

Practical experiences with no-tillage farming on dryland and irrigated crop production at Moree, NSW

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Livingston Farm at Moree has been involved with the practical application of conservation farming since 1976. Since that time the farm of 4400 ha has been cropped with a stubble mulch tillage system, and we are now, as knowledge permit⁴, eliminating the tillage altogether.

We have for two years operated our 280 ha of furrow irrigated land on a no- tillage winter cereal/summer legume double crop rotation. A full description of the procedure for planting soybeans into cereal stubble has been outlined (1).

So far, we have encountered the following difficulties:

- availability of suitable machinery (seed drills and boom sprays);
- marking systems;
- increased germination of weeds after planting;
- more soil and residue-borne diseases, and, in irrigated land, insect pests;
- spreading of residues, especially of irrigated crops;
- on irrigated land, the difficulty of re-shaping hills and furrows.

We had initial problems with the purchase of a suitable boom spray, and had a unit custom-built to our specifications. For seeding of large dryland areas, we are currently using a chisel plow with pneumatic seeder, narrow points, and farm-made press wheels. We are also evaluating a N American deep furrow drill for this purpose. To overcome the problem of planting rowcrops into cereal residue, a N American no-tillage slot planter has been imported, whilst a 3-point mounted no-tillage drill for irrigated planting of cereals or close- drilled crops into residue is being developed.

Marking systems for very large fields remain a problem, whilst post-plant weed control has become more critical. Pests and diseases will require special treatment, both by direct control measures, as well as changes in the rotational strategy adopted. To spread residues evenly, we insist a straw chopper be fitted to our harvester and have fitted Canadian modifications to it to give an even better spread of residue (2). The re-shaping of hills and furrows on irrigated land is done at the planting of each crop. However at times this is not done well, owing to uneven soil and residues. Irrigated fields have a major tillage occasionally when land levelling is required.

Some of the advantages have been:

- greatly reduced time spent in the field;
- greatly reduced energy requirement;
- lower capital investment;
- better soil moisture status at planting;
- less wear and tear on farm machinery;
- better watering of irrigated land, owing to slower advance down furrows;
- 7. more efficient irrigation water use, with cooler soil and lower evaporation.

Yields on our property have been equal to or better than those of the conventional system, provided crop establishment was good and the pests and weeds controlled. Crops for which herbicides are available and which readily fit into our farming system of no-tillage in dryland and irrigated areas include wheat, barley, triticale, soybean, mungbean, corn, sorghum.

1. Esdaile, R.J. 1980. Aust. Cotton Grower 2. 2:58-60.

2. Reed, W.B. and Bigsby, F.W. 1978. ASAE Paper 78-1566.

