# Potential productivity of irrigated maize in Northern Victoria

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Yields of maize in northern Victoria are limited by the poor physical characteristics of the predominant red-brown earth soils. In an attempt to allow maize to express its full potential to convert radiant energy into plant dry matter under field conditions, two experiments were conducted.

### Experiment 1 : Maximum production - experimental plot.

To minimise constraints to growth, an area (15m x 15m) was prepared using these ameliorative treatments: All the subsoil was broken up, gypsum and superphosphate were added, subsurface drainage installed at 1.2m, the topsoil replaced, extra topsoil added and 75 t/ha cow manure incorporated. Variety Pioneer 3183 was hand sown in a diamond pattern at 92,000 plants/ha on 31/10/84, and irrigated by fine sprinkler's at an evaporation deficit of 35-40 mm. Applied fertilizer (kg/ha) was 500 N, 117 P, 75 K.

# Results

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Dry matter yield: 34.8 t DM/ha = 254 kg DM/ha/day for 137 days.

Grain yield: 16.6 t DM/ha, (18.6 t at 12%). Harvest Index .48.

Conversion of radiant energy: % conversion = mwhr x 0.9099

Radiation from 8/11/84 (emergence) to 25/3/85 (physiological maturity) was

96625 mwhr, giving a conversion efficiency of 3.96% over 137 days.
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#### Experiment 1 : Maximum production - field crop.

1 ha (var. XL82) was grown on an ex-pasture soil using recommended row crop techniques but with excellent management. Sown 31/10/85, emerged 8/11/85, harvested 25/3/86. Its growth curve is shown in Fig. 1.



### Fig.1 Dry matter accumulation of maize (t DM/ha). Variety XL82, 1985-86.

Growth from canopy closure to hard dent stage was linear at a rate of 328 kg DM/ha/day. Conversion of radiation for 78 days was 4.64%.

These high yields and conversion efficiencies demonstrate the great potential of irrigated maize in northern Victoria.