

ISSN: 2467-9283



Indexing & Abstracting

Open Academic Journals Index (OAJI), InfoBase Index, Cosmos, ResearchGate, CiteFactor, Scholar Stear, JourInfo, ISRA: Journal-Impact-Factor (JIF), Root Indexing etc.



Impact Factors*

IBI factor: 3

Impact factor (OAJI): 0.101



*Kindly note that this is not the IF of Journal Citation Report (JCR)

Vol-4, Issue-1

February 2018

Participatory Technology Generation and Dissemination at Out-Reach Sites of Regional Agriculture Research Station Khajura

Ram Das Chaudhary^{1*}, Padam Prasad Poudel², Bisheswar Prasad Yadav³,
Santosh Raj Tripathi¹, Govinda KC¹, Dinesh Kumar Yadav¹, Rajana Rawal¹,
Yagya KC¹ and Indrapal Singh¹

¹Regional Agricultural Research Station, Khajura, Banke, Nepal

²Grain Legumes Research Program, Khajura, Banke, Nepal

³Oilseed Research Program, Nawalpur Sarlahi, Nepal

Abstract

Regional Agricultural Research Station Nepalgunj (RARS/N) has its four major outreach sites in Satbariya Village Development Committee (VDC) of Dang, Betahani VDC of Banke, Mahammadpur VDC of Bardiya and Patharaiya VDC of Kailali district to test and validate various cost effective, client oriented, socially and environmental friendly improved technologies in order to address the farmers problem. These sites are representing various agro domain conditions of rain fed, different types of land. The PVS trial sets of different crops were conducted in RCBD design consisting new promising varieties including local adopted variety. All the varieties were planted in 3 farmers' field in each location. Individual farmers were considered as single replication. Major phenological parameters and yield were recorded. Agronomic management practices were done according to recommendation practices for particular crop. With the experiments result, IR-83377-B-B-47-2 and IR-83388-B-B-108-3 were selected from rainfed early rice trial. Likewise, genotypes, IR 81826-13-B-57 and IR 78875-207-B-B-B performed well in normal irrigated environment of all OR sites. Similarly, medium season rice genotypes IR-83377-B-B-93-3 and C 3419-10-1-2 performed well in rainfedat all sites. Equally, rainfed medium season rice genotypes IR-83377-B-B-93-3 and C 3419-10-1-2 were early and produced more grain yield in all OR site. Also, Genotypes IR-87761-1-39-1-1-1, IR-87754-42-2-2-4 and Sukkha Dhan-1 performed well in drought condition. Likewise, potato genotypes PRP266265.15, PRP266264.1 and PRP266265.1 produced higher tuber yield in all tested environments. Correspondingly, turmeric genotypes CI 507 and Kapurkot Haledo-1 produced more rhizomes in farmer's management.

Keywords: Outreach; PVS; genotypes

Introduction

Nepal Agricultural Research Council (NARC) has been conducting Outreach research activities in more than 50 Outreach sites under the command areas of Regional Agricultural Research Station and Agriculture Research Station (RARS/ARS) in various agro-ecological domains across the country. Outreach research, which is reported to be initiated during 1960's by Parwanipur Agriculture Farm by distributing minikits of maize, wheat, grain legumes and potato (Paudel, 2011), paved the long way with tremendous experiences and changes. The definition and boundary of outreach research had broadened with the present

development of participatory and pluralistic model of technology development and emergence of INGO's, CBO's and private sectors in agriculture research and development (Gauchen *et al*, 2003). The activities are conducted in collaboration with extension personnel in farmer's field to verify technologies and adopt them with necessary relevant research agencies in order to make the technologies more useful to the farmer's. NARSC (1987) had defined outreach research program as a combination of adoptive research and service activities conducted by researchers that assist extension personnel to disseminate technology. The present concept of outreach research is being defined as a method

Cite this Article as:

R.D. Chaudhary et al. (2018) Int. J. Grad. Res. Rev. Vol 4(1): 19-25.

¹*Corresponding author

Ram Das Chaudhary,
Regional Agricultural Research Station, Khajura, Banke, Nepal
Email: ramdasc79@gmail.com

Peer reviewed under authority of IJGRR

© 2018 International Journal of Graduate Research and Review



This is an open access article & it is licensed under a Creative Commons Attribution 4.0 International License (<https://creativecommons.org/licenses/by/4.0/>)

of participatory technology development and dissemination involving interactive participation and partnership of farming communities and diverse research and development actors from public, private and civil society sectors in bringing together their knowledge and practices and research capacity (ORD 2000).

Regional Agricultural Research Station Nepalgunj (RARS/N) has focused to test and generate various cost effective, client oriented, socially and environmental friendly improved technologies in order to address the farmers' problem. Research results on promising crop varieties and technologies are regularly tested and validated at the farmer's field condition. The improved technologies and crop varieties which are found be equally performing well and best with pronounced result in the farmers field are further disseminated in wider scale to the concerned stakeholders through necessary arrangement of seed production at station as well as through the experienced farmers, cooperatives and line agencies. In outreach since farmers are involved in every steps of the research with their remarkable participation, they acquire good knowledge and experience to select the appropriate crop varieties and technologies. They can make better decision for acceptance and rejection of promising varieties/technologies identified at on- the farm. Therefore, this participatory research approach named as "outreach research" has served as a significant bridge among researchers, extension, private sectors and farmers for dissemination of proven technologies. This research paper highlights the research activities and results in cereal crops, vegetables and livestock as well as fisheries were executed during in the command areas of RARS, Khajura during the fiscal year 2014/2015 and 2015/2016.

Objectives

- To test and verify promising varieties under farmers' field condition and provide an opportunity to the farmers to select most suitable variety on their own choice
- To maintain sustainable and profitable farming system through introduction of improved package of practices.
- To assess researchable needs, problems or suggestion to further plan of research programs and to guide the implementation process.

Materials and Methods

Research Sites

RARS, Nepalgunj has its four major outreach sites in Satbariya Village Development Committee (VDC) of Dang, Betahani VDC of Banke, Mahammadpur VDC of Bardiya and Patharaiya VDC of Kailali district. Also a model village has been established in Mainapokhar VDC of Bardiya district where the demonstration plots have for the developing and being tested as well as proven technologies and crop varieties are maintained for the farmers, extension workers and other concerned agencies through the participatory approach. The sites so mentioned are so selected and established as it would be represent various agro domain conditions of rain feeding, different heights of land for example, up land, low land etc, different type of irrigated conditions as well as different type of wet land (Table 1)

The PVS trial set was distributed throughout the sites. Varieties were selected from the promising lines of CVTs conducted in previous years at the RARS, Khajura, Banke District. The trials of different crops were conducted in RCBD design consisting new promising varieties with local adopted variety. All the variety was planted in 3 farmers' field in each location. Individual farmers were considered as single replication. Major phenological parameters, yield attributing characters and total yield were recorded. The summary of crop, packages of varieties and genotypes, plot size and respective sites of cultivation has been presented in Table 2.

The seed rate for all the rice varieties namely the normal, rain-fed early season as well as drought stress tolerant rice was 45 kg /ha and the fertilizers was applied @ 100:30: 30 Kg NPK/ha. Half of nitrogen (N) was top dressed 20-25 DAT and remaining half was applied 2 times at 45-50 DAT and 65-70 DAT. Other agronomical operations were carried out as recommended practices and same for all. The trial for wheat consisting of 4 promising genotypes and one local check with 3 replications were sown in line @ 120 kg/ha and the fertilizer was applied @ 100:50:25 kg NPK/ha. Seed was sown in 2nd week of November and harvesting was completed by 2nd week of April. Agronomical operations were carried out as per the recommended practices.

Table 1: Description of the outreach sites of Regional Agricultural Research Station (RARS), Khajura, Banke

District	VDC	Geographic Description
Banke	Betahani VDC, Nauragoudhi	Low wet-land and dry land, 180 masl
Bardiya	Joshiapur VDC, Mohamadpur	Middle wet-land and dry land, 180 masl
Dang	Satbariya VDC, Satbariya	Irrigated and rain fed, 185 masl
Kailali	Jabalpur VDC, Patharyia	Irrigated and rain fed, 115 masl

Table2: The Summary of crop, varieties and plot sizes

S.N.	Activities	Districts	Treatments (genotypes)	Replications No(Farmers as replication)	Plot size (m2)
1	PVS on Rainfed-Early Rice	Banke, Bardiya, Kailali and Dang.	4new+1check	3set each district	25
2	PVS on Normal season Rice	Banke, Bardiya, Kailali and Dang.	5new+1check	3set each district	25
3	PVS on Rainfed Medium season Rice	Banke, Bardiya, Kailali and Dang.	5new+1check	3set each district	25
4	PVS on Drought stress tolerant Rice	Banke, Bardiya, Kailali and Dang.	4new+1check	3set each district	25
	PVS on Wheat	Banke, Bardiya, Kailali and Dang.	4new+1check	3set each district	25
5	PVS on Potato	Bardiya, Kailali and Dang.	5new+1check	3set each district	7.2
6	PVS on Turmeric	Bardiya, and Kailali	5new+1check	2set each district	3.6

The Participatory Variety Selection for vegetable was conducted for potato and turmeric with plot area mentioned. Plantation for potato was done in line at a distance of 60 cm row to row and 25 cm plant to plant. The plantation of tuber was done in November 2nd week and the harvesting was completed with in January 4th week. Plantation of turmeric was done in line at a distance of 30 cm row to row and 30 cm plant to plant. Agronomic management practices were done according to recommendation practices for particular crop.

Results and Discussion

Yield of genotypes were varies among them locations. The yield differentiation of varieties between the locations could be due to the various micro climatic conditions, different soil status, various infestation rates of the disease & pests.

Participatory Variety Selection (PVS) in Rain-fed Early Season Rice

Pooled data of days to maturity and plant height revealed significant among the genotypes. Genotypes IR-64683-87-2-2-3-3 and IR-81063-B-94-U-3-3 matured earlier than check variety Hardinath 1 (Table 3). Likewise, genotypes IR-83377-B-B-47-2 and IR-64683-87-2-2-3-3 had taller plant than check varieties. Similarly, grain yield result were significant within location and non- significant over the OR locations. The highest grain yield was observed from IR-83377-B-B-47-2 (7867kg/ha) followed by the genotypes IR-83388-B-B-108-3 (7333kg/ha). Whereas the lower yield was achieved in the IR-64683-87-2-2-3-3(5800kg/ha) and the check variety Hardinath-1 (5867kg/ha) in Pathariya Kailali the highest yield observed same genotype IR-83377-B-B-47-2(6933kg/ha) followed by the check variety Hardinath-1 (6867kg/ha). In Satbariya Dang whereas the lower yield was seen in the IR-64683-87-2-2-3-3 (5467kg/ha). The similar genotype IR-83377-B-B-47-2(5600kg/ha) highest yield as well as the check variety Hardinath-1 (5600kg/ha) In Mohammadpur Bardiya

Whereas the lower yield was seen in the IR-64683-87-2-2-3-3(4133kg/ha) the highest grain yield was observed from IR-81063-B-94-U-3-3 (5600kg/ha) followed by the genotypes IR-83377-B-B-47-2 (5200kg/ha). Whereas the lower yield was seen in the IR-83388-B-B-108-3 (4300kg/ha) in Betahani Banke the all locations were average highest grain yield was observed rice genotypes IR-83377-B-B-47-2(6400kg/ha) (Table 3).

Participatory Variety Selection in Normal Season Irrigated Rice

Pooled data of days to maturity and plant height revealed significant among the genotypes. All genotypes were earlier than check variety Sabitri. Among them, HUA 565, IR 87615-9-3-1-3 and IR 78875-207-B-B-B were early genotypes (Table 4). Likewise, genotypes IR 87615-9-3-1-3 and IR 81826-B-B-57 had taller plant than check variety. Similarly, grain yield result were significant within location and over the OR locations. In Pathariya Kailali and Betahani Banke district, the highest grain yield was observed from genotype IR 78875-207-B-B-B (6067 kg/ha) followed by the genotypes IR81826-13-B-57 (6000 kg/ha).Whereas the lower yield was achieved in the genotype HUA 565 (3267 kg/ha). Pathariya Kailali However, the highest grain yield was observed from genotype IR-87615-9-3-1- 3(3600 kg/ha) followed by the genotypes IR 77721-93 (3200 kg/ha). Whereas the lower yield was achieved in the genotype HUA 565 (2467 kg/ha) Satvariya, Dang, the highest yield observed the genotype IR 81826-13-B-57 (6267kg/ha) and the lower yield was achieved in the IR 87615-9-3-1-3 (4533 kg/ha) in Mohammadpur, Bardiya. The highest grain yield was observed in IR 78875-207-B-B-B (6067 kg/ha) followed the genotype IR 81826-13-B-57 (6000 kg/ha) and lower yield was seen in the HUA 565 (3267 kg/ha) in Betahani, Banke. The all locations were average highest grain yield was observed rice genotypes IR 81826-13-B-57 (5250 kg/ha) and lower yield was recorded in the HUA 565 (3548 kg/ha) (Table 4).

Table 3: Phonological and yield performance of tested Rainfed-early rice varieties in different OR sites during 2014/15 and 2015/16

Tested Genotypes	Days to Maturity	Plant height (cm)	Average grain yield (kg/ha) at different sites (districts)				Average yield (kg/ha)
			Kailali	Dang	Bardiya	Banke	
IR-64683-87-2-2-3-3	113	97	5800	5467	4133	4400	4950
IR-81063-B-94-U-3-3	115	88	5933	4533	4400	5600	5117
IR-83377-B-B-47-2	118	97	7867	6933	5600	5200	6400
IR-83388-B-B-108-3	122	82	7333	6000	5333	4300	5742
Hardinath-1	117	87	5867	6867	5600	4600	5734
GM	117	90	6560	5960	5013	4820	5588
F-test	007	0.001	0.101	0.046	0.012	0.010	0.073
LSD(0.05)	0.595	0.937	1889.7	1642.9	891.1	555.3	1058.4
CV (%)	3.0	4.0	15.3	14.6	9.4	4.1	12.3

Table 4: Yield performance of normal season irrigated rice varieties in different OR sites during 2014/15 and 2015/16

Tested Genotypes	Days to Maturity	Plant height (cm)	Average grain yield (kg/ha) at different sites (districts)				Average yield (kg/ha)
			Kailali	Dang	Bardiya	Banke	
IR 87615-9-3-1-3	128	115	5333	3600	4533	5333	4700
IR 77721-93	135	109	4733	3200	5733	4733	4600
IR 81826-B-B-57	140	119	6000	2733	6267	6000	5250
IR 78875-207-B-B-B	130	99	6067	3133	5833	6067	5250
HUA 565	119	103	3267	2467	5333	3267	3548
Sabitri	141	100	5867	3133	6000	5867	5217
GM	132	108	5211	3044	5467	5211	4733
F-test	0.001	0.014	0.001	0.007	0.065	0.001	0.029
LSD(0.05)	6.501	1.015	439.0	495.6	1195.7	439.0	1014.6
CV (%)	2.2	7.4	4.6	8.9	12.0	4.6	14.2

Participatory Variety Selection in Rainfed-Medium Season Rice

Pooled data of days to maturity was non-significant and all genotypes were earlier than check variety Radha 11. In other hand, plant height was significant among the genotypes in pooled data. Among them, genotypes IR 83873-B-B-47-3 and IR 70181-82-PMI-1-1-5-1 had taller plant than check variety (Table 5). Similarly, grain yield result were significant within location and over the OR locations. In Pathariya Kailali, highest grain yield was observed from IR-83377-B-B-93-3 (7600 kg/ha) followed by the genotypes C-3419-10-1-2 (7200 kg/ha). Whereas the lower yield was achieved in the check variety Radha-11 (4600 kg/ha). However, Satvariya, Dang, the highest yield observed the check variety Radha-11 (6000 kg/ha) and the lower yield was achieved in the IR-70181-PM-1-1-15-1 (3400 kg/ha). The genotype IR-83377-B-B-93-3 (6267 kg/ha) highest yield followed the check variety Radha-11 (6000 kg/ha) and lower yield was achieved in the IR-70181-PM-1-1-15-1 (4533 kg/ha) in Mohammadpur, Bardiya. The highest grain yield was observed from C-3419-10-1-2 (4440 kg/ha) followed the check variety Radha-11 (4300kg/ha) and lower yield was seen in the IR-83376-B-B-47-3 (3700 kg/ha) in Betahani, Banke. The all locations were average highest grain yield was observed rice genotypes IR-83377-

B-B-93-3 (5587 kg/ha) and lower yield was recorded in the IR-70181-PM-1-1-15-1 (4450 kg/ha) (Table 5).

Participatory Variety Selection in Drought Stress Tolerant Rice

Pooled data of days to maturity and plant height revealed non-significant among the genotypes. All genotypes were earlier and tall plant than check variety Sukkha Dhan-1 (table 6). The grain yield of drought stress tolerant varieties at all OR locations were found non-significant. The highest grain yield was observed from check variety Sukkha Dhan-1 (6400 kg/ha) followed by the genotypes IR-87761-1-39-1-1-1 (5439 kg/ha). Whereas the lower yield was achieved in the genotypes IR-87753-11-2-1-1 (4760 kg/ha). In Pathraya Kailali, the highest yield observed the genotypes IR-87761-1-39-1-1-1 (5200 kg/ha) followed the genotypes IR-87754-42-2-2-4 (5067 kg/ha). In Mohammadpur Bardiya, genotype IR-87761-1-39-1-1-1 (6000 kg/ha) highest yield followed by the genotypes IR-87754-42-2-2-4 (5867 kg/ha). All genotypes were produced grain yield lower than check variety Sukkha Dhan-1 in Betahani, Banke. Over the locations, highest grain yield were observed in genotypes IR-87761-1-39-1-1-1 (5177 kg/ha) and lower yield was recorded in the IR-87753-11-2-1-1 (4724 kg/ha) (Table 6).

Table 5: Phonological and yield performance of rain-fed Medium Season rice varieties in different OR sites during cropping year (2014/15 and 2015/16)

Tested Genotypes	Days to Maturity	Plant height (cm)	Average grain yield (kg/ha) at different OR sites (districts)				Average yield (kg/ha)
			Kailali	Dang	Bardiya	Banke	
IR 70181-82-PMI-1-1-5-1	132	101	5667	3400	4533	4200	4450
C 3419-10-1-2	130	96	7200	4133	5733	4440	5357
IR 83377-B-B-93-3	128	97	7600	4200	6267	4280	5587
IR 83376-B-B-47-3	130	94	5800	4800	4933	3700	4808
IR 83873-B-B-47-3	126	102	5533	5267	5333	3800	4983
Radha-11 (Check)	139	92	4600	6000	6000	4300	5225
GM	131	97	6067	4633	5467	4120	5072
F-test	0.060	0.001	0.001	0.001	0.065	0.088	0.432
LSD(0.05)	4.940	5.545	304.4	345.2	1195.7	562.6	1217.8
CV (%)	1.7	4.1	15.32.8	4.1	12.0	5.3	15.9

Table 6: Phonological and yield performance of drought stress tolerant rice varieties in different OR sites during 2014/15 and 2015/16

Tested Genotypes	Days to Maturity	Plant height (cm)	Average grain yield (kg/ha) at different OR sites (districts)				Average yield (kg/ha)
			Kailali	Dang	Bardiya	Banke	
IR-87753-11-2-1-1	121	105	4760	4667	5600	3867	4724
IR-87761-1-39-1-1-1	120	105	5439	5200	6000	4067	5177
IR-82608-B-B-33-2	118	108	5400	4533	5600	3973	4877
IR-87754-42-2-2-4	122	104	5000	5067	5867	4133	5017
Sukha dhan-1	124	100	6400	3733	5600	4733	5117
GM	122	105	4760	4640	5733	4155	4982
F-test	0.066	0.073	0.015	0.634	0.896	0.015	0.705
LSD(0.05)	1.161	1.173	830.4	2322.3	1206.6	373.5	765.5
CV (%)	1.5	2.7	8.2	26.6	11.2	4.8	10.0

Participatory Variety Selection in Wheat

Pooled data of days to maturity was significant and all genotypes were earlier than check variety Gautam. In other hand, plant height was non-significant among the genotypes in pooled data and all genotypes were dwarf than check variety Gautam. Similarly, grain yield was significant over the OR locations and non-significant within location except Dang (table 7). The grain yield of wheat genotypes at OR sites shown the highly significant. In Satvariya Dang and other sites genotypes were shown non-significant. The highest yield was observed in BL-4316 (2838 kg/ha) followed by the check variety gautam (2651 Kg/ha) and the lowest yield in NL-1202 (2225 kg/ha). In Pathariya Kailali, the highest yield was observed in NL-1202 (4175 kg/ha) and the lowest yield in BL -4316 (2767 kg/ha). In Satvariya Dang the highest yield was observed in BL-4406 (3833 kg/ha) and the lowest yield in BL -4316 (2750 kg/ha). In Joshipur Bardiya the highest yield was observed in BL-4316 (3917 kg/ha) followed by the genotype BL-4463(3800 kg/ha) and the lowest yield in NL-1202 (3525 kg/ha). The all locations were average highest grain yield was observed wheat genotypes NL-1202 (3419 kg/ha) and lower yield was recorded in the BL-4463 (3027 kg/ha) (Table 7). The yield differentiation of varieties between the locations could be due to the various micro climatic conditions, different soil status, various infestation rates of the disease & pests.

Participatory Variety Selection in Potato

The result of tuber yield in Kailali and Dang was found highly significant. Kailali The highest yield was observed in genotype PRP266265.1 (28.3 t/ha) PRP266264.1 and PRP266265.15 (24.6 t/ha) respectively (table 8). Whereas; statistically lower yield was recorded in genotype PRP286265.22 (19.0 t/ha) and as well as adopted check variety local the yield of these varieties were recorded (10.0 t/ha) Dang the highest yield was observed in genotype PRP266265.15 (26.3 t/ha). However, statistically lower yield was recorded in variety Desiree (15.6 t/ha) the average highest yield was observed in genotype PRP266265.15 (25.3 t/ha) and lower yield was recorded farmer local (9.0 t/ha) (Table 8).

Participatory Variety Selection in Turmeric

The result of rhizome yield in Bardiya and kailali was Non-significant. Bardiya The highest yield was observed in genotype CI 507 (34.6 t/ha) (table 9). Kapurkot Haledo-1 (32.2 t/ha) and CI 205 (31.6 t/ha) respectively. Whereas; statistically lower yield was recorded in genotype CI 503 (22.8 t/ha) Kailali the highest yield was observed in variety Kapurkot Haledo-1 (26.3 t/ha) whereas; statistically lower yield was recorded in variety local (25.1 t/ha) the average highest yield was observed in genotype CI 507 (31.8 t/ha) and lower yield was recorded farmer local (24.7 t/ha) (Table 9).

Table 7: Phonological and yield performance of tested wheat varieties in different OR sites, (2014/15 and 2015/16)

Tested Genotypes	Days to Maturity	Plant height (cm)	Average grain yield (kg/ha) at different OR sites (districts)				Average yield (kg/ha)
			Kailali	Dang	Bardiya	Banke	
BL-4316	116	84	2838	2767	2750	3917	3068
BL-4406	116	88	2623	3158	3833	3750	3341
BL-4463	118	88	2498	2892	2917	3800	3027
NL-1202	116	83	2225	4175	3750	3525	3419
Gautam	119	91	2651	3208	3667	3575	3275
Grand mean	118	87	2567	3240	3383	3713	3226
F-test	0.004	0.489	0.375	0.001	0.178	0.707	0.625
LSD (0.05)	1.598	2.212	669.3	449.4	1156.2	713.5	644.9
CV (%)	3.0	3.1	13.8	7.4	18.1	10.2	13.0

Table 8: Yield performance of tested potato varieties in different OR sites during 2014/15 and 2015/16

S.N.	Tested Genotypes	Average tubers (ton/ha) at different OR sites (districts)			Average yield (ton/ha)
		Bardiya	Kailali	Dang	
1	PRP266264.1	21.7	24.6	23.6	23.3
2	PRP266265.1	21.3	28.3	18.3	22.6
3	PRP85861.11	18.3	22.3	18.3	19.6
4	PRP286265.22	19.0	19.0	19.0	19.0
5	PRP266265.15	25.0	24.6	26.3	25.3
6	Desiree	14.3	20.0	15.6	16.6
7	Local	13.7	10.0	4.6	9.4
	Grand mean	19.0	21.2	18.0	19.4
	F-test	0.733	0.001	0.001	0.001
	LSD (0.05)	16.05	3.821	7.220	5.449
	CV (%)	48.1	10.3	22.9	29.7

Table 9: Yield performance of tested turmeric varieties in different OR sites during 2014/15 and 2015/16)

S.N.	Tested Genotypes	Average Rhizomes (ton/ha) at different OR sites (districts)		Average yield (ton/ha)
		Bardiya	Kailali	
1	CI 507	34.6	29.1	31.8
2	CI 205	31.3	28.7	30.0
3	CI 503	22.8	29.9	26.3
4	CI 210	25.9	27.5	26.6
5	Kapurkot Haledo-1	32.2	30.4	31.3
6	Local	24.4	25.1	24.7
	Grand mean	28.5	28.4	28.5
	F-test	0.425	0.245	0.173
	LSD (0.05)	15.44	4.918	6.609
	CV (%)	22.1	7.1	15.6

Conclusion

Participatory varietal trial was conducted in rice, wheat, potato and turmeric. Genotypes IR-83377-B-B-47-2 and IR-83388-B-B-108-3 were selected from rainfed early rice trial. Likewise, genotypes, IR 81826-13-B-57 and IR 78875-207-B-B-B were performed well in normal irrigated environment all OR site. Similarly, genotypes IR-83377-B-B-93-3 and C 3419-10-1-2 were performed well in rainfed medium season rice in all OR site. Equally, rainfed medium season rice genotypes IR-83377-B-B-93-3 and C 3419-10-1-2 were early and produced more grain yield in all OR site. In addition, Genotypes IR-87761-1-39-1-1-1, IR-87754-42-2-2-4 and Sukkha Dhan-1 performed well in farmers' field in drought condition. Likewise, potato genotypes

PRP266265.15, PRP266264.1 and PRP266265.1 produced higher tuber yield in all tested environments. Correspondingly, turmeric genotypes CI 507 and Kapurkot Haledo-1 produced more rhizomes in farmer's management.

Acknowledgement

The authors wish to express their appreciation to farmers who providing experimental plots and voluntary participation during the course of experiment and data recording. Likewise, express our gratitude to recorders of outreach sites, all activity leaders, site in-charge and support staff of this station for their tremendous help and support to carry out this study.

References

- Gauchan D, Joshi M, and Biggs S (2003) A Strategy for Strengthening Participatory Technology Development in Agricultural and Natural Resources Innovations Systems. The case of Nepal *International Journal of Technology Management and Sustainable Development*, 2 (1): 39-52.
- Nepal Agricultural Research Service Centre1 (NARSC) (1987) Policy guidelines Research outreach policy and guidelines, Katmandu, Nepal
- Outreach Research Division (ORD) (2000) Proceeding of Fifth National Outreach Research Workshop, 30-31 May, 2000. Published by Nepal Agricultural Research Council, Outreach Research Division, Khumaltar, Lalitpur
- Paudel, MN (2011) Outreach research a bridge between research and extension. In: proceeding of the National Outreach Working Group Workshop held on 19 May, 2011. Published by Nepal Agricultural Research Council, Outreach Research Division, Khumaltar, Lalitpur: 4-13.