Low cost seeder conversions for no-till farming

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No-till farming is a relatively new concept for crop production in Australian agriculture. The development of sophisticated direct drill seeders for handling heavy trash conditions has enabled the successful establishment of many crops using this technique.

Research has clearly demonstrated that the short term advantages of a no- till farming system are better soil moisture conservation, earlier and extended sowing time and reduced labour inputs. The long term advantages of a no-till farming system are reduced soil erosion, increased soil organic matter, improved soil structure and substantial increases in crop yield (1). The high cost of specialised seeding equipment precludes many farmers from assessing the advantages of conservation farming on a small scale on their properties.

A series of low cost conversions for sowing equipment have been developed at the Agricultural Research Station, Cowra.

Combines with a floating undercarriage.

The floating undercarriages and tines on most combines are of insufficient strength to allow penetration of the tines into a wide range of soil conditions and soil moisture levels. The replacement of this undercarriage with a rigid frame fitted with a coulter, rigid tine assembly overcomes the problem and allows the machine to cut easily through trash.

Combines with a rigid frame undercarriage.

The tines on combines with rigid frame undercarriages have a break away force of at least 55kg. This force is usually sufficient to allow for penetration of the digging point into most soil types and moisture conditions. A limitation of most rigid frame combines is their inability to handle heavy trash conditions when direct drilling. This problem can be easily overcome by replacing the working tines with coulters. The coulters are fitted onto the spring release clamps using the same attachment bolts as for tines. Narrow digging points are fitted to the sowing tines for reduced soil disturbance.

c) Airseeder-scarifier systems.

The greater number of sowing bars and higher breakaway pressure of scarifier tines allows coulters to be fitted directly to the tine shanks to improve the trash handling ability of air seeder systems. The higher breakaway pressure of the spring release mechanism ensures that the coulter will not force the digging point of the tyne out of the ground.

These relatively cheap conversions do not require any major structural changes to the frames of the seeders. The conversions also have the added advantage of allowing farmers to interchange between a conventional full soil disturbance and a direct drill minimum disturbance undercarriage with excellent trash handling ability.

1. Packer, I.J., Hamilton, G.J., and White, I. (1984). Conservation tillage practices conserve soil and improve soil physical conditions. J. Soil Cons. N.S.W. 40: 78-87.