

NUTRITIVE VALUE OF IRRIGATED ANNUAL CLOVERS FOR LACTATING DAIRY COWS

C.R. STOCKDALE*

In northern Victoria, irrigated annual pastures are important for feeding of dairy cows. Two clovers, subterranean clover (*Trifolium subterraneum*) and Persian clover (*Trifolium resupinatum*), are increasingly being used in these pastures. This study determined the nutritive value of these clovers for lactating dairy cows.

Pure swards of each clover were grown and fed to cows in four grazing and five stall feeding experiments. Studies were undertaken between June and October for subterranean clover, and between May and December for Persian clover. Cows were grazed at various intensities or fed different levels of herbage in stalls. Each feeding treatment involved 3-5 cows and was imposed for 4-5 weeks, after an initial common feeding period. Friesian cows of 450-500 kg mean live weight were used. Intakes of grazing cows were estimated using a double sampling technique involving a rising plate meter.

In vivo digestibilities obtained with sheep ranged from 75-80% for both clovers. When these clovers were fed to dairy cows, milk yield varied from 13 kg/day at the lowest level of intake (8 kg DM) to 28 kg/day at the highest level (22 kg DM). The relationship between intake and milk yield was the same for stall feeding and grazing experiments, and similar for both clovers. Milk yield (MY) responses to level of intake (DMI) are summarized by the following regression equation.

$$MY = -2.7 + 2.36(\pm 0.42) DMI - 0.044(\pm 0.014) DMI^2$$

$$100r^2 = 95.1; \text{ r.s.d.} = 1.13; \text{ c.v.} = 5.3\%$$

Marginal returns to extra feeding up to 15 kg DM/day averaged 1.4 kg milk for each additional kg of DM eaten above 8 kg DM/day. This is better than the marginal return of 1.1 kg milk/kg DM which can be expected from traditional dairy pastures in northern Victoria (Stockdale *et al.* 1981). While milk protein responded in a similar manner to whole milk, responses in milk fat yield were much less because the cows fed at low planes of nutrition produced milk with a substantially higher fat content than did better fed cows.

Cows grazing traditional dairy pastures in northern Victoria produce 22 kg milk/day while eating 13-14 kg DM/day (Stockdale *et al.* 1981). Maximum intakes in this study, of 22 kg DM/day, which approximate to 4.5% of body weight, together with high marginal returns from additional feeding, suggest that both clovers have much higher nutritive values than current pasture mixtures. Their use for feeding lactating cows appears to have great potential for improving dairy farm productivity.

STOCKDALE, C.R., KING, K.R., PATTERSON, I.F. and RYAN, D.T. (1981). Aust. J. Exp. Agric. Anim. Husb. 21: 148.

* Kyabram Research Institute, Kyabram, Vic. 3620.