Deep Ripper

Curved slanted tines minimise surface disturbance and benefit from slightly lower draft. Image: Williamson-Agri

Narrow shank ripper tines rely on the bottom foot characteristics to loosen the soil profile (Image: Tilco-Ag-Systems)

Key points:

- Low disturbance narrow shank ripper tines loosen soil without mixing, from the primary action of the bottom foot. Low rake angle, sufficient width and lift height are necessary to loosen soil to full ripping depth.
- The ripper should operate slightly below the depth of excessive soil strength, identified by a cone penetrometer probe. Check soil loosening half-way between ripper tines and increase depth if required.
- Deep ripping should be conducted with sufficient soil moisture within the profile to minimise clod size, tine wear and draft requirement. Wet sandy soils significantly reduce the area of loosened furrow profile and increase the undisturbed dome between rip-lines.
- There is a critical depth below which tines fail to lift and loosen soil, instead resulting in slotting, smearing and compaction at depth. This must always be avoided. A lack of visible soil upheave during ripping is an indicator of tynes operating below their critical depth.
- Adding wings to narrow shank ripper tynes improves efficiency of deep loosening but increases surface disturbance. Specific wing designs and tyne layouts can achieve level lift and flat surface finish.
- Deep ripping is typically conducted at a speed in the range of 5-6 km/h, with example work rates for a 6m wide ripper of 2.7-3.2ha/hr and at possible cost of $80-110/ha, function of drawbar power and depth.
- Deep ripping into flattened stubble and creeper weeds may require cutting coulters to control catching and dragging.

Further information:

GRDC factsheet:

https://grdc.com.au/resources-and-publications/all-publications/factsheets/2022/ripping-technology-national-fact-sheet

Soil Hub