

## **Soybeans as a dryland crop in North-West New South Wales**

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Soybeans are a possible alternative dryland crop to sunflowers and grain sorghum in the north-west of New South Wales. As well as producing a valuable grain, they are capable of fixing nitrogen, thereby improving or at least stabilizing the N status of soils of the region. Also soybeans may have a place as an opportunity crop sown after wheat given favourable rainfall in the December-January period.

A research programme was initiated in 1975 to evaluate soybeans as a dryland crop and in particular to optimize time of sowing, variety and planting configuration.

Sowing times ranging from October to March were evaluated over the four years of this study (1975-1979). Optimum time of sowing was late November to early December. With later plantings, decline in yield was almost linear. For instance soybeans sown in late January yielded only two thirds that of plants sown in late November on average. The 1978/79 season's results were exceptional in that yields from the late (January) sown crops were greater than those from the early (November-December) sown crops due to the extremely hot, dry January.

Varietal effects were minimal when averaged over the four years and the November, December and January planting dates and the early season varieties Clark 63 and Calland averaged 1430 and 1530 kg/ha whilst the late season Ruse and Bragg yielded 1610 and 1440 kg/ha respectively. These results are in marked contrast to data from irrigated trials where the late season varieties are invariably superior. However, results from individual seasons were not always so clear cut. For example, Calland yielded 1300 kg/ha in an experiment in which Bragg yielded 400 kg/ha (1977/78) whilst in a different season (1978/79) Bragg produced 1600 kg/ha and Calland 900 kg/ha. Results were explained by rainfall distribution and as such the use of at least two varieties of differing maturities is warranted to minimize yield fluctuations.

Planting configuration was evaluated during the 1978/79 season. Calland soybeans were sown at three populations (100,000, 350,000 and 600,000 plants/ha) and two row spacings (30 and 80 cm) over four planting dates (November to March). Early sowings were favoured by low plant populations and wide row spacing whilst the opposite occurred with late sowings. In other words reduction of yield with late sowing can be partially countered by high planting density in narrow rows.

Yields of soybeans (all varieties) grown on heavy textured black-earth soils were greater than those grown on lighter textured red-earth soils. This was probably due to the greater moisture storage on the black-earths.

In summary, the results are consistent with the proposal that soybeans are a possible alternative dryland crop to sunflowers and grain sorghum in north-west N.S.W.