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Convert existing farm equipment to plant break crops

This fact sheet details a simple method to convert your current farm equipment to be able to plant break crops. We have used this method as it is economical, quick and easy to install.

1 Source an air seeder

There are many different types of air seeders with costs starting from $3,500. The basic units can be more difficult to calibrate and may be less accurate during application. The more expensive units are much more accurate and generally have a more robust blower/fan delivery system. All units have their benefits and disadvantages, and these should be considered prior to purchase.

Basic unit:

Advantages	*Disadvantages*
• Cheap (<$3,500) • Compact and light • Easy to transport and move on and off equipment • Easy set up on equipment	• Can be difficult to accurately calibrate • Smaller volume of seed able to be stored

More robust units:

Advantages	*Disadvantages*
• Easier to calibrate • More accuracy with planting rate • Less chance of hose blockages • Able to plant accurately on slopes	• More expensive to purchase • Usually heavier and more time consuming to mount on equipment

2 Attach the air seeder on an implement

Air seeders can be attached to numerous types of equipment including wavy disc, rotary hoe, bed renovator, power harrow, weeder rake, fertiliser box, and even a cane harvester. We have found the best results from attaching the air seeder to an implement that works the soil rather than spreading seed on top of the soil to work in later.

The basic unit we have been using (yellow air seeder in photo - top photo on right) is mounted by simply welding a 30mm square hollow box section to the implement, and the air seeder slides onto this attachment. More robust units require a bracket for sturdier construction.

3 Install connection hose and spreading disc

The distribution hoses need to be installed from the air seeder unit to the delivery position. Consideration needs to be taken on where the seeds will be distributed in relation to the implement.

For example, on a wavy disc, the seed may be distributed before the discs or between the disc assemblies (gangs). The spreader discs are optional and allow the seed to be distributed more evenly over a larger area rather than just out of the end of the hose.

4 Calibrate the air seeder unit

It is essential to calibrate the air seeder unit to ensure that the correct seeding rate is applied and to check that each hose is distributing a similar amount of seed. Most air seeders will come with a calibration table which can be used as your starting point. One method of calibration includes:

1. Place some seed in the air seeder
2. Tie bags at the end of each hose to collect seed from each outlet
3. With the unit engaged, drive the implement for 100 metres
4. Remove the bags and weigh individually to determine the accuracy across the unit, then add the individual weight together to get a total weight of seed
5. Measure the width being planted using this implement
6. Use the following formula:

10,000 x kg of seed weighed = kg seed planted per hectare

100m distance travelled x planting width

For example, 0.61kg of seed collected from a 3 row wavy disc (3 x 1.6 row spacing = 4.8m planting width) over a distance of 100m:

$$\frac{10{,}000 \times 0.61}{100 \times 4.8} = 12.7 \text{ kg seed/hectare}$$

5 Troubleshooting

Some learnings from using this equipment include:

- Successful break crops were achieved using the air seeder on a variety of implements. This positive outcome may partly be due to the type of seed being planted. For instance, crops like soybean can be more sensitive to planting depth and spacing, whereas other legumes like sunn hemp seem to grow regardless of precision planting. Select the correct species for the planting method.
- With the basic unit, ensure the 30mm box is located in a solid position to minimise vibrations which can impact on seeding flow rate. For instance, in the photo to the right you can see the air seeder is not stable enough to avoid vibrations from the rotary hoe, which will shake the seed out faster than intended.

- If planting a multi species break crop, there will be different sized seed. There has been some concern the seeds would settle out in the hopper, however this has not been a problem during this study. Paddocks have been successfully planted with a good distribution of seed species across the whole block.
- Take time to set the distribution hoses up to ensure there are no kinks or hollows which will stop the flow of seed. Aim for a reasonably straight distribution from the air seeder unit to the outlet. This point is especially important for the basic air seeders as the more robust units seem to overcome this issue with a more powerful blower/fan unit.
- As with all crops, consider the weather conditions. Planting any crop right before heavy rain, or prolonged periods of no rain, will not lead to positive results. Many times this failure is attributed to the seed or the planting unit when it is simply a timing issue.
- The air seeder units are capable of distributing inoculated seed. As with all planters, having too much water mixed in with the peat or liquid inoculant will result in blocked hoses. Follow the volumes recommended on the inoculant packaging and, while it never looks like you have enough water with the inoculant to cover the seeds, don't be tempted to add more.
- If possible, we recommend using an air seeder unit before purchase. This will help you determine the right size and type of unit for your needs.

The Innovative Multispecies Project is funded by the partnership between the Australian Government's Reef Trust and the Great Barrier Reef Foundation, and Farmacist.

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