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## DIRECT PLANTING: A POTENTIAL MEANS OF RAISING THE PRODUCTIVITY OF DRY LAND AGRICULTURE (TUNISIA)

Recent trials in Tunisia demonstrate the promise of direct seeding. Farmers who implement this system can expect higher incomes, greater profitability, and a more secure natural resource base

Direct seeding is a key aspect of conservation agriculture and a proven intervention for reducing soil erosion, improving soil structure and water retention, and ultimately raising productivity and yields. Recent trials at a site in Tinja, 45 km north of Tunis, demonstrate the gains that can be expected if the practice is extended to dry land regions in Tunisia and beyond.



Direct planting has decreased soil loss rates on fields planted with wheat and faba bean

*Source: "pictures from project managers"*

### Points to Consider

- Navigate financial obstacles: investigate ways to reduce the costs of expensive machinery. Potential strategies could be encouraging farmers to form groups to share costs; providing government subsidies; and using local material and labor to construct more affordable machinery
- Convince farmers: to overcome resistance and skepticism a pro-active approach is needed to demonstrate to farmers the effectiveness of direct planting and the gains they can expect over more traditional and accepted forms of cultivation
- Consider appropriate interventions: results varied according to the topography of a given field. Due consideration should therefore be given to physical

### Purpose

This briefing describes preliminary work on a pilot project in Tunisia that is investigating the efficacy of direct planting techniques. It is aimed at policymakers, donors, and other potential partners and supporters.

### Suitability

This intervention is suited to areas where farmers are willing to adopt conservation agriculture and there are strategies in place to help farmers navigate financial hurdles.

### The project in numbers

- Initiated: since 2000
- Soil loss rates: decreased from 3.2 g/l to 0 g/l for wheat, and 4g/l to 0g/l for faba beans
- Cost of a direct planting seeding machine: 40,000 DNT

### Partners

- ESAK
- INAT
- DG ACTA
- PADAC

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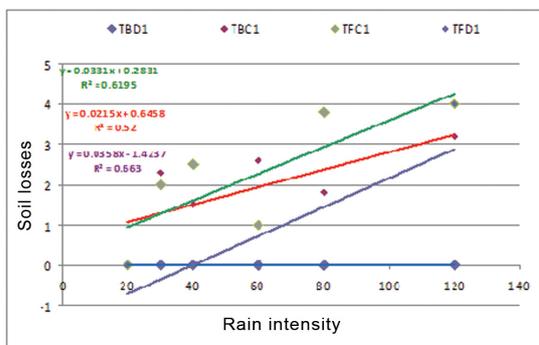


Figure 1: Fields planted with faba beans and wheat experienced significant improvements in soil loss rates on up-hill slopes – from 3.2 g/l to 0 g/l for wheat, and 4g/l to 0g/l for faba beans

Source: "pictures from project managers"

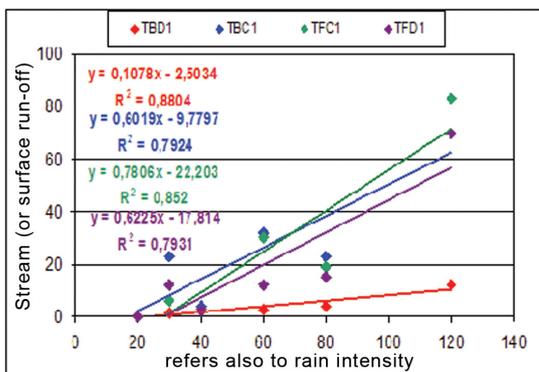


Figure 2: Direct planting also reduced surface run-off on up-hill fields: from 80 to 70 mm on fields planted with faba beans and from 60 to less than 20 mm on fields planted with wheat

Source: "pictures from project managers"

Direct planting - the practice of not plowing farmlands and leaving crop residue in the field for improved soil fertility and water conservation – is used by many farmers in middle and high-income countries. Research has confirmed that the technique brings optimal production at the best cost. In the world’s dryland agro-ecosystems and the marginal farming areas of low-income countries, it can bring direct benefits to smallholder farmers. The practice has the potential to strengthen food security across Central and West Asia, the Middle East and in North and sub-Saharan Africa.

Recent trials at a single site north east of Tunis have demonstrated impressive results, raising the potential for extending this technique across the dry land areas of the Middle East and North Africa (MENA) region. Results demonstrate increases in the amount of organic matter, improved soil structure, and better water retention. Fields planted with faba beans and wheat experienced significant improvements in soil loss rates – from 3.2 g/l to 0 g/l for wheat, and 4g/l to 0g/l for faba beans. Direct planting also reduced surface run-off on up-hill fields: from 80 to 70 mm on fields planted with faba beans and from 60 to less than 20 mm on fields planted with wheat. Impacts were less promising on down-hill fields suggesting that topography is a controlling factor.

In addition to positive impacts on productivity, a reduced need for fertilizer and labor has the potential to lower the costs of production, thereby raising profitability. There are also important environmental gains: lowering the application rates of inorganic fertilizer helped to conserve natural resources and avoid damaging levels of environmental contamination.

### Overcoming skepticism and resistance

Despite the potential of semi-direct sowing and conservation agriculture, there are a number of negative issues associated with the practice that have to be overcome if implementation is to be successful and sustained over the long-term. A key obstacle that often undermines attempts to implement conservation agriculture is the excessive costs of planting machines which can cost up to 25,000 USD. Efforts are therefore required to help farmers overcome this significant financial hurdle.

Fortunately, there are ways to effectively navigate this obstacle, facilitating the technique’s implementation across more extensive swathes of the world’s dry land regions. Subsidies provided by government could help to make the costs of seeders or planting machines more affordable for farmers. The formation of farmer groups could also be encouraged so that farmers are able to share costs. Another promising development are locally-produced planting machines which use local materials and labor and can therefore provide equipment at much lower prices.

Those promoting conservation agriculture may also confront inertia, a lack of awareness, and resistance among farmers who cling to more traditional and accepted forms of cultivation. Overcoming this requires a pro-active approach to convince farmers of the efficacy of semi-direct sowing and the long-term benefits – increased fertility and productivity - that this form of cultivation is capable of generating. This approach could be achieved through trainings – aimed at both farmers and extension workers – and an increased number of trials and demonstrations that clearly show the positive impacts of this system vis-à-vis more traditional forms of cultivation.

