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Recommendations for...

THE ESTABLISHMENT OF HARBINGER MEDIC IN THE NORTHERN WHEATBELT

Harbinger is an early-maturing medic that has met with success on some soil types, especially in the northern wheatbelt. Similar to Cyprus barrel medic but best suited to different soil types, harbinger adds to the range of pasture legumes available for sowing in under 16 in. annual rainfall areas.

By R. J. PARKIN, B.Sc. (Agric.), Agricultural Adviser, Geraldton

HARBINGER medic has come into prominence in the past two or three years and has received much publicity, especially in the Geraldton district. It has been tested on a wide variety of soil types in this and other districts and has been outstanding on some soils but poor on others.

Soil types suitable for harbinger

Harbinger medic has been very successful on the so-called deep yellow sands. These soils support grevillea or native pine, mallee vegetation in some areas, and banksia and low scrub in others.

These soils cover at least a million acres of the Geraldton district in the Ajana, Binnu, Yuna, Mullewa, Eradu and Northampton areas. Generally, the soils are fairly coarse grained; they are yellow on the surface and deepen in colour and loaminess with depth, but a clay layer is not usually present within 3 ft. 6 in. of the surface.

These soils must not be confused with the deep white sands which support typically Christmas trees, wattle species and zamia palm in some areas (such as Allanooka and Mingenew) or blackbutt and Christmas trees (at West Arrino and Eneabba). Such soils would not favour the establishment of harbinger medic. In fact most legumes apart from lucerne or lupins do poorly on these soils, partly because of potash deficiency.

On coastal limestone sandy soils (such as at Geraldton and west Northampton) or the coastal black wattle calcareous soils (such as at Port Gregory, Greenough, Dongara and Cliff Head) harbinger medic could be expected to grow exceptionally well.

On red sandy loam (York gum—mallee vegetation) such as is found in the Yuna, Mullewa, Morawa and Perenjori districts, harbinger can be successfully established. However, such soils must be well drained and not subject to waterlogging. Even so, it is doubtful whether it is of any advantage over Cyprus barrel medic or Geraldton subterranean clover on this soil type.

Powdery yellow gravelly soils which support tamar (Casuarina campestris) and wodjil (Acacia spp.) or mallee vegetation such as found in the Canna-Gutha, Perenjori, Wilroy areas also will grow harbinger medic, but seldom prolifically. It establishes less readily than other species such as Geraldton sub. clover on these soils. The same applies to the
gravelly breakaway country which outcrops in gravel or consists of white sand overlying gravel or clay within 2 ft. 6 in. of the surface. These soils support either low scrub, mallee, blackboy or parrot bush (Dryandra spp.) such as in the Northampton, Irwin, Allanooka, Walkaway, Mingenew and Eneabba areas.

The areas where harbinger is recommended are shown on the map below.

**ESTABLISHMENT METHODS**

**Seed treatment**

It is essential in all sowings of harbinger medic on yellow sandplain, that the seed be inoculated with the medic group of inoculum and lime pelleted according to the method outlined in Department of Agriculture Bulletin No. 3213. The only circumstance in which inoculation and lime pelleting is not necessary will be either on old trefoil country sometimes found on the York gum red loams, or on country which has previously supported sown medic pastures such as Commercial Barrel medic pastures on the coastal black wattle soils.

**Rate of seeding**

This is obviously affected by numerous factors such as growing period, soil type, use of cover crops, weeds and so on. Generally, a rate of 4 to 5 lb. per acre will give a good establishment of harbinger medic. Sown by itself and not too deeply there is no advantage in going above this seeding rate unless it is grown specifically for seed production. In this case it is worthwhile seeding at a higher rate of 8 lb. per acre.

In a seeding rate trial at Tenindewa, on yellow sand, the seed production increased with increasing seeding rates up to 8 lb. per acre, the highest rate used.
HARBINGER OR CYPRUS?

Harbinger medic (Medicago littoralis) is hard to distinguish from many other medics, especially Cyprus and Commercial barrel medics. Like most medics, it has oblong leaves with serrated edges, and small yellow pea-type flowers. It sets seeds in clusters of pods, borne on stalks from runners, above the ground.

It is almost identical to Cyprus barrel medic to look at, although it has slightly paler green foliage and less variation of leaf type. The burrs are only half to two-thirds the size of Cyprus burrs, and the seed is smaller and slightly flatter. Under favourable conditions a harbinger burr contains an average of four seeds, although it can contain as few as two. Burrs of Cyprus barrel medic contain up to seven seeds.

The burrs of harbinger are found in clusters of up to six per flowering stalk, but more normally, three to four. Cyprus rarely has clusters of more than two, never more than three. The burrs of Cyprus coil clockwise, whereas harbinger burrs coil anti-clockwise.

Both harbinger and Cyprus are capable of producing runners up to three feet long. In some experiments harbinger medic has commenced setting seed in 60 days from the time of sowing. Its maturity under normal conditions is much the same as that of Cyprus.

The greatest demand for this species should come from the 12 to 16 inch annual rainfall belt or those districts with a growing period of less than four months.

Fertiliser application

For general establishment on yellow sands and not on new country, a rate of 120 to 130 lb. per acre of plain superphosphate is adequate. It is only worthwhile using higher rates of super if the pasture is to be heavily grazed or is grown for seed production.

In these circumstances 180 to 240 lb. of super per acre is recommended. At Tenindewa, 180 lb. of super an acre gave 40 per cent. more seed production and 20 per cent. more dry matter than 120 lb. an acre. Seed production was increased by a further 22 per cent. when the rate of super was raised to 240 lb. an acre.

Where these soils have had no previous trace element application a bag of copper-zinc-molybdenum super is recommended. Responses to molybdenum have been observed on sandy soils at Eneabba, Wilroy, Yuna, Northampton and Ajana.

The No. 2 mix copper-zinc-molybdenum super should be used on the yellow sands whereas copper-zinc super only should be used on the calcareous black wattle coastal soils. The black wattle coastal limestone soils do not require additional molybdenum.

Depth of seeding

Harbinger should be sown at ½ to 1 inch or a maximum of 1½ in. on light soils and ½ in. or a maximum of 1 in. on heavier soils. This will allow greatest germination and a minimum delay in nodulation.

Sowing technique

Where practicable, the best method is to sow the seed through the grain side of box, using a special reduction gear. This gives the best and most even establishment. Some machines can sow as low as 9 lb. pelleted seed without a reduction gear. Even with this method a poor pellet can cause some blockages from free lime.

Another good method is to mix the pelleted seed with the fertiliser by placing the correct weight of seed with each bag of fertiliser in the box (running the seed along the box two or three times) and mixing with a flat bar such as a tyre lever. This and the action of the stars in the fertiliser box are sufficient to give a good mix for large scale sowings. Freshly pelleted seed should be used for this method.

Inoculated and pelleted seed should not be sown through a small seeds attachment. When sown by this method, lime is knocked off the pelleted seed, which reduces the protection given by the lime to the bacteria. In addition, the lime
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removed collects and blocks the seed cups, reducing the seeding rate and causing uneven establishment.

Weed control is all-important for successful establishment. As harbinger, like all medics, is susceptible to quite small amounts of 2,4-D herbicide the only feasible means of weed control is cultivation and grazing. For this reason and to give the pasture a good chance of success, the seed should preferably be sown by itself into the stubble of a previous crop.

Dry sowing should be employed only where weeds are not a problem and there is no serious wind erosion hazard.

A cover crop is not recommended unless it is heavily grazed or is sown to prevent wind erosion.

Sowing harbinger with a wheat crop may reduce wheat yields by up to two bags per acre and reduce seed production of the medic.

**Grazing management**

Light, continuous grazing throughout the growing period is recommended. Very heavy "flash grazing" can, and has, in many cases caused serious setbacks to establishment of the pasture. The rate of grazing will of course depend upon pasture growth, weed competition, cover crop density and other factors. While it is true that grazing will increase seed production, excess grazing will reduce seed set. If pasture growth is prolific, moderate grazing rates even during flowering will not adversely affect seed set.

It is doubtful whether a continuous grazing rate of one sheep per acre could be exceeded during the grazing period in first year stands in the Geraldton region, except under exceptional circumstances.

If the pasture is established with care there is no reason why established stands of harbinger medic on yellow sandplain should not be capable of carrying more than one sheep per acre, grazed continuously.

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