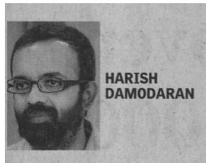


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THE HINDU BUSINESS LINE

Seeding change



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► *MNCs have been more proactive in responding to labour shortages and other emerging farming-related concerns.*

Ten years ago – actually, even less – nobody would have believed there was a serious market in India for herbicides, sugarcane harvesters or milking machines. Farm mechanisation was largely limited to tractors and, to some extent, combines used for harvesting wheat and paddy in the northern Green Revolution belt.

But today, herbicides have displaced insecticides as the fastest-growing segment within plant-protection chemicals, while the Maharashtra and Gujarat governments are extending up to 50 per cent subsidy on cane harvesters and milking machines. Even tractor sales, which averaged 2.1-2.2 lakh units annually till about 2004-05, have zoomed to almost five lakh now.

All this is a result of labour shortages in the countryside. Earlier, these were sporadic or confined to certain pockets; they did not really pose an intractable problem.

But that has changed with a growing economy opening up alternative employment avenues in industry, construction and other sectors, besides rural families increasingly wanting to see their children spend more time in school.

In the process, the opportunity cost of working on the farms – be it through hired hands or unpaid family labour – has gone up, making shortages more structural and widespread.

in harvesting or transplanting. Maharashtra's cotton growers now list manual weeding as their No. 1 expense item, ahead of even picking. Equally unthinkable is the struggle to get labour to graze, feed, clean or milk animals – prompting the dairy cooperative, Amul, to offer a 25 per cent subsidy on milking machines on top of the Gujarat Government's 50 per cent.

The ones making the best out of the situation are the multinationals – from New Holland Fiat (cane harvesters) and DeLaval (milking machines) to Monsanto (which is seeking to introduce transgenic cotton and corn hybrids 'tolerant' to spraying of glyphosate-based herbicides) and Syngenta (with its 'Tegra' technology to grow paddy seedlings in trays containing special growth media and replanting these in farmers' fields by machines).

TRANSPLANTING DYNAMICS

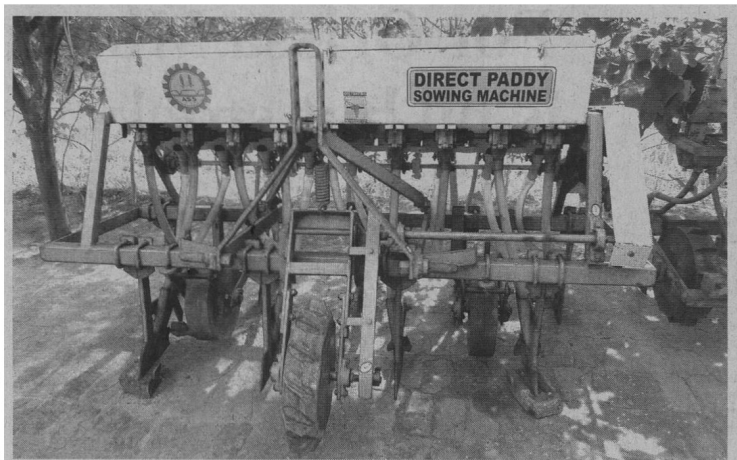
This article focuses on direct seeded rice (DSR), which goes one step ahead of mechanical transplanting – by dispensing with it altogether. Normal paddy cultivation entails preparing a nursery, where the seed is sown and raised into a young plant. This seedling is, then, uprooted and replanted about a month later in the main field. The nursery seedbed size is usually 5-10 per cent of the total area sought to be transplanted.

Transplanting, in turn, is a highly labour-intensive affair. Farmers in Punjab – where the American beverages and snacks giant, PepsiCo, is running a DSR programme – say that it takes 5-6 labourers working for 10 hours to transplant an acre.

"That used to cost me Rs 400-500 an acre three years back. Now, it is Rs 1,500-plus," informed Sarabjit Singh, who, with his three brothers, farms 90 acres at Mouliwala village in Patran block of Patiala.

Labour apart, transplanting – which happens during the peak mid-June summer – also consumes huge amounts of water. For the first 60 days or so, the plant has to be irrigated daily to ensure continuously standing water at a minimum 1.5 inches above the ground.

There is reason for this: What the water in the fields does is prevent germination of weeds by denying them oxygen in submerged conditions.



With growing labour shortage, farming operations are becoming increasingly mechanised.

At the same time, the hollow aerenchyma tissues present in rice allow air to penetrate through to its roots.

Water, in other words, acts as a herbicide for the paddy till the tillering stage is complete. After 60 days, the threat from weeds recedes, obviating the need for daily irrigation. For the water to remain standing, the field – prior to transplanting – has to also be wet-tilled ('puddled') using tractor-drawn disc harrows. It leads to compaction of the lower soil layers and reduced water percolation.

DOING IT DIRECT

In DSR, the above three processes – nursery preparation, puddling and transplantation (whether manual or mechanical) – are done away with. The paddy seeds are, instead, straightaway drilled into the field by a direct sowing machine powered by a normal tractor.

In this case, PepsiCo has designed a machine, improvised from an imported peanut planter and fabricated locally through an Amritsar-based manufacturer, A.S.S. Foundry & Agri Works.

"I tried out DSR first in 2009 on one acre and then next year on 18 acres. Both times, I used their machine free of cost. This year, I bought my own machine for Rs 55,000 and planted 50 acres. In 2012, I plan covering my entire 90 acres under DSR," said Sarabjit Singh.

Given that the DSR ma-

chine can plant an acre within an hour, the labour as well as time saved is significant. "All I need here is 1.5-2 litres of diesel, a driver and helper, costing under Rs 100/acre", he noted. The bigger saving is, however, on water, as DSR basically replaces it with 'real' herbicides.

MAKING UP FOR WATER

In normal transplanting, the most common herbicide is butachlor, used after 2-3 days and costing Rs 120-130 an acre.

DSR, in contrast, is all about having the 'right' weeding solution, which means spending more: Rs 180 on oxadiargyl (a pre-emergent herbicide applied 3-4 days after sowing), Rs 600 on bispyribac sodium (after 15 days), and Rs 325 on fenoxaprop-p-ethyl (after 30 days). These are mostly sold under brands owned by the likes of Bayer CropScience.

So, it is still worth it? Yes, felt Sukhandeep Singh, a 15-acre farmer from Sibian village in Kotkapura block of Faridkot, who has opted for 100 per cent DSR this time.

"With transplanting, there is tension of labour and daily irrigation, when we get electricity for hardly 5-6 hours. Here, I only need to give water every 5-6 days in the first 60 days and every 10 days for the remaining 80-day period", he pointed out.

Adding to it is the problem of water availability itself. "Five years ago, I could draw water from 80 feet below the

ground. Today, it is below 110 feet, for which I have sunk a 260-feet deep submersible pump", observed Sarabjit Singh.

PepsiCo's interest in promoting DSR technology is driven by similar concerns over depleting groundwater table levels – although an added consideration is the felt need to project itself as "the first beverage company to achieve positive water balance".

"We did initial DSR trials at our Jallowal (Jalandhar) R&D farm in 2004 and 2005. Since then, we have taken it to farmers' fields. In 2011, we expect to touch 12,000 acres, including 8,900 in Punjab, 1,500 in Tamil Nadu and 1,300 in Karnataka", said Dr Susheel Sankhyan, General Manager (Agriculture Research) at PepsiCo India.

PepsiCo claims that its DSR interventions helped generate water savings of 7.84 billion litres in 2010. This exceeded the 5.83 billion litres that it used in its bottling and snacks manufacturing facilities in India.

Whether these assertions ("giving back more water than we consume") are true or not, one thing stands clear: Multinationals seem more alive and proactive in responding to the changing dynamics of farming on the ground. The farmer is desperately seeking solutions that the Indian Council of Agricultural Research and other government departments are increasingly being unable to provide.