

THE EFFECT OF STAGE OF MATURITY ON THE DIGESTIBILITY AND
CHEMICAL COMPOSITION OF MAIZE

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The digestibility of maize silage produced in the irrigation region of Victoria is below that produced in Europe (Lemerle et al 1982). Typical maize silage produced in Europe can be 15 **DMD units** higher than maize silage produced in the USA (75% v 60% Dinium, pers. **comm**), the reasons for this being unclear. The extent to which stage of maturity changes nutritive value has not been defined for the Victorian region which differs from these areas in soil type and climate during the maturation phase. Silage production in the area follows American recommendations with ensiling at physiological maturity which may be inappropriate for crops grown under Australian conditions. Climate, harvest date, ensiling method and silage additives are factors which affect both the material ensiled and the quality of the final product.

A serial harvest of maize (Var XL 82) was carried out in 1984 to define changes in chemical composition and digestibility which occur with advancing maturity. The first harvest was at tasselling (68 days post emergence) and continued at 2-3 weekly intervals until 148 days post emergence. Physiological maturity of maize plants was attained around 130 days post emergence. The changes which occurred in in-vitro dry matter digestibility (**DMD**), nitrogen content (**N**), neutral detergent fibre (**NDF**), acid detergent fibre (**ADF**) and lignin are presented in the table.

The effect of maturity on the nutritive value of maize.

	HARVEST DATE (days post emergence)					
	68	85	98	118	133	148
DMD (%)	64.5	61.5	65.5	69.5	67.5	67.5
N (%)	1.15	1.20	1.00	0.90	0.86	0.89
NDF (%)	64.6	62.5	61.3	66.4	68.7	78.4
ADF (%)	34.7	34.9	35.9	37.3	38.8	45.8
Lignin (%)	2.1	2.9	2.2	2.9	2.5	3.2

The results demonstrate the relatively stable digestibility of maize once **tasselling** has commenced, despite an increasing fibre component as the plant matures. Presumably this is due to the **concomittant** increase in grain content as the plant matures. Plant nitrogen content is below animal requirements at all stages of maturity measured, and thus supplemental protein will be required to be fed with maize silage if potential animal production is to be achieved.

The effect of grain content in a maize crop on both diet digestibility and provision of nutrients to the animal needs further investigation.

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