

ATAL BHUJAL YOJANA, HARYANA

DIRECT SEEDED RICE (DSR): THE GAME CHANGER IN SIRSA

Prelude: Haryana is not traditional paddy growing area, while paddy Cultivation in the irrigated area of Haryana was introduced in the 1970s following the Green Revolution. Almost the entire land under rice cultivation in Haryana is irrigated. Farmers are using transplanting seedling/ Conventional method which are water intensive. As it is a Kharif crop which requires high temperature, (above 25°C) and high humidity with annual rainfall above 100 cm. In the areas of less rainfall, it is grown with the help of irrigation.

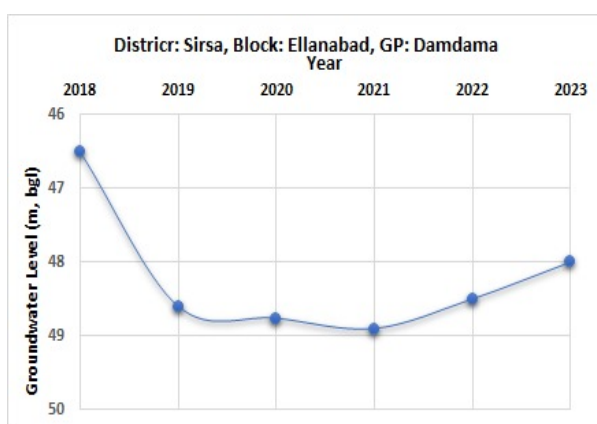
Sirsa is one of the districts in Haryana adjoining to Punjab. The major crops grown in this region are Paddy, Wheat, Cotton and Mustard. The current water level in Sirsa is 113 feet with a declining trend of 3.6 feet each year. Due to this declining trend, the two over-exploited blocks of Sirsa i.e. Rania and Ellanabad have been taken up under Atal Bhujal Yojana. However, due to persistent efforts of State Government, various demand and supply side measures are being promoted in these 2 blocks to arrest the declining trend of groundwater. It includes promotion of Direct Seeding of Rice, Crop Diversification, Micro Irrigation and Rejuvenation of Ponds, which have proved to be crucial in behavior change of farmers and community.

Initially, it was observed that farmers in this region were cultivating paddy with the help of flood irrigation methods, which was consuming a huge quantity of groundwater. Moreover, the region has no canal connectivity for irrigation and receives less rainfall (150-200 mm) in the monsoon season, thus farmers are dependent on groundwater extraction for cultivation of crops and earning their living for families. Other challenges for paddy cultivation using conventional method include preparation of nursery and transplanting the sapling in main field. This process is quite tedious, time consuming, water consuming and includes a huge amount of labour cost. During this whole process, approx. 3500-4000 litre of groundwater is consumed for production of 1 kg of rice. Since, one acre of land produces approx. 24-25 Quintal of rice, thus, it consumes 84 Lac litre or 0.0084 MCM. Moreover, the shadow price of paddy has been calculated as 0.85 paisa per litre, thus, the total price for 84 Lac litre comes to be Rs. 71.40 Lacs for production of 24-25 Quintal of Rice.

In order to address the aforesaid problem, Atal Bhujal Yojana has proved to be beneficiary to overcome the problem of declining groundwater with active involvement of community. In Haryana, Atal Bhujal Yojana is being implemented by Irrigation & Water Resources Department, Haryana with active coordination of water related line departments. It involves implementation of various demand & supply side interventions along with capacity building & training of various stakeholders at community and management level. Resultantly, the active role played by Irrigation & Water Resources Department along with Agriculture & Farmer Welfare Department have promoted the use of Direct Seeding of Rice (DSR) as an effective alternative method for Paddy Cultivation. DSR has proved to have multiple benefits like water saving upto 20-25% as compared to flood irrigation along with weed management and reduced cost of cultivation, as there is no need of transplanting the saplings and puddling.

In this context, various field demonstrations were done by KVKs, Agriculture Department and PMU staff involved in Atal Bhujal Yojana. During the demonstrations, various queries of farmers were addressed which made them convinced to adopt the DSR in their fields. Initially, DSR was adopted by fewer farmers in less area of land, but after the surprised results in terms of production, water saving and cost of cultivation, other farmers started to adopt this practice. A lot of IEC activities along with awareness strategy worked well in District Sirsa, which not only changed the behavior of farmers but also motivated them to convince their fellow farmers to adopt DSR in their farms.

One of such motivated farmer is Sh. Lakhjeet Singh of Village Damdama of Ellenabad Block, Sirsa who served as an inspiring example for other farmers in their village and their whole district. He adopted and led the DSR practice in his farm of 20 Acres, which slowly led to 100% adoption of DSR in roughly 4450 Acre of land in Village Damadama. This is a big success on how communities can come together to address groundwater challenges and embrace sustainable agricultural practices. The decision to adopt the Direct Seeded Rice (DSR) method not only proved to have several potential benefits for the farmers but it also improve the declining trend of groundwater as referred below:



Sh. Lakhjeet Singh share from his experience that DSR reduces the water consumption significantly, as farmers no longer needed standing water in their fields for weeks. This led to better water availability in the region and reduced strain on irrigation resources. The DSR method expedited the cropping cycle, allowing farmers to cultivate additional crops during the previously fallow period. This led to increased farm productivity and improved food security in the community. With no transplanting required, DSR reduced labor requirements, addressing the issue of labor shortage in their region. Additionally, farmers saved on labor costs and expenses associated with seedbed preparation and nursery management. Farmers observed improved soil health, increased organic matter content, and a decline in the use of chemical fertilizers and pesticides. Lakhjeet also described the benefit of DSR scheme being implemented by Agriculture department under Government of Haryana, through which, Farmers get an incentive of Rs. 4000/- per acre and there is no limit of area of DSR adoption for the interested farmers. Moreover, it has been observed that DSR has a benefit of Rs. 12,880/- as per the Benefit Cost Ratio - (Per Acre) as compared with Conventional Method:

Benefit Cost Ratio - (Per Acre)					
		Conventional		Direct Seeded Rice	
SN	Particulars	Paddy		Paddy	
		UoM	Amount (Rs)	UoM	Amount (Rs)
A	Input Cost				
I	Procurement of Seed	6kg @ Rs 260 / kg	1560	8kg @ Rs 260 / kg	2080
II	Nursery Preparation	including Labour	600	NA	0.00
	Sub-total		2160		2080
B	Land Preparation & Planting				
I	Ploughing & Puddling		6000	Ploughing	2200
II	Transplanting / Sowing		5000	NA	1800
	Sub-total		11000		4000
C	Fertilizer & Manure (including Labour)				
I	DAP	01 bag @ Rs 1350/-	1350	01 bag @ Rs 1350/-	1350
II	Urea	02 bag @ RS 380/bag	760	02 bag @ RS 380/bag	760
III	Potash	35 kg @ Rs 17/kg	595	35 kg @ Rs 17/kg	595
IV.	Zinc	10 kg @ Rs 80/kg	800	10 kg @ Rs 80/kg	800
V.	Labour		500		500
	Sub-total		4005		4005
D	Plant Protection				
I.	Insecticides & Pesticide		2000		2000
II.	Weeding	Herbicide (Nominee gold+Saathi)	725		725
III	Labour		300		300

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IV.	Irrigation Charges		3000		1200
	Sub-total		6025		4225
E.	Harvesting & Transportation				
I.	Harvesting	Combine harvester	2000		2000
II.	Transportation / Threshing	Trolley	2200	Trolley	2200
	Sub-total		4200		4200
	Total Expenditure		27390		18510
	Average yield in Qtl.	24 Qtl @ Rs.3000		24 Qtl @ Rs. 3000	
	Gross Income		72,000		72,000
	Incentive money through MPMV		0.00		4,000
	Net Income		44,610		53,490
	Net income + Incentive money through MPMV				57,490
	Income Difference			12880	

Conclusion:

To conclude, it is rightly said that 'Where there is Will, there is a Way'. The success story of Lakhjeet Singh underscores the strong Will and his transformative power of motivating others to adopt the DSR method for paddy cultivation. Resultantly, the effective team building efforts by Irrigation and Agriculture Department have led to bring the behavior change in the farmers and led the community to take the way forward in new techniques of irrigation. Since Paddy is one of the main cash crop for the poor farmers, which has a fixed MSP by the Government, thus, paddy cultivation can not be stopped by the farmers but its way of cultivation can be changed, which in turn will reduce the groundwater extraction and cost of cultivation, thus adding multiple benefits to the farmers. Importantly, the thriving agricultural practices like DSR, Micro Irrigation have inspired neighboring communities to explore cultivation of water guzzling crops like Rice and Wheat with reduced demand of water, fostering a wave of positive change in the region's rice farming landscape due to effective implementation of Atal Bhujal Yojana.