7-1996

Lupin Logic Number 72

LUPIN LOGIC

Grain Pool of W.A.

Agriculture Western Australia

Editor: Peter Nelson

July 1996

Number 72

ISSN 1035-3763

Registered by Australia Post - Publication No. WBG2760

Post-emergence broadleaf weed control in lupins

Terry Piper

With the late break, most lupins will have been seeded dry. Problems with weed control in this system arise when the opening rain is followed by a week or two of dry weather. There is plenty of moisture to get both the crop and the weeds going, but the surface soil then dries and leaves the simazine inactive. A lot of post emergence spraying will be necessary.

Broad-leaved weeds can usually be readily controlled if they are caught at an early stage. Do not leave them to grow too much, especially if a dry spell then puts them under moisture stress. Control will then be much more expensive and less effective.

Doublegees are best controlled with simazine top-up. Trials in 1995 comparing herbicides and mixtures of equal cost showed that the addition of metribuzin will hasten control, but simazine alone was most effective in the long term.

Wild radish was best controlled by Brodal®/metribuzin mixtures (60 g + 60 mL/ha). This mix controlled quite large radish. The only other product able to handle large radish is Eclipse®, but this can only be used on Kiev and Danja lupins at 8+ leaves.

Capeweed needs metribuzin for best control, although Brodal® provides at least suppression at common rates.

A three-way mix of Brodal®/metribuzin/simazine (50/100/600) is a practical tank mix, useful if doublegee, radish and capeweed are present.

Metribuzin is expected to have a minor use registration for lupins this year (as was the case last year). Check that this is so before using on lupins.

Grass weeds

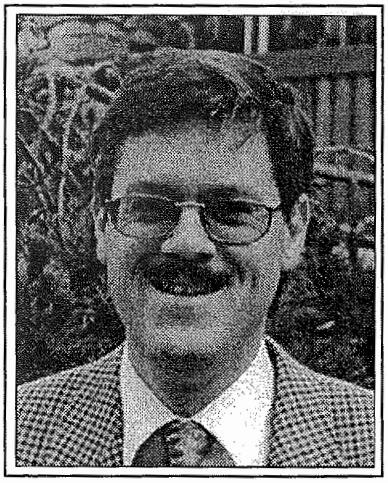
There is no urgency for the control of grassy weeds or self sown cereals. There is no evidence to suggest that removing grasses early from a lupin crop increases crop yield. There are advantages in delaying the removal of grassy weeds in that there is opportunity for late germinations to be controlled and also the weeds provide surface cover to prevent spore-splash of brown spot from the soil. Several grass-selective chemicals are available for use; however, you should know whether ryegrass resistance is present before spending money on them.

Lupin production in Germany

Peter Roemer, Suedwestdeutsche Saatzucht

Following von Sengbusch's discovery of the first 'sweet' lupins in Germany in 1928, lupin production increased to an area of 78,000 hectares. After the end of the second world war, the development progressed separately in the new West and East German States.

In West-Germany lupin production decreased steadily. In 1990 only 600 ha of sweet lupins (50% yellow, *L. luteus* and 50% white, *L. albus*) were grown for grain with about 13,000 ha of bitter narrowleaf, *L. angustifolius* and sweet yellow lupins being cultivated as a green manure crop.



Peter Roemer, lupin breeder

Lupin Logic is published by the Grain Pool of WA in cooperation with Agriculture Western Australia.
Editorial address: Agriculture Western Australia, 3 Baron-Hay Court, South Perth 6151
Telephone (09) 368 3465, Mobile (018) 92 6657 or Fax (09) 474 2405
Grain Pool of WA, Grain Pool Building, 172–176 St Georges Terrace, Perth WA 6000
Telephone (09) 481 0959 Facsimile (09) 481 3553 Toll free (008) 19 9083

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In East Germany there are large areas of acidic sandy soils well suited to lupin production and in 1990 22,000 ha was grown for seed and 100,000 ha (yellow lupins) for forage production.

After the reunion of both States in 1989, the situation changed for the eastern areas because growing lupins for forage was not economical under the new 'capitalistic' conditions. Lupin production dropped dramatically.

In 1993 the European Community changed the subsidy regulation. Subsidies are now paid per hectare of crop and not as before per tonne of yield. This favoured the cultivation of grain legumes such as peas and lupins.

In 1995 the area of grain lupin production in Germany is estimated to be 5900 ha of Albus and 21,000 ha of yellow lupins. This production is concentrated in the north-eastern areas on acidic soils. The bulk of the lupin varieties grown are sweet and the seeds are used for animal nutrition and to a smaller extent for human consumption. Farmers can no longer afford to grow lupins for forage or green manuring because of the high seed cost.

In recent times the lupin industry in Germany has been threatened by the disease Anthracnose. This has been particularly so in the warmer and more humid areas in the South of Germany where albus lupins have been very severely affected by this disease.

Nevertheless, we have observed that *L. luteus* and *L. angustifolius* are also attacked under similar climatic conditions.

The control on Anthracnose (a seed transmitted fungus disease) will be essential if there is to be further expansion of the lupin industry in Germany.

Forecasting aphid outbreaks and virus epidemics

Dr Debbie Thackray

Can computer models predict bad aphid and virus years and what action to take? Researchers at South Perth, funded by GRDC, are incorporating historical and experimental data on climate, aphid populations, virus spread and yield losses into a computer simulation model. The finished product will forewarn growers of impending aphid outbreaks and virus epidemics in lupins.

Aphids spread cucumber mosaic virus (CMV) and bean yellow mosaic virus in lupin crops. These viruses can cause yield losses of 50% or more in bad aphid years, with further losses through direct aphid feeding damage. However, bad aphid outbreaks do not occur every year. Until now, aphid sprays for virus control have been difficult to justify except sometimes in seed crops.

Debbie Thackray

However, in a 1995 field trial run by Annette Bwye and Dr Roger Jones at Badgingarra, a previously untested newer generation pyrethroid gave up to 60% yield increases through control of aphids and CMV.

How can growers in different regions make better informed decisions about aphid and virus control in lupins? Regular crop inspections indicate aphid arrival and numbers, but are time-consuming when properly done. However, low aphid numbers are easy to miss in more casual inspections and may only be noticed after virus spread has occurred – aphid control may then be too late.

An early-warning forecast will predict when and where aphid outbreaks and virus epidemics are likely to occur. This will support crop management decisions relating to cultural control at seeding, and the necessity for and timing of sprays for control of virus spread and also feeding damage.

The model forecasts aphid numbers based on January–April rainfall for the local area. Late summer/early autumn rain before seeding is critical, since it maintains the weeds on which aphids build up before moving into crops early in the season. Little or no rain at this time results in late aphid arrival, low numbers in the crop and very little virus spread.

With further development (subject to funding) the completed model will predict the effects of planting density, row spacing, stubble retention, lupin variety, % seed CMV and germination rate on CMV spread, yield and the % CMV in harvested seed. Thus, growers and advisers may use the model to 'try' different strategies before deciding on management plans. They will also know when to examine their crops for aphids and whether sprays could be economic.

Further reading: *Lupin Logic* 13, 50, 62; Bulletin 4294.

Vital reading

You are urged to obtain a copy of the discussion document *Review of natural resource management and viability of agriculture in Western Australia.* The final conclusions reached by this task force through discussion with interested people will determine the future path of agriculture in Western Australia.