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Two New Lupins

The Department of Agriculture recently released two new lupin varieties—Marri and Ultra. Marri closely resembles the existing Uniharvest variety, but is resistant to the grey leaf spot disease. Ultra is the first commercial release of a sweet Mediterranean white lupin variety in Australia.

Marri was bred as part of a collaborative programme with the United States Department of Agriculture, by Dr J. S. Gladstones initially at the University of W.A. and since 1971 in the Department of Agriculture, with Drs Ian Forbes and Homer D. Wells of the Coastal Plain Experiment Station at Tifton, Georgia, USA. Details of its breeding were published in the Journal of Agriculture Volume 16 No. 2, 1975, pp. 44-49.

In Department of Agriculture trials in 1974 and 1975, Marri substantially outyielded Uniharvest on west coastal sandy soils; on the poorer sands it also usually outyielded Unicrop. The difference can be ascribed mainly to Marri's resistance to grey leaf spot, which under these conditions fairly regularly causes premature leaf drop and poor seed filling in susceptible varieties.

In all inland districts Marri has yielded less than Unicrop, which remains the recommended variety for general sowing there, and for late sowing in all areas.

Anthracnose (Glomerella cingulata), to which Marri is also resistant, has not been recorded as a significant disease of lupins in W.A.

Like Uniharvest, Marri has some advantage over Unicrop in its taller growth, which facilitates harvesting on rough, newly-cleared soils, or where for other reasons the short growth of Unicrop is a disadvantage.

Ultra is adapted only to well drained soils of good fertility. On lighter soils its yields have been consistently and substantially lower than those of present commercial varieties and it is more prone to brown spot disease.

Best results in trials have been on red-brown loams in the Chapman Valley, where Ultra has outyielded Unicrop provided planting is early. Yields have also been good on some loamy soils elsewhere, but the results so far have not been consistent enough to form a basis for recommendations.

From limited local experience it appears that Ultra is not greatly attacked by insects, other than bud-worms. The long period during which the pods remain green makes them vulnerable to budworm attack and growers in northern districts must expect to have to spray in most seasons.

One potential advantage of Ultra is that grazing trials by the CSIRO have shown it to be consistently less likely to cause lupinosis than all other lupin varieties. Ultra also appears to be less affected by root rots and Sclerotinia on medium to heavy soils than narrow-leafed varieties such as Unicrop. On the other hand it is more susceptible to water-logging.

Ultra, which was known during pre-release testing in Western Australia as WB2, is a sweet variety of the Mediterranean white lupin. This is a species whose seeds, after prolonged soaking to leach out their alkaloids in the old bitter varieties, have been used around the Mediterranean for several thousand years, mainly for direct human consumption. A number of sweet (alkaloid-free) types were developed by German breeders in the 1930's and 1940's.

Ultra was developed by the West German seed firm of Pflug and was approved for release there in 1950. It was selected by Dr J. S. Gladstones at the University of W.A. as the best for W.A. conditions of a range of material introduced from overseas, on grounds of its earliness, good seed yield, and relative disease resistance. Subsequent bulking and testing were by the Department of Agriculture.

Ultra flowers at about the same time as Unicrop but matures somewhat later. It is fully sweet and soft-seeded, and has white seeds and non-shattering pods. The seeds are easily distinguished from those of present commercial varieties in W.A., being flat, square, and much larger. The plant has broad leaflets, a white to slightly bluish flower and large pods approaching in size those of a broad bean.

Considerably higher seeding rates will be needed than for other lupin varieties because of Ultra's larger seed size.

The main marketing advantage of Ultra is that its seeds have appreciably higher protein and oil contents, and a lower fibre content than narrow-leafed lupins. In preliminary feeding trials by the Department of Agriculture with broiler chickens, it has been superior to both narrow-leafed lupins and soybean meal. If these results are confirmed, Ultra should receive a price premium in the feed market.

Because of its high soil fertility requirement, Ultra is unlikely to be as widely successful in W.A. as the narrow-leafed varieties, and it comes into more direct competition on the farm with wheat and other cereals. Also, its large seeds may cause problems of seeding and harvesting with some machinery. Nevertheless it could find a useful place which will complement that of existing lupin varieties, and extend lupin growing on to a wider range of soil types than hitherto.

Further details about Marri and Ultra lupins are available from the Department of Agriculture.