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Lupins in South Africa

Jan van der Mey, ARC-Grain Crops Institute Potchefstroom

Lupins were first introduced into South Africa in 1899. Three species were tested the sweet narrow-leafed lupin (*Lupinus angustifolius*), the yellow lupin (*L. luteus*) and the white lupin (*L. albus*).

Winter rainfall areas

In the winter rainfall areas of the Cape Province the bitter narrow-leafed lupin, after selection for soft seeds, became popular as a soil improver and summer sheep feed and the area of this species reached about 100,000 ha by the mid 1960s. However, the disease powdery mildew virtually wiped the crop out in 1971. Varieties resistant to powdery mildew are now available and the winter rainfall area currently grows between 20 and 40 thousand hectares of lupins both bitter and sweet. White lupin is grown on the heavier more fertile soils, narrow-leafed lupin on the intermediate soils and yellow lupins on the sandy soils of the west coast

A real problem to lupin development in the winter rainfall region is that both bitter and sweet lupins of the same species are grown side by side and often as mixed crops. This renders the grain unsuitable for large scale utilisation in industrially formulated feed mixes.

Summer rainfall areas

In the summer rainfall areas of the Transvaal Highveld the white lupin is well adapted and yields of over 3 t/ha have been achieved in commercial plantings in good years.

In 1992, a concentrated effort was made by breeders, agronomists and developers to make the crop a commercial reality. A production package is now available for farmers.

Farmers have two options when they can plant the crop. They can plant in winter (May to the middle of August) utilising stored moisture. The long season variety Esta, of the Hamburg type is used. Wheat is also grown during the winter so lupins are grown in a wheat/lupin rotation.

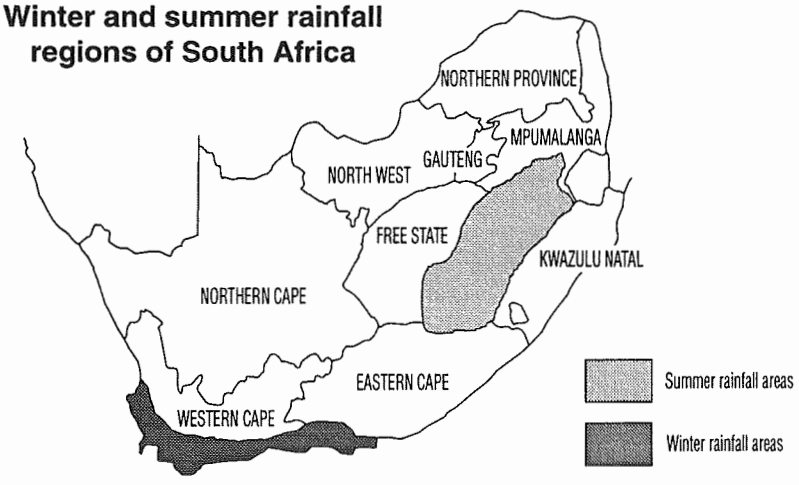
Later plantings are possible after the first spring rains and then the medium maturity variety Hantie, similar to the Kiev mutant type, is recommended. Lupins planted at this time of the year are normally grown in rotation with a maize crop.

Research has shown that wheat yields after lupins, over five seasons, resulted in yield increases from 0 to 17% in wheat and 0 to 39% for maize.

Researchers have identified that the two most important factors on the farm to ensure lupin success was to establish a uniform stand and control late germinating weeds.

Producers in 1995/96 closely followed the recommendations of the 'Lupin team' and a yield of 2t/ha was recorded over 740 ha. This is a small area in terms of the Australian crop, but it is only a beginning. The target is to grow 100,000 ha of lupins in each of the two main areas so that the larger feed manufacturers will start to recognise sweet lupins as a reliable source of high quality protein and energy.

Winter and summer rainfall regions of South Africa



Lupin Logic is published by the Grain Pool of WA in cooperation with Agriculture Western Australia.
Editorial address: 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 Mobile (018) 92 6657

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Gene mapping

Sarah Brien, State Agricultural Biotechnology Centre

The Grain Research and Development Corporation (GRDC) is funding a three year project designed to assist plant breeders in developing new varieties of lupins to suit different climatic and environmental conditions.

The project, 'Gene mapping in lupins' is underway at the Western Australian State Agricultural Biotechnology Centre (SABC) and its aim is to search for genetic markers linked to desirable agronomic traits, such as high yield or disease resistance, in narrow-leafed lupins.

Sarah Brien

The process relies on the fact that genes close together on the chromosomes are normally inherited together. The percentage of offspring that don't show this co-inheritance is a measure of how far apart genes are and this information can be used to create a map of chromosomes.

The almost unlimited number of genetic markers (visible pieces of DNA) that can be generated using advanced molecular biological techniques means that markers closely linked to all genetically determined agronomic traits can theoretically be found, leading to much more specific selection and direction in a breeding program.

In other words once the breeder knows where the genes for yield, disease resistance etc are located on the chromosomes they will be able to select the parents with much more precision for the attributes being bred for and possibly halve the time taken to develop and release a new variety.

To date a genetic marker linked to the gene for early maturity has been found. The long-term aim is to map a full picture of the lupin genetic makeup.

Beat anthracnose, use clean seed

World wide experience tells us quite clearly that the first step to be taken to contain and eventually eradicate anthracnose is for all lupin growers to use seed which is free of anthracnose.

Peter Metcalfe, Project Manager for the anthracnose containment and eradication program, has released a list of shires where anthracnose has been found. These shires are: Carnamah, Chapman Valley, Chittering, Coorow, Greenough, Irwin, Mingenew, Morawa, Moora, Mt Marshall, Mullewa, Northampton, Perenjori, Three Springs, Bridgetown and Dalwallinu.

Peter strongly urges that all lupin growers in these shires access clean seed from other shires for the 1997 planting.

The Grain Pool of Western Australia realises the importance of getting clean seed into these affected shires and is supporting growers by providing a 50% seed freight subsidy up to $15 per tonne for farmers to get in clean seed from unaffected shires.

Peter goes on to say that "If it costs $300/t for clean seed, which includes grading costs over a gravity table, germination and CMV test and freight, then assuming that the original seed had been delivered to CBH for a return of $185 then the actual cost of getting new seed is about $11 per ha. This cost is insignificant in comparison with the potential loss that could occur, especially with an early infection".

The future of the lupin industry is in the hands of each individual grower in the infected shire. The simple message is if you are in a shire in which anthracnose has been recorded you must get clean seed in for the 1997 crop. Mark Sweetingham, senior plant pathologist with Agriculture Western Australia is on record as saying "Sowing clean seed means that farmers can go into their 1997 lupin programs confident that anthracnose will not affect their 1997 production".

Lupin receivals (tonnes as at midnight 29 December)

Geraldton	Fremantle	Albany	Esperance	Total
407,941	349,129	23,016	35,635	815,721

1996/97 estimated lupin equities

	$/tonne
Harvest advance	180.0
Est top up Feb 1997	7.50
Est. equity	23.0
Est. gross payments	210.50