

Mixed cropping for the production of feed rations

G.H. Walton

Department of Agriculture, Perth, W.A., 6151

The growing of lupin and cereal mixtures has been suggested by Nel (1965) as a way of producing protein for on-farm use. Rations containing from 13 to 30% crude protein are required for livestock. This paper reports on trials conducted to establish whether a grain mixture containing this level of crude protein could exceed the combined yields of a cereal and a lupin grain crop.

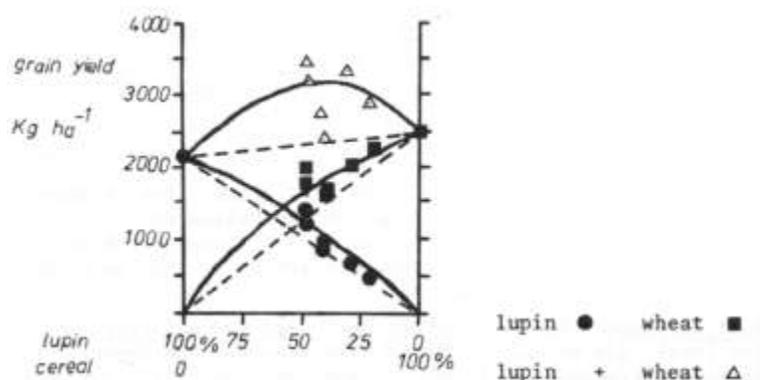
Two field trials were sown in 1977 using sweet narrow-leafed lupin grown in varying proportions with either oats or wheat. The trials were sown at a range of crop densities covering those obtained in commercial crops of both components. No nitrogen fertiliser was used as the trials were sown either on new land or on land previously sown to clover.

An example of the yields obtained with the various mixtures is illustrated in Fig. 1. A grain mixture containing 13 to 30% crude protein was obtained from a mixed stand containing 15 to 30% lupin plants. It will be seen from Fig. 1 that higher yields were obtained from the mixtures than from pure stands; this has been termed "overyielding" by Willey and Osiru (1973). On the basis of "land equivalent ratios" (Willey 1979) the growing of a mixed crop to produce a grain mixture containing 13 to 30% crude protein represents a land saving of 10 to 15%, compared with pure stands having 30 to 30% of the area sown to lupins.

Increasing crop density increased pure crop yields but had no effect upon land equivalent ratio values.

The system offers a means of increasing yield per unit area while at the same time producing a crop mixture directly suitable for feeding to livestock.

Fig 1. Yields of grain obtained from mixed crops of lupin and wheat grown in different proportions from 0 to 100%. Replacement diagram modified according to Willey (1979)



Nel, P.C. (1965) *S. African J. Ag. Sci.* 8:1035

Willey, R.W. and Osiru, D.S.O. (1973) *J. Ag. Sci.* 79:519

Willey, R.W. (1979) *Field Crop Abs* 33