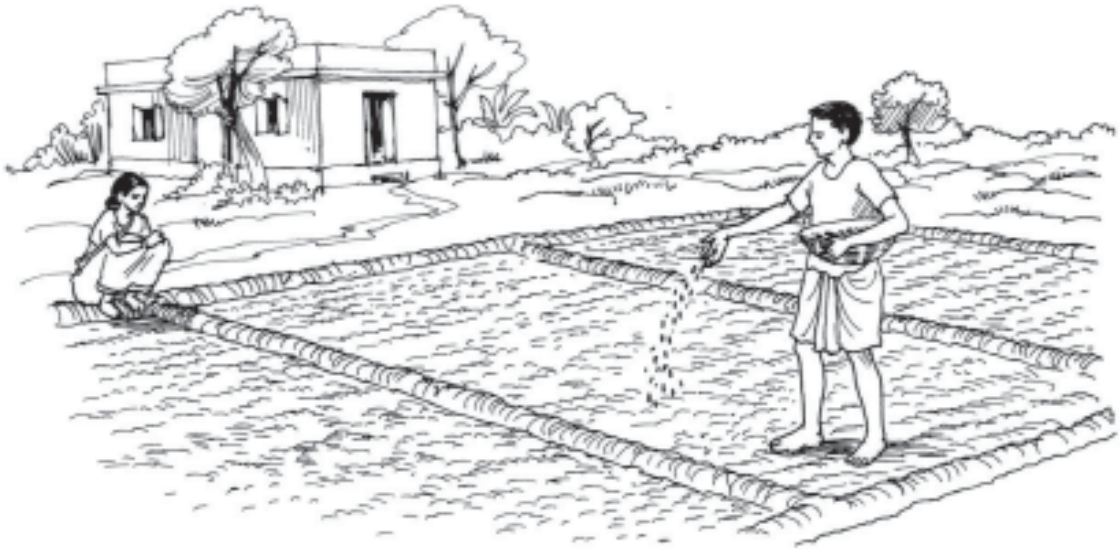
Regional Impact of Simple Changes: Benefits of Conservation-Tillage Technologies

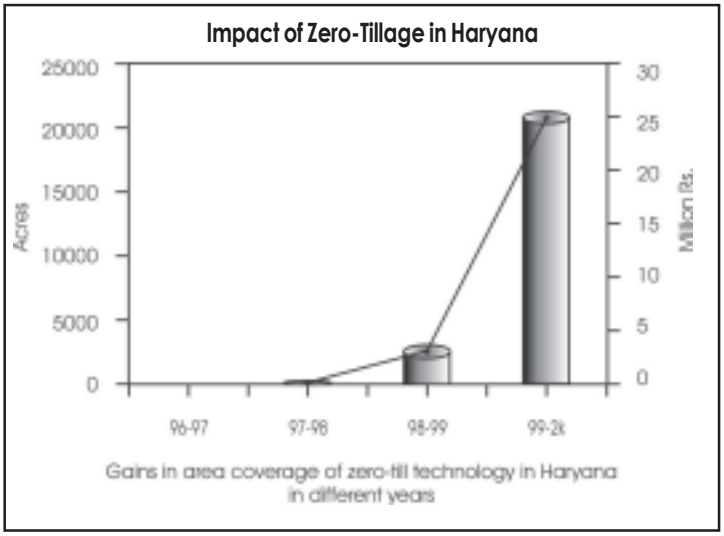


Alternative tillage practices that reduce costs and raise productivity are fast catching up in Haryana, India. The zero-tillage technology adopted in the state has a positive impact on wheat productivity, labor and fuel costs and creation of additional capital.

From only a few acres in 1997-98, zero-tillage technology has spread in Haryana to more than 20000 acres in 1999-2000 with a saving of INR 25 million. Changing to a zero-tillage system on one hectare of land would save 60 liters of diesel and approximately 1 million liters/ha of irrigation water.

Using a conversion factor of 2.6 kg of carbon dioxide per liter of diesel burned, this represents about a quarter ton less emissions of carbon dioxide per hectare, the principal contributor to global warming.

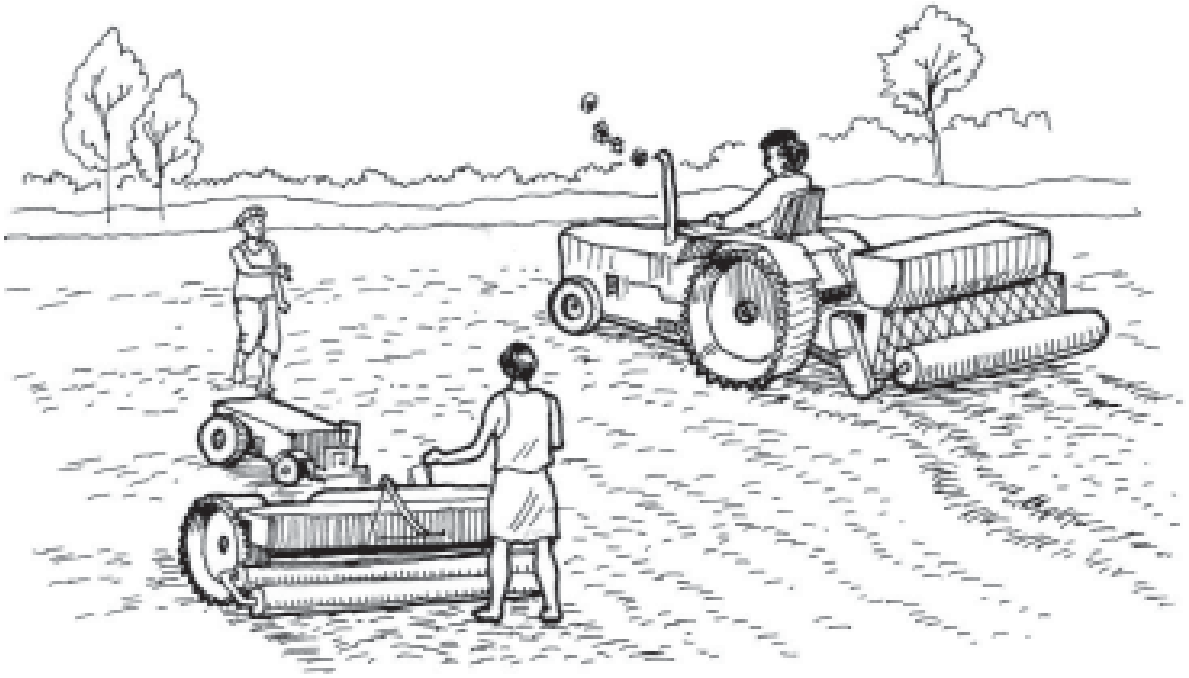
Current land preparation practices for wheat after rice involve as many as 12 tractor passes, and preparatory irrigation for sowing wheat. If zero-tillage would be practiced over an area of 0.5 m ha (1.25 m acres), this would generate a net wealth of nearly INR 170 crores including a saving in foreign exchange of INR 30 crores through reduced fuel consumption.



Projected Area Coverage, Savings in Fuel and Labor and Additional Gains in Productivity of Wheat Under the Special Project of RWC

Year	Acres under zero-tillage	Total net saving (million Rs)	Additional gains in wheat production (t)	Fuel saved (l)	Time saving (days labor)
2001	60,000	80	65,790	1,440,000	3,500,000
2002	180,000	240	197,370	4,320,000	10,500,000
2003	540,000	720	592,110	12,960,000	31,500,000
2004	1,250,000	1,667	1,370,625	30,000,000	72,916,667
Total	2,030,000	2,707	2,225,895	48,720,000	118,416,667

1. Because zero-tillage takes immediate advantage of residue moisture from the previous rice crop, and cuts down on the subsequent irrigation requirements, water use is reduced by about 10 cm-hectares



Benefits of lesser emissions increase dramatically if extended across even a portion of the rice-wheat region's 13.5 million ha.

The scientists of the Rice-Wheat Consortium are working with farmers to cut down on the burning of crop residues, which amount to as much as 10 tons/ha, producing some 13 tons of carbon dioxide. Non-burning on just 2 million ha would reduce the huge flux of yearly CO_2 emissions by 17 million tons.

Adoption of zero-tillage on, say, 5 million ha would represent a saving of 5 billion cubic meters of water each year. That would fill a lake 10 km long, 5 km wide, and 100 m deep. In addition, annual diesel fuel savings would come to 0.5 billion liters —equivalent to a reduction of nearly 1.3 million tons in CO_2 emissions each year.

What Needs to be Done Now?

- Increase the availability of prototypes of implements or tools for achieving more effective tillage for improved crop stands and yield gains.
- Promote greater interaction between public/private sectors and research/extension specialists.
- Work out site-specific crop- and soil-management practices to restore soil productivity.

Adapted from:

Mehla, R. S., J. K. Verma, R. K. Gupta and P. R. Hobbs. 2000. Stagnation in the Productivity of Wheat in the Indo-Gangetic Plains: Zero-till Seed-cum-Fertilizer Drill as an Integrated Option. Rice-Wheat Consortium Paper Series 8. Rice-Wheat Consortium for the Indo-Gangetic Plains, New Delhi, India.

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