

an adjacent experiment capeweed at densities up to 30 plants per square metre did not cause a significant reduction in yield. Lupins are more susceptible to weeds that are able to grow up through the crop canopy and compete in the spring. The main weeds in the herbicide experiments tabulated were wild oats in New South Wales and ryegrass in New South Wales, Victoria and southern Western Australia. Spiny emex, capeweed and wild radish are common weeds in lupins in the northern agricultural regions of Western Australia.

CONCLUSION

It is suggested that the soil fertility, winter temperatures and weed type and density of the northern agricultural regions of Western Australia are such that weeds are of little consequence in lupins. However, the development of lupin production in this region is expected to be self defeating, in a sense, as both the soil fertility and the weed level will increase. This trend is believed to be already developing as vigorous patches of wild radish are becoming increasingly obvious in lupin grain crops. Weeds cause a significant reduction in the yield of grain lupin crops in southern parts of Western Australia and in New South Wales and Victoria.

EFFECT OF SUBTERRANEAN CLOVERS ON PRODUCTION OF BULBS OF SOURSOB

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At Dangin, 160 km east of Perth, Western Australia, in an area carrying a 'variety' of *Oxalis pes-caprae* having a mid style, orange tipped sepals and no leaflet markings, four subterranean clovers, Geraldton, Dwalganup, Dinninup and Clare, were established during the 1973 growing season. The first two are recommended for planting in the area. Clare was selected because it can bury its burr in hard setting soils which are often associated with soursob. Dinninup was included because it is a prolific burr producer. Soil samples were taken at the end of 1974 and soursob bulb numbers noted.

The four clovers significantly reduced the number of bulbs compared with areas not sown to clovers. Geraldton and

Dwalganup subterranean clovers were significantly superior to Dinninup and Clare in reducing the number of soursob bulbs produced.

Geraldton and Dwalganup were superior to Clare and Dinninup because they were more suited to the shorter growing season (4-5 months) at Dangin. The short season favours the clovers which can set viable seed before conditions become too dry. Dinninup and Clare set mature seed some 3 and 5 weeks respectively after Geraldton, which makes their ability to survive under natural conditions in the Dangin area very doubtful.

Results in the experiment show that although not suited to the area Dinninup and Clare reduced the soursob bulb production by some 40 per cent. Under a natural grazing situation this reduction could be expected to be much less because the micro-environment under the sward will vary considerably. Under experimental conditions the sward was mown regularly, but not too close to the surface, so that a significant density of green material was present. Under these conditions a suitable environment for burr production and burial was provided. With normal grazing this high density of green plant material would be absent and the clover would be forced to burr down above the hard, dry, unshaded surface. Seed produced under these conditions has a decreased viability and impermeability which results in a decreased dominance in the swards in successive seasons.

The failure of many stands of subterranean clover in the wheat-growing areas of Western Australia can be attributed to the hard crusting of soils which prevents the burial of burr. This is particularly evident where soursob infestations are present because they have tended to be confined to the 'better' soils which set hard as soil moisture decreases. Combined with poor grazing management these soils rapidly lose the clovers and become pure infestations of soursob.

CONCLUSIONS

Soursob can be effectively reduced by competition from subterranean clover.

The clovers selected should have characteristics that permit them to survive from year to year in the environment present. Controlled grazing to allow compact clover growth is desirable to obtain the formation of viable seed and also provide the greatest competition to the soursob. To achieve this, careful attention to management of the grazing of the pasture is required.

The subterranean clover Daliak which matures early and forms dense swards under field conditions should be tested.