



DESIGN AND WEAR OF PASTURE SOWING POINTS

Howard Caldwell, Woolbrook Engineering Pty Ltd, Cavendish

Our decision to attempt direct drilling of pasture arose after many attempts to sow and maintain pastures in the conventional manner. We were concerned about damage to soil structure arising after many cultivations to eliminate weed competition.

During a visit to New Zealand approximately 10 years ago we examined and purchased a specialist direct drill machine designed for NZ conditions and fitted with "Baker" boots (inverted "T" type soil openers). On arrival and subsequent use on our property we found it necessary to alter the machine in various ways to cope with the differing conditions in Australia.

WEAR

One of our main concerns was the wear factor on the blades. Over the next sowing season we designed a blade, trying to eliminate as much wear as possible. The size of the blade has a definite bearing on wear. Our blade has been reduced so there is as little soil contact as possible. It is shaped so that soil builds up on either side and is held there as it passes through the ground, giving soil to soil contact reducing friction.

Tungsten is now applied as standard to the face of the blade. This tungsten is specially compounded in Australia to withstand friction wear and a considerable amount of hammering and impact when sowing in stony country.

An optional extra is to also have tungsten applied to the wings of the blades for direct drilling into areas of hard wearing country such as sandy granite type soils and soils with a low clay content.

MAINTENANCE

Close attention must be paid to maintenance on the blade. Hard facing is applied as standard on the leading edge of the blade above the tungsten and along the wings and underside of blade. We suggest that extra hard facing be applied in two perpendicular runs approximately 30 - 40 mm long on either side of blade between toe and commencement of wing (see Fig 1).

Maintenance should be attended to constantly throughout the sowing season and hardfacing re-done before it is all worn away. The advantage of the tungsten is that blade life is at least quadrupled and continual point removal and hardfacing is almost eliminated.

SOWING

When direct drilling care must be taken to ensure that the seed is not sown. We look for an open slot so that we can control tilth cover over seed within this furrow. THE DEPTH OF SEED SOWN IS MEASURED BY TILTH COVER OVER SEED, REGARDLESS OF THE DEPTH OF THE FURROW. Due to less than perfect depth control and as many Australian soils have low clay content it is not possible and therefore not desirable to create a flat bottomed inverted "T" furrow. This is because the sides of the furrow will close in or collapse on all furrows that are too deep and although seed will germinate it will not have enough energy to sustain survival in its journey to the surface.

Our aim has been to grow pasture as a cropping man grows crop, lovely thick swards of green grass --- and with careful attention to detail and a little help from 'the MAN up above in the rain making department' you can too.

To overcome these problems our modified "T" slot is more open and the bottom of the slot is "V" shaped. This is achieved by pitching the point forward so that the leading tungsten tip is 8 mm lower than the rear of the blade. Average depth is set at "1st knuckle of your index finger".

Figure 1
The Tungsten-faced point

