



ISSN (E): 2277- 7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2022; 11(2): 3065-3070
© 2022 TPI

www.thepharmajournal.com

Received: 10-12-2021

Accepted: 20-01-2022

Shailendra Pratap Singh
Ph.D., Research Scholar,
Department of Agriculture
Economics, Sam Higgin Bottom
University of Agriculture Science
and Technology, Prayagraj,
Uttar Pradesh, India

Dr. Ameesh J Stephen
Assistant Professor, Department
of Agriculture Economics, Sam
Higgin Bottom University of
Agriculture Science and
Technology, Prayagraj, Uttar
Pradesh, India

Dr. Ashish S Noel
Associate Professor and Head,
Department of Agriculture
Economics, Sam Higgin Bottom
University of Agriculture Science
and Technology, Prayagraj,
Uttar Pradesh, India

Paras Nath Jhariya
Ph.D., Research Scholar,
Department of Agriculture
Economics, Sam Higgin Bottom
University of Agriculture Science
and Technology, Prayagraj,
Uttar Pradesh, India

Corresponding Author:
Shailendra Pratap Singh
Ph.D., Research Scholar,
Department of Agriculture
Economics, Sam Higgin Bottom
University of Agriculture Science
and Technology, Prayagraj,
Uttar Pradesh, India

A case study on seed replacement rate, existing seed delivery system and value chain analysis of existing suppliers & paddy growers in Siddharth Nagar district of Uttar Pradesh

Shailendra Pratap Singh, Dr. Ameesh J Stephen, Dr. Ashish S Noel and Paras Nath Jhariya

Abstract

The Siddharthnagar district is divided into 5 tehsils and 14 blocks, where for Kalanamak production and constraints study the blocks were purposively selected whereas for estimation of seed replacement rate and for other objective estimations, the blocks were randomly selected. Barhni, Itwa, Shohratgarh, and Dumariyaganj, these four blocks are taken for further study about paddy seed distribution, utility and assessment of seed replacement rate for last 20 years. The primary data were certainly collected from the seed growers, distributors and farmers. The socio-economic details and various aspect of production and marketing of paddy seed were collected through various personal interview sessions with the help of pre-structured interview schedule. The secondary data were derived from state seed development and distribution bodies, Siddharthnagar Kirshi Bhawan, Vikas Bhawan (Naugadh) Sidharthnagar, from state economic survey 2019 and seed dacnet sites along with various e-sources. The percentage distribution to various variety grower and paddy growers at various sectors were selected block and villages in Siddharthnagar. Cluster analysis done to integrate the seed utilizing community according to their primary and secondary income and their educational as well occupational segregation. The sequence of related business deals (activates) from special input for specific product to primary production, grading, marketing certification etc. to final selling till consumers. The Seed Replacement Rate (SRR) of researched/certified seeds amongst various sections of the farming community and here the marginal community of farmers had shown seed replacement rate of certified seeds was found to be 37.39. Barhni block had shown highest of 23.12 percent of SRR during the year of 2013, whereas Shohratgarh has shown 23.81 percent of Seed replacement rate amongst all the four blocks. During 2016-17, it could be easily estimated that marginal landholders have done better utility of notified seed with a percentage share of 74.69 percent. The rest have performed as usual but small farming community had performed relatively better year-wise. 16.75, 6.39, 2.08 and 0.09 were the respective percentage share of small, medium, semi-medium and large farming community. At farmers level germination failures have scored highest factor loadings with 0.809 stood first showing the impact of germination percentage on paddy seed utility. Price determination by external sources rather the government has occupied second last position with 0.773 scoring suggesting that the paddy seed cost determination must be done by the government agencies, the paddy seed cost higher than actual realization.

Keywords: Paddy, SRR, value chain analysis, participatory approach

Introduction

Proper place in time. It is particularly true in the case of small farmers who generally have low availability of cash money. It may be mentioned that seed replacement rate (SRR) of paddy is low (24.35 per cent) in India (<http://seednet.gov.in>). The seed renewal period as recommended by the National Commission on Agriculture (1976), is four years in paddy.

The agricultural sector is highly dependent on the availability and quality of seeds for a productive harvest. Therefore, in order to increase the quantity and quality of produce, efforts are made to introduce enhanced varieties of seeds with the help of advance technology and modern agricultural methods. In India, agriculture is the dominant occupation, which secures abundant opportunities for the seed market in the region. According to IMARC Group's latest report titled, "Seed Industry in India: Market Trends, Structure, Growth, Key Players and Forecast 2021-2026", the Indian seed market reached a value of US\$ 4.9 Billion in 2020 [1]. The Indian seed market has witnessed a major restructuring as a result of the implementation of some progressive policies by the government.

Seed Development, 1988 and National Seed Policy, 2002 have helped in strengthening the Indian seed industry in the areas of R & D, product development, supply chain management and quality assurance. Owing to this, India has emerged as the fifth largest seed market across the globe. Moreover, the active participation of both, public and private sectors has also played a vital role in laying a strong foundation of the industry. This includes launching initiatives to promote the use of hybrid seeds among the farmers who had earlier used outmoded open pollinated varieties. Some other growth-inducing forces, such as growth in income levels, commercialization of agriculture, patent protection systems and intellectual rights over plant varieties, have given a great push to the market. Owing to these factors, the Indian seed market is further expected to exhibit strong growth during 2021-2026.

Research methodology

Study were conducted conveniently in Siddharthnagar district, it borders with Nepal and is well known tourist place and holds GI tag for Kalanamak variety of paddy being tarai district have very intensive cereal production belt. Districts in Eastern Uttar Pradesh, India have been considered for identifying major yield determinants in rice. (. Adoption of traditional varieties is higher in Siddharthnagar. Therefore, any development of rice varieties suitable for these fragile ecologies will make a positive impact on the millions of poor people in eastern Uttar Pradesh thus the area is chosen at priority list

The Siddharthnagar district is divided into 5 tehsils and 14 blocks, where for Kalanamak production and constraints study the blocks were purposively selected whereas for estimation of seed replacement rate and for other objective estimations, the blocks were randomly selected.

The seed replacement rate (SRR) for paddy crop was worked out using following formula as given

1. Certified seed _____ (Govind Pal, 2018)

$$SRR = (C \times 100) / (A \times K)$$

Where; SRR- Seed Replacement Rate

C- Certified seed used by the farmers

A- Area under paddy crop

K- Seed rate per unit of area

2. Quality seed _____ (Govind Pal, 2018)

$$SRR = (Q \times 100) / (A \times K)$$

Where; SRR- Seed Replacement Rate

Q- Quality seed used by the farmers

A- Area under paddy crop

K- Seed rate per unit of area

3. **Value chain analysis:** The sequence of related business deals (activates) from special input for specific product to primary production, grading, marketing certification etc. to final selling till consumers. this were including various function *viz.* private/state owned producers, processors, traders, and distributions of particular products linked by various business transactions through which the products passes through various producers, middlemen and

consumers. Therefore, various value chain performers, who are accountable for seed distribution, service related information, are expected to share an interest at end product will have effect on the end market. Central link mapping in the chain of the distributive network, construction of such plan/ map helps to illustrate the exemplified costs incurred, the utility of each stage, primary and secondary services, constraints that obstruct efficacy of the existing value chain and various accessible shareholders of the value chain.

4. **Participatory approach:** The various performers in the chain has different influence at different level of chain which might include production processing utility realization and marketing functionaries included as well thus the summation of different perspective in the supply chain can only be evaluated until the decisively existing opportunities are being explored in the chain, demand participation of the shareholder are comprehended thus conventionally this chain includes buyers (owned seed growers / private seed growers/ state owned agencies) processors, input suppliers, public agencies and other certifying agencies, labors, commercial regulations, international plant protection and farmers rights, WTO and her legalities and polices for seed production and distributions etc. are major players/performers in the value chain

Result and Discussion

Study was conducted conveniently in Siddharthnagar district, it borders with Nepal and is well known tourist place and holds GI tag for Kalanamak variety of paddy being tarai district have very intensive cereal production belt. Districts in Eastern Uttar Pradesh, India have been considered for identifying major yield determinants in rice. The chapter is arranged in different sub-section according to objectives of the study.

- To Estimate seed replacement rate in between different sections of paddy growers.
- Explore existing seed delivery system and value chain analysis of existing suppliers.

To Estimate seed replacement rate (SRR) in between different sections of paddy growers at various levels of blocks, district and state

Table 1: The Seed Replacement Rate (SRR) of hybrid seed amongst various sections of the farming community

Type of farming community	Total Number of Farmers	Total Land Holding (ha)	Hybrid Seed used by the farmers (kg)	SRR Hybrid
Marginal	15	10.9	5	3.84
Small	24	37.9	88	19.37
Semi Medium	60	197.8	624	26.29
Medium	47	289.1	1051	30.30
Large	10	114.4	380	34.50
Total	156	649.92	2118	27.16

The table 1 depicts the Seed Replacement Rate (SRR) of hybrid seed amongst various sections of the farming community, where the total numbers of farmers were 156 amongst them marginal farmers were 15 and had a hybrid seed replacement rate of 3.84 percent. The small farmers who were 24 in number hand sum total of 37.9 ha of land holding

shown 19.37 percent of hybrid seed replacement rate. The semi-medium had total of 197.8 ha of lands amongst the sample selected and had seed replacement rate of 26.29 percent. Next were medium farmers, these were 47 in number amongst the sample selected randomly and had a total of 289.1 ha along with that had a hybrid seed replacement rate of 30.30 simultaneously the large farmers were having a seed replacement rate of 34.50. These results replicate the similar results as that of as they studied replacement rate of paddy in three districts in Punjab, increasing replacement rates amongst

various sections of farming community and the trend was incremental. It can be estimated that due to better economic condition of large farmers to buy seed from institutional sources and their higher awareness about the quality of seed. AZ6444 and Arize6633 were the two hybrid varieties were taken for cultivation and the both varieties were released from Bayer. Amongst both important and potential varieties, AZ6444 has ore market penetration due to heavy tillering and drought resistant property.

Table 2: The Seed Replacement Rate (SRR) of researched/certified seed amongst various sections of the farming community

Type of farming community	Total number of farmers	Total land holding (ha)	Researched seed (kg)	SRR researched
Marginal	15	10.9	142	37.39
Small	24	37.9	290	21.89
Semi Medium	60	197.8	3455	49.91
Medium	47	289.1	3586	35.44
Large	10	114.4	650	16.24
Total	156	649.919	8123	35.71

The Table 2 the Seed Replacement Rate (SRR) of researched/certified seeds amongst various sections of the farming community and here the marginal community of farmers had shown seed replacement rate of certified seeds was found to be 37.39. The SRR of certified seeds in small and semi-medium farmers were 21.89 and 49.91 percent. There had been about 50 percent of replacement rate in certified seeds this represents more innovative community amongst all the group of farmers. The medium group has shown 35.44 percent of seed replacement rate and the last one was large group and that had shown with 114.4 ha of total land owners had shown a replacement rate of 16.24 percent as

most of the lands were already used under certified seed of paddy. The Sidharthnagar region being one of the most backward portion of the state and thus there has constant increase in SRR of certified seeds, But still the marginal and small groups have been lagging behind. In these area two major certified varieties were prominent, which were Prasanna variety from Krishidhan and Sampoorna from Kaveri company, these are superfine varieties which are having 20 Qt/ha of production. The market penetration for Sampoorna is stronger amongst the farmers as this variety is slightly anti-lodging properties.

Table 3: Year-wise Seed Replacement Rate (SRR) of certified/researched seeds in various selected blocks

Year	Barhni		Shohratgarh		Dumariyaganj		Itwa	
	Total Area Under Paddy Production (ha)	Year-wise Researched SRR (%)	Total Area Under Paddy Production (ha)	Year-wise Researched SRR (%)	Total Area Under Paddy Production (ha)	Year-wise Researched SRR (%)	Total Area Under Paddy Production (ha)	Year-wise Researched SRR (%)
2001	147820	19.62	145000	20.00	126701	2.25	153901	20.14
2002	131780	21.25	145000	20.00	126702	2.25	153902	20.14
2003	147800	20.97	145000	20.00	126003	2.46	153903	20.14
2004	150000	19.33	145000	20.00	128904	2.25	153854	20.15
2005	152000	20.39	140650	20.62	119605	2.42	153805	20.16
2006	156250	18.56	141400	23.09	120706	2.25	153806	20.16
2007	157300	22.12	141400	23.09	120907	2.40	153857	20.15
2008	157950	22.06	147540	24.77	120388	2.55	160808	23.63
2009	151300	19.17	145000	20.00	129109	2.40	160809	23.63
2010	162350	17.70	137750	21.05	114020	2.99	166310	26.16
2011	161750	17.60	140650	24.70	114321	3.33	146261	28.74
2012	151340	20.48	140650	24.70	112772	3.38	146412	29.71
2013	166500	23.12	147550	23.81	113243	3.39	146263	29.74
2014	162400	17.86	159250	25.75	128414	3.96	138014	26.77
2015	152500	16.16	133400	23.17	119325	3.28	146265	27.74
2016	158300	18.32	145000	23.00	120926	2.80	151416	27.06
2017	161800	19.47	158500	22.73	113867	2.38	157267	24.80
2018	156100	20.82	146500	20.82	116608	2.74	148618	20.86
2019	147250	19.69	153500	24.43	117079	2.91	147219	19.70
2020	146250	19.83	152750	23.33	117080	2.91	147220	19.70

In the table 3 an analysis of Year-wise Seed Replacement Rate (SRR) of hybrid and certified/researched seeds in various selected blocks were done from where samples were extracted, it was quite prominent that during 2013 and 2014 due to seed subsidy there has been highest recorded seed

replacement rate. Over all when observed the Itwa block had shown highest seed replacement on an average. Barhni block had shown highest of 23.12 percent of SRR during the year of 2013, whereas Shohratgarh has shown 23.81 percent of Seed replacement rate amongst all the four blocks. when

considering the block Dumariyaganj, that section is majorly dealing with Kalanamak variety and some hybrid paddy seeds, lesser is the acreage of certified seed utility in that area.

Thus the SRR in these sectors which were situated nearby cities are usually lesser and in case of Dumariyaganj it was 3.96 percent.

Table 4: Distribution of Operational Holdings Using Notified/Researched Seed in Sidharthnagar district Area in hectares Percentage in parenthesis

Year	Marginal landholders	Small landholders	Medium landholders	Semi-medium landholders	Large landholders	Sum total of the farming community
1996-97	424(81.07)	69(13.19)	24(4.59)	6(1.15)	0(0.00)	523
2001-02	2085(79.25)	295(11.21)	92(3.50)	63(2.39)	96(3.65)	2631
2006-07	12252(63.19)	4239(21.86)	2104(10.85)	785(4.05)	8(0.04)	19388
2011-12	57370(76.20)	13147(17.46)	4175(5.55)	555(0.74)	45(0.06)	75292
2016-17	70155(79.03)	14523(16.36)	3344(3.77)	709(0.80)	35(0.04)	88766

The above Table 4 showed the Distribution of Operational Holdings Using Notified/Researched Seed in Sidharthnagar district, there had been an increasing trend of notified area coverage under paddy cultivation by notified or researched seeds. During 1996-97 81.07 percent of the total hybrid seed users were from marginal land holdings. 13.19 percent were from small farming community and 4.59 percent were medium farming community, 1.15 percent of the 523 hybrid users were semi-medium. But no large landholders were found to be in the area. The next 2001-02 era, the marginal, small, medium and semi-medium landholders had 79.25, 11.21, 3.50 and 3.65 percentage of contributions in the notified seed usage whereas a great comparative increment could be seen in larger group with 3.65 percent. During 2006-07, it could be perceived that the percentage share for various

groups were 63.19, 10.85, 4.05 and 0.04 for marginal, medium, semi-medium and large farm group. But considering conspicuous increment in small farming group can be noticed with share of 21.86 percent. During 2011-12, it could be professed that the percentage shares for various groups were 76.20, 17.46, 5.55, 0.74 and 0.06 for marginal, small, medium, semi-medium and large farm group. During 2016-17, it could be easily estimated that marginal landholders have done better utility of notified seed with a percentage share of 79.03 percent. The rest have performed as usual but small farming community had performed relatively better year-wise. 16.36, 3.77, 0.80 and 0.04 were the respective percentage share of small, medium, semi-medium and large farming community.

Table 5: Distribution of Operational Holdings Using Notified/Researched Seed in Uttar Pradesh state Area in hectares Percentage in parenthesis

Year	Marginal landholders	Small landholders	Medium landholders	Semi-medium landholders	Large landholders	Sum total of the farming community
1995-96	32169 (72.21)	7112 (15.96)	3769 (8.46)	1366 (3.07)	135 (0.30)	44551 (100)
2001-02	129933 (72.95)	25117 (14.10)	14221 (7.98)	6484 (3.64)	2362 (1.33)	178117 (100)
2006-07	1483855 (75.15)	296850 (15.03)	146614 (7.43)	44723 (2.27)	2445 (0.12)	1974487 (100)
2011-12	2126275 (72.05)	476108 (16.13)	257847 (8.74)	85777 (2.91)	4950 (0.17)	2950957 (100)
2016-17	4961675 (74.69)	1112710 (16.75)	424374 (6.39)	138263 (2.08)	6275 (0.09)	6643297 (100)

The above Table 5 showed the Distribution of Operational Holdings Using Notified/Researched Seed in Uttar Pradesh state, there had been an increasing trend of notified area coverage under paddy cultivation by notified or researched seeds. During 1996-97, 72.21 percent of the total hybrid seed users were from marginal land holdings. 15.96 percent were from small farming community and 8.46 percent were medium farming community, 3.07 percent of the 44551 notified users were semi-medium. A discouraging record of large farmers again being holder of only 0.30 percents. The next 2001-02 era, the marginal, small, medium and semi-medium landholders had 72.95, 14.10, 7.98 and 3.65 percentage of contributions in the notified seed usage whereas a great comparative increment could be seen in larger group with 1.33 percent. During 2006-07, it could be perceived that

the percentage share for various groups were 75.15, 15.03, 7.43, 2.27 and 0.12 for marginal, small, medium, semi-medium and large farm group. During 2011-12, it could be professed that the percentage shares for various groups were 72.05, 16.13, 8.74, 2.91 and 0.17 for marginal, small, medium, semi-medium and large farm group. During 2016-17, it could be easily estimated that marginal landholders have done better utility of notified seed with a percentage share of 74.69 percent. The rest have performed as usual but small farming community had performed relatively better year-wise. 16.75, 6.39, 2.08 and 0.09 were the respective percentage share of small, medium, semi-medium and large farming community.

II Explore existing seed delivery system and value chain analysis of existing suppliers

Table 6: The potential paddy variety of seminal companies in the district with their specifications

Specifications	Sampurna	AZ6444	Arize 6633	Prasanna	Kalanamak
Type of seed	Originative propagative	Hybrid	Hybrid	Research variety	GI tagged variety
Productivity	Medium productivity	High productivity	High productivity	Medium productivity	High productivity
Resistance against	Blight resistant	Leave blight resistant variety	No resistance	No	Blight resistant
Drought resistant	Slight drought resistant	Slight drought resistant.	Non- Drought resistant	Non- Drought resistant	Drought resistant
Tillers	Good tillering	Maximum tillers	Good tillering	Good tillering	Good tillering
Days of production	130-135 days	130-135 days	130-135 days	130-135 days	130-135 days
Lodging issues	Lodging issues after tillering	Anti-lodging	Lodging issues after tillering	Lodging issues after tillering	Lodging issues after tillering
Productivity	20-25Qt/acre	30-35Qt/acre	25-30Qt/acre	20-25Qt/acre	
Market rate	1500-1550 ₹/Qt	1650₹/Qt	1650₹/Qt	1600/₹Qt	40000₹/Qt
Quality	Fine	Medium fine	Fine	Fine	Superfine
Company	Kaveri	Bayer	Bayer	krishidhan	Government
Market penetration	Poor penetration	Highest penetration	Average penetration	Average penetration	Low penetration

In the district of Sidharthnagar the major paddy seed profiles could be discussed in the above table 6, the types of seeds that have maximum acreage in the area were sampurna, which is originative-propagative, AZ6444 and Arize 6633 which were hybrid and are product of the same company i.e. Bayer AG crop sciences, and prasanna as researched variety from Krishidhan company. Both hybrid varieties have had very high market rate ranging between 1600-1650₹/Qt, Whereas the prasanna and sampurna had medium market rate ranging from 1500-1600 ₹/Qt. productivity was high for AZ6444

which was 30-35 Qt/acre followed by Arize 6633 offering 25-30Qt/acre. The Research variety and Originative propagative both have similar productivity which was estimated to be 20-25Qt/acre. The quality of respective varieties could be accessed as fine and medium fine varieties. All of them except AZ6444 has lodging problems after tillering and thus realized lesser market penetration in the lowland area of the district also this variety had shown drought resistance performance thus preferred over other existing varieties.

Table 7: Selected potential and major varieties existing in the district at various blocks and their respective companies

Sr. No.	Variety	Company	Brand
1.	Hybrid seeds	Pioneer Seeds	27P31, 27P37.
		Bayer AG Crop Science	6444, 6129 Gold, Arize Idia
		Nath Seeds	Gorakhnath 509, Loknath 505
		Advanta Company	Advanta 807
		Kaveri Company	Kaveri 468, Kaveri 9090
		Dhanya Company	8383
2.	Researched seeds	VNR Seeds Privt. Ltd.	2111
		Krishidhan company	komal, prasanna, silky
		Paan seeds	Jamuna
		Kaveri company	Chintu
		Nath company	2020
		Mahindra Company	Saubhagya

Major varieties existing in the wholesale and retail markets of Sidharthnagar along with their respective companies were as mentioned in the above table, along with the state department of agriculture; there are existence of multiple private agencies and companies in the district. In the district majority of the companies were dealing with hybrid seeds and there were less penetration and positioning of the researched varieties. the major brands in hybrid seeds amongst farmers were 27P31, 27P37 by Pioneer Seeds, 6444, 6129 Gold, Arize Idia by Bayer AG Crop Science, Gorakhnath 509, Loknath 505 by Nath Seeds, Advanta 807 by Advanta Company, Kaveri 468, Kaveri 9090 by Kaveri Company, 8383 by Dhanya Company, 2111 by VNR Seeds Privt. Ltd. for researched seeds where the market capturing were estimated to be less than 20 percent the major players in the districts were komal, prasanna, silky by Krishidhan company, Jamuna by Paan seeds, Chintu by

Kaveri company, 2020 by Nath company, Saubhagya by Mahindra Company. (Govind Pal, 2018) concluded that the ratio of public and private paddy seed variety in the locale were 77:23 which is quite encouraging and amongst various crops the seed replacement ratio was found to be 42.99 percent for paddy in certified seeds and for quality seed it was 63.46 percent. The various sources existed in the seed demand fulfillment were farm saved seeds occupying about 31.65 percent of demand, followed by private seed distributors by 22.70 percent next is research institutions grabbing 20.06 percent, later on the departments/ cooperative have share of 12.71 percent and the last once is authorized dealers with 9.73 percent. The past experiences of the farmers with various seeds of the various crops were the main criteria for selection of the seed from various authorized and unauthorized bodies.

Table 8: Sources of paddy seeds amongst various sections of the farming community

Farm category Source of Seed	Self-retained	Fellow farmer	Relatives and friends	State Dept. of Agriculture	Authorized seed dealer	Private seed dealer	Village shop keeper	Commission agent	Total
Marginal	27.70 (19.51)	9.26 (6.52)	9.95 (7.01)	0.00 (0)	18.13 (12.77)	49.70 (35)	10.91 (7.68)	16.34 (11.51)	142 (100)
Small	40.92 (14.11)	15.92 (5.49)	3.19 (1.1)	3.63 (1.25)	46.28 (15.96)	104.14 (35.91)	21.69 (7.48)	54.23 (18.7)	290 (100)
Semi Medium	205.57 (5.95)	114.02 (3.3)	0.00 (0)	28.68 (0.83)	376.94 (10.91)	1782.43 (51.59)	374.18 (10.83)	573.18 (16.59)	3455 (100)
Medium	319.15 (8.9)	0.00 (0)	0.00 (0)	33.71 (0.94)	521.40 (14.54)	2262.41 (63.09)	305.53(8.52)	143.80 (4.01)	3586 (100)
Large	56.94 (8.76)	0.00 (0)	0.00 (0)	8.26 (1.27)	173.94 (26.76)	322.73 (49.65)	46.87 (7.21)	41.28 (6.35)	650 (100)

The sources for paddy seeds amongst various sections of the farming community can be described from above table, here for the marginal farmers the private seed dealers share maximum of 35 percent of total seed distributed, small farming community has 35.91 percent share of their distributions from private dealers. The semi-medium farming community had more than half that is 51.59 percentage of share by private distributors followed by commission agent sharing 16.59 percent of distribution. The medium farming groups have also more sharing of paddy distribution from private dealers which were 63.09 percent. Authorized seed dealers also have sharing of 14.56 percent of sharing in seed distribution in the area. Coming to the large farming community the seed distribution is majorly dealt with two agencies which is 26.76 percent by authorized seed dealers and 49.65 percent private seed dealers. still marginal and small farming groups are dependent on self retained to some extent as the table indicates that for marginal farming community and small farming community the share for self retained seed is 19.51 and 14.11 percent respectively. State department of agriculture doesn't show a significant allocation in seed distribution amongst farming community rather the access to the seed from agriculture department is majorly to the large farmers which were 1.27 percent of total seed utility. had studied the existing value chain management amongst farmers, seed producers, seed distributors, private seed companies, public research institutions etc which was focused on maize seeds in Muzaffarpur district of Bihar for duration of 2010-11. After harvesting the farmers are intended to sold the raw cobs to the company @ 875/Q. here the cost of production falls from 9360/acre to 13180/acre, with a gross margin of 1170 to 10110/acre. Hiremath *et al.* (2020) ^[1] conducted study to discern the formal and informal seed sector contributions in seed supply in Raichur district of Karnataka. The formal seed sector is contributing 78% to total seed supply whereas, informal seed sector is contributing 22% to seed supply in the present study. Nearly 80% of the farmers are using quality seeds i.e. certified seed and truthfully labeled seed and remaining 20% farmers are using farm saved seeds.

Conclusion

The sources for paddy seeds amongst various sections of the farming community can be described from above table, here for the marginal farmers the private seed dealers share maximum of 35 percent of total seed distributed, small farming community has 35.91 percent share of their distributions from private dealers. The semi-medium farming community had more than half that is 51.59 percentage of share by private distributors followed by commission agent sharing 16.59 percent of distribution.

An analysis of Year-wise Seed Replacement Rate (SRR) of hybrid and certified/researched seeds in various selected blocks were done from where samples were extracted, it was

quite prominent that during 2013 and 2014 due to seed subsidy there has been highest recorded seed replacement rate. Over all when observed the Itwa block had shown highest seed replacement on an average. Barhni block had shown highest of 23.12 percent of SRR during the year of 2013, whereas Shohratgarh has shown 23.81 percent of Seed replacement rate amongst all the four blocks. when considering the block Dumariyaganj,

References

1. Govind Pal KU. A Study on Sources and Management of Paddy Seed in Eastern Uttar Pradesh, India. *Journal of Economics, Management and Trade*. 2018;21(7):1-7.
2. Umesh Hiremath. Role of Formal and Informal Seed Sector in Augmenting Seed Replacement Rate in Raichur District of Karnataka, India *International Journal of Current Microbiology and Applied Sciences*, 2020, 9(6). ISSN: 2319-7706,
3. Joshi RM, Patil HK. Paddy seed replacement scenario in Konkan region of Maharashtra;. *International Research Journal of Agricultural Economics and Statistics*, 2012, 120-127.
4. Kumara RA. Value Chain Analysis of Maize Seed Delivery System in Public and Private Sectors in Bihar. *Agricultural Economics Research Review*, 2012, 387-398.
5. Verma Sangeeta SM. Sources, replacement and management of paddy seed by farmers in Punjab. *Agricultural Economics Research Review*. 2009;22(2):323-328.