increase farmer's interest.
 – Required more nos. of implements like power tiller, cono

Wider adoption of custom hiring :	
Sr. No.	Constraints
1.	<p>Technical</p> <p>Farmers are not habituated with the RPT</p> <p>Problem faced for repairing of instruments</p> <p>Lack of technical knowledge</p>
2.	<p>Financial</p> <p>Lack of money to borrow the instruments</p> <p>High cost of fuel</p> <p>Irregularity of availability of fuel.</p>
3.	<p>Social</p> <p>Lack of labour/skilled worker to operate the RPT and power tiller</p>
4.	<p>Institutional</p> <p>More training and exposure are required to increase farmer's interest</p>
5.	<p>Others</p> <p>Transportation of heavy implements is restricted because of undulating topography</p>

Problem encountered by farmers			
Sr. No.	Problem	%	Rank
1.	Transportation of heavy machinery like thresher, power tiller due to undulating topography of the village	80	1
2.	Shortage of machinery like power tiller, pump set during peak season	74	2
3.	Shortage of machinery like spray machine, cono weeder due to more nos. of machines are not in working condition	69	3
4.	Unawareness to operate machines like RPT, wheel hoe, hand transplanter etc	68	4

weeder, spry machine, pump set.

Problem encountered by farmers: A study was conducted with 90 randomly selected farmers of project area to find the out the problems faced by the farmers after implementation of CHC in the project area. The major findings are as follows:

Conclusion: It is concluded there is an ample scope of more development of custom hiring centre in the North Pulinpur ADC village. As the topography of the village is undulating in nature so the scope of light machineries are more as compare to heavy machineries, in such a scenario the more light machineries should be promoted and the villagers should be trained accordingly. Moreover, the maintenance of the machinery is another major issue which is major constrain of the CHC as because most of the

machinery are not in a good condition to operate. During winter season as because the source of water is very limited so the villagers have to depend on pump set for providing irrigation so more pump set should be provided for getting a very good irrigation facility in the village which can ultimately increase the cropping intensity. So, we can say that although a great height have been achieved by CHC but there is a more scope to make this facility available to each and every farmer of the North Pulinpur village and that will be the ultimate success of this centre; keeping the concept of CHC of the village there is a scope to develop CHC in each and every villages of the state for overall development of the farming community.

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