The effect of supplementation type on animal performance in mid lactation during periods of reduced pasture growth

Michael Egan
Teagasc, Animal & Grassland Research and Innovation Centre, Moorepark, Fermoy, Co. Cork

Summary

- Supplementation feed choice has an effect on animal performance during drought periods.
- Soya hulls had similar production responses compared to concentrate alone.
- Palm kernel and beet pulp did not maintain milk production.
- Feed cost and animal responses must be consider when selecting feed supplementation choice.

Introduction

Due to the seasonal growth pattern of perennial ryegrass, there is little grass growth during late autumn and early spring resulting in increased levels of supplementation to grazing animals. In summer (mid-April to September), when grass growth exceeds feed demand, grazed grass makes up the majority of the animals diet, however, concentrate supplementation may be required during periods of reduced grass growth. Typically, concentrates offered to dairy cows are in the form of cereal grains and residues of oilseed crops. By-products, secondary products obtained during harvest or processing of a principal commodity can also be used as a substitute to expensive cereal based concentrates to meet animal requirements and reduce supplementation costs. The use of by-products for ruminant feeding has increased substantially in recent years in Ireland. Soya hulls imports have increased three-fold and palm kernel expeller (PKE) doubled since 2008 with beet pulp increasing by 60% since 2012.

Drought feeding research in Moorepark 2018

In July 2018, a grazing experiment was established at Teagasc Moorepark examining feed type fed to lactating dairy cows in mid-lactation in a sustained period of reduced grass growth. The objective of the study was to evaluate the effect of supplementation choice on animal performance to spring calving dairy cows during a prolonged herbage deficit in mid-late lactation. Four feeding systems were compared over the eight week period; palm kernel (PKE), soya hulls (SOYA), beet pulp (BEET) and parlour concentrate (CONC) (Table 1). Cows were fed the additional supplement (+4 kg DM/day) after morning milking in individual feeders in addition to 2 kg DM/day of concentrate at milking. Grass silage and grass allocations were similar on all treatments.

Feed type had an effect on animal performance, the CONC and SOYA treatments had the greatest milk yield (22.0 and 21.5 kg/day) and milk solids (1.77 and 1.74 kg/day) production followed by the BEET (20.6 and 1.62 kg/day) and PKE the lowest (19.1 and 1.59 kg/day) treatments. Feeding PKE did however increase fat content but it had a negative effect on milk protein content (Table 2). The large differences in animal performance can be somewhat explained by feeding value, as PKE had the lowest OMD and greatest ADF and NDF content.

Table 1. Concentrate feed allocation and forage allowance (grazed grass and grass silage) offered daily

Group	Concentrate allowance (kg/cow/day)	Additional supplement allowance (kg/cow/day)	Grass silage allowance (kg/cow/day)	Grazed grass allowance (kg/cow/day)
Palm kernel	2	4	5	6
Soya hulls	2	4	5	6
Beet pulp	2	4	5	6
Concentrate	6	0	5	6

Table 2. The effect of concentrate supplementation [molassed beet pulp, soya hulls and palm kernel expeller] on milk production and milk composition

	Beet pulp	Soya hulls	Palm kernel	Parlour concentrate
Milk yield (kg/cow/day)	20.6	21.5	19.1	22.04
Fat %	4.47	4.70	4.77	4.58
Protein %	3.57	3.56	3.45	3.65
Milk solids yield (kg/cow/day)	1.62	1.74	1.59	1.77
Body weight (kg)	512	505	517	515
Body condition score	2.90	2.95	2.85	2.98

Conclusions

Feeding palm kernel and beet pulp as a supplementation feed choice during a drought were not sufficient to maintain milk production when compared to parlour concentrate and soya hulls. At the time of the experiment, feed cost was similar for palm kernel, beet pulp and soya hulls (*circa* €220–250/t), however parlour concentrate was more expensive (€310/t). Careful consideration must be given when selecting supplements based on feed cost, feeding method and animal production responses.