

## Rotary spading machine



Rotary spaders use sets of winged blades (inset) to loosen and mix the soil profile down to 35-40cm depth (Image: Grocock Soil Improvement)

### Key points:

- Rotating spades that are PTO driven loosen and mix the soil profile down to 35-40cm followed by a consolidation of the profile with a tyred wheel gang.
- Spading is conducted at typical a speed of 5-6 km/h, at work rates up to 2.5ha/hr and at a cost often in the range of \$150-170/ha.
- The surface condition left after spading is bare and prone to soil erosion risks. Where there is soil moisture in the profile, the option to 'spade and sow' in one pass minimises the window of soil erosion risk and avoids the challenge of seeding a crop into a soft seedbed.
- While the mixing of a surface applied amendment shows a concentration peak in the 50-150mm depth layer, the uniformity of mixing down the profile is best at slower forward speeds (3-4km/h) and especially after dual pass spading, conducted in opposite direction offset by half a blade spacing or at an angle.
- The soil mixing by spading is primarily a top-down mixing process of the surface layer but also involves a bottom-up mixing process of the lower layers.
- Spading is not recommended in stony paddocks or with residual stumps. The tractor power requirement significantly increases with spading depth and forward speed.
- Field testing has shown some effectiveness at diluting water repellent surface soil and partially burying resistant weed seeds.
- Rotary spaders can be used to incorporate lime to treat acidity but be mindful that acidic sub-surface layers may be brought to the surface and may need additional lime applications. Assess soil pH after amelioration.

### Further information:

GRDC factsheet:

<https://grdc.com.au/resources-and-publications/all-publications/factsheets/2022/soil-mixing-by-spading-national>

