

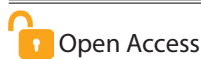
Case Study on Popularization of Paddy Drum Seeding Technology in Kallakurichi of Tamil Nadu

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Abstract

In Kallakurichi district, Paddy is the predominant crop and is being cultivated in an area of 60,000 ha in three seasons. Most of the farmers engaged in transplanted rice cultivation. Due to water shortage during transplanting time resulted in poor crop growth. To overcome these issues, KVK, Kallakurichi has introduced and popularized direct sowing of paddy through supply of Paddy drum seeder on custom hiring basis for the benefit of farming communities. As a result of the KVK intervention, now 167 farmers in Chinnasalem and Kallakurichi block cultivated paddy under drum seeding technology in Kar season in an area of 276 acres with reduced cost of cultivation.

Keywords: Direct sowing, Drum seeding, Paddy, Water shortage

Background Information

In Kallakurichi district, farmers are cultivating Paddy in an area of 60,000 ha in Kar, Samba, Late samba and Navarai season. In this district 99% of the farmers practicing broadcasting of paddy seed in "Kar" season (May-July) to raise paddy nursery, which resulted in low productivity due to water shortage during transplanting of paddy seedlings. This might be occurred due to deficit rainfall noticed in the previous years', thus lead to reduction of groundwater table in the water sources. For paddy, both nursery as well as main field requires huge amount of water for proper growth and development. In addition to that the labour costs involved from nursery to harvest also more in paddy when compared to other crops. Water shortage leads to delay of transplanting time and use of over aged seedlings with limited tillering capacity. Farmers' faced these adverse situations during Kar and Samba season of paddy cultivation in Kallakurichi district. Keeping this in view, KVK, Villupuram II has introduced and popularized the drum seeding technology of paddy by using

TNAU paddy drum seeder for minimum seed rate with less water requirement is one of the feasible option to farmers of this district.

Institutional Involvement/ Intervention

KVK imparted training on Drum seeding techniques in Paddy to farmers both on and off campus mode since 2019. KVK also conducted Front Line Demonstration on Paddy with drum seeding technology in an area of 20 acres with ICM practices. Then Frequent Farm advisory services offered. Further the drum seeder was supplied to the needy farmer on custom hiring mode (Figure 1). In addition to that, this technology have also popularized in convergence mode with Department of Agriculture.

Drum Seeding Technology

This technique involves direct seeding of pre-germinated paddy seeds in drums made up of fibre materials to sow the seeds evenly in lines spaced at 20 cm apart in puddled and levelled fields (Figure 2). About 35 to 40 kg paddy seed

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ha⁻¹ is soaked overnight in water and allowed to sprout. The sprouted seed is shade dried 30 minutes before sowing for even distribution of seeds through holes of drum seeder. Ensure that the field should be wet and drained out the excess water for easy and efficient seeding by drum seeder. Well drained and shade dried sprouted seeds are filled with 3/4th of the drum seeder and it should be slowly moved across the field. Based on the number of drums which is usually 4 to 8 number/ drum seeder, in one pass; normally 8 to 16 lines were sown. Withholding of irrigation up to 3 days after sowing facilitates easy rooting. For better weed control, water level in the field may be raised depends upon the growth of the seedlings. Intermittent irrigation is must till the panicle initiation stage



Figure 1: Supply of paddy drum seeder to farmers by KVK, Kallakurichi



Figure 2: Sowing of pre-germinated paddy seed by the farmers through drum seeder at Kallakurichi district

Direct sowing in one ha area with paddy drum seeder could be completed in 5 to 6 hours by three labours when compared to transplanting method, requires 30 to 40 labours. This technique not only saves seed, water, labour involvement but also improves the productivity per unit area with early maturity by 7-10 days. Further the cost of cultivation also reduced towards raising of paddy nursery and transplanting of seedlings.

Results

The yield performance of paddy through direct seeding by using paddy drum seeder vs. transplanting was compared in farmer’s field. The yield enhancement (6-42%) by direct seeding was noticed in farmers field (Table 1). The result is in accordance with the findings of Malleswara Rao *et al.* (2014) and Roma Devi *et al.* (2020). All the beneficiary farmers were satisfied with the performance of drum seeder and most of the farmers realized better yield of paddy in direct seeding (Table 1).

Totally farmers could spend Rs. 16,100.00 acre⁻¹ for cultivation of paddy under drum seeding method (Table 2) and realized the net income of Rs. 40,900.00. Therefore, farmer could save an amount of Rs. 10,200.00 than transplanting method of paddy cultivation (Table 2). The Cost: Benefit ratio also high (1:3.5) in case of drum seeding method.

Outcomes

Because of this intervention the farmers could reduce the expenditure up to 38% and increased the net income up to 36.4%. Then the crop was ready to harvest seven to ten days earlier than the farmers practice. Further line sowing of paddy by this technology improved the aeration in field, good tillering ability thus increase the yield potential of the plant and also managed the weed problem very easily. Hence Paddy drum seeder proved that it is one of the best technology in the district towards reduced seed rate as well as manpower in cultivation of paddy.

Table 1: Performance of direct seeding by Drum seeding vs. Transplanting method in Paddy

Sl. No.	Farmer’s Name and Address	Variety	Area (acre)	Yield (kg acre ⁻¹) by drum seeding method	Yield (kg acre ⁻¹) by transplanting method	% gain in yield
1	K. Balasubramani Poondi village	ADT 45	1.5	35 bags (2,695 kg)	20 bags (1,540 kg)	42.8
2	R. Kavitha Kalasamuthiram	Sivan samba	1	30 bags (2,310 kg)	27 bags (2,079 kg)	10
3	K. Prahadeeswaran Elavadi	Co51	1.5	48 bags (3,696 kg)	32 bags (2,464 kg)	33
4	R. Kumarasay Deviyakurichi	BPT	1	35 bags (2,695 kg)	30 bags (2,310 kg)	14.3
5	A. Backiyaraj Vasudevanallur	BPT	1.7	77 bags (5,929 kg)	60 bags (4,620 kg)	22.0
6	M. Rajendran Vasudevanallur	Seeraga samba	30 cent	8 bags (616 kg)	3 bags (231 kg)	6.25
7	V. Sadayappan Kural	White ponni	1 acre	20 bags (1,540 kg)	16 bags (1,232 kg)	20.0

Table 2: Cost of cultivation (Rs. acre⁻¹)

Sl. No.	Particulars	Details/ Quantity	Rate (Rs.)	Cost by drum seeding technology (Rs.)	Cost by transplanting method (Rs. acre ⁻¹)	Net saving over transplanting
1	Land preparation	3 times	2,000.00 time ⁻¹	6,000.00	6,000.00	Nil
2	Seed cost (kg acre ⁻¹)	10 kg for drum seeding for direct sowing of paddy & 30 kg for nursery raising for transplanting of paddy seedlings	50.00 kg ⁻¹	500.00	1,500.00	1,000.00
3	Seedling raising	Land preparation: 2 labours	-	-	1,500.00	1,500.00
4	Puddling	Fixed (Rs. acre ⁻¹)	-	4,000.00	4,000.00	Nil
5	Irrigation	1 irrigation within 24 hrs of seeding and next one during puddling in case of transplanting	-	1,700.00	3,500.00	1,800.00
6	Machine operation	L female labour	300.00 acre ⁻¹	300.00	-	Nil
7	Transplanting	15 labours	300.00 acre ⁻¹	-	4,500.00	4,500.00
8	Weeding	Machine + Manual		Cono weeding, 600.00	Manual weeding, 2,000.00	1,400.00
9	Harvesting	1.5 hrs acre ⁻¹	3,000.00 acre ⁻¹	3,000.00	3,000.00	Nil
	Total expenditure			16,100.00	26,000.00	
	Net saving					10,200.00
10	Yield	34 bags @ 78 kg bag ⁻¹ @ Rs. 1,500.00 bag ⁻¹			28 bags	-
	Gross Income (Rs.)			57,000.00	42,000.00	-
	Net Income (Rs.)			40,900.00	26,000.00	-
	B:C ratio			3.54	1.62	-

Conclusion

As a result of the KVK intervention, now 167 farmers at Chinnasalem and Kallakurichi block cultivated paddy under drum seeding technology in Kar season in an area of 276 acres. Hence cultivation of Paddy under drum seeding technology proved as an income generating activity for paddy farmers.

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