# TIMING OF DROUGHT DOES NOT AFFECT FIELD PEA YIELDS

**R.J. Martin**, P.D. Jamieson, and D.R. Wilson

NZ Institute for Crop & Food Research Ltd, Private Bag 4704, Christchurch, New Zealand

Peas are often reported to be particularly sensitive to water stress at flowering and pod fill. However, a drought response model (1) relates yield to maximum potential soil moisture deficit ($D_{pmax}$), not the timing of the deficit. To check this, the response of field pea yield to drought was determined in five field experiments in Canterbury, New Zealand - one in a mobile rainshelter (2), and the others exposed to rainfall (3).

## METHODS

*Rovar* field peas were grown in the field with up to 450 mm of water applied using trickle irrigation in three to six treatments per experiment. Subsequently, in a rainshelter on an adjacent site, 12 water stress treatments were applied at various times for various durations to the same cultivar. The plots were otherwise microjet irrigated to avoid water stress.

## RESULTS AND DISCUSSION

Relative pea seed yield for all experiments was unaffected by drought until $D_{pmax}$ exceeded 80 mm (Figure 1). At deficits higher than this *critical* deficit ($D_c$), seed yield declined linearly at 0.18% of maximum yield per mm deficit, irrespective of when the crop experienced the deficits. Timing of stress affected final harvest dry matter yield and seed yield components in the rainshelter experiment. Stress before flowering reduced leaf area and crop growth, but increased pea size and harvest index compared with stress after flowering. Peas per pod were unaffected by stress, and pods per plant were reduced by the degree of stress but not its timing.

## CONCLUSIONS

Peas should be watered on the basis of potential soil moisture deficit calculations (i.e. when it gets dry), not on the basis of crop development. Potential evapotranspiration rates in Canterbury frequently exceed 6 mm per day. Without rainfall, a fully wetted profile may dry beyond $D_c$ in about 2 weeks.

## REFERENCES

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