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# RESULTS FROM THE SPRING 1986 BLOAT SURVEY: SOUTHAUCKLAND-WAIKATO

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A bloat survey of 312 North Island dairy farms carried out in spring 1986 by Ruakura staff showed that farms with moderate to severe bloat tended to have larger herds, higher stocking rates, a greater proportion of clover in pastures and higher soil potassium, levels (Carruthers et *a/.* 1987). However, these 4 factors together accounted for only 22% of the variation in bloat severity between farms. In an attempt to highlight further factors important in bloat, a comparison was made of nil and severe bloat farms in South Auckland-Waikato.

## Nil versus severe bloat farms

**Production and management.** The average nil bloat farm in South Auckland-Waikato had fewer cows, more pasture dry matter present in paddocks and a much larger area grazed per cow (approximately 2.5 times the pasture "on offer" to cows), and produced less milkfat per hectare than the average severe bloat farm (Table 1 a).

**Fertilisers and soil fertility.** There were minimal differences in fertiliser applied over the 1984-85 and 1985-86 seasons and in measured soil fertility status between nil and severe bloat farms (Table 1 b). More P, S and lime was applied to severe bloat farms and this was reflected in soil test values. However, nutrient levels on both farm categories were above those generally considered optimum for high producing dairy farms.

**Pasture composition and mlneral analyses.** Severe bloat farms were characterised by a higher clover content in the pastures than nil bloat farms (Table lc). Previous studies have indicated that a higher clover content of pastures is associated with more severe bloat. Total N (%) of pasture was also higher on severe bloat farms (Table 2), suggesting a generally higher "N fertility" status on severe bloat farms. Other mineral levels showed little difference between farms (Table 1 c). There was no indication of a pasture sodium or potassium link with bloat as suggested by Turner (1981).

**Plant N analysis.** Of the plant N parameters, soluble protein N was higher on severe bloat farms (Table 2). Since levels of soluble N in plants vary more with environmental factors such as soil temperature than do levels of total N, a link between soluble protein N and climatic conditions in relation to varying bloat severity should be examined.

## Farmers' comments

The majority (62%) of the 312 farmers interviewed in the wider survey felt plant factors were responsible for bloat, followed by fertiliser (32%), climate (18%), animal (16%) and management (17%) factors. Some named more than one factor in their replies.

Clover content of pastures was the main plant factor mentioned while lush pasture growth was also implicated. High potassium was the main fertiliser factor mentioned, but high fertility status was felt to be important. Humid, misty mornings, heavy dews or frosts, light showers and cold and windy conditions were thought to induce bloat. Animal breeding, high stocking rates and cows "gorging" themselves were also cited as possible causes of bloat. Breeding dairy cattle for low bloat susceptibility could make advances in reducing bloat.

## Discussion

By comparing nit and severe bloating farms in the South Auckland-Waikato region, it has been possible to highlight factors which appear to be important in bloat namely, feeding management of cows, clover content of pastures and some plant N components in the pasture. Farmers also perceive these factors to be important, as Well as potassium usage

and climate. Feeding level, clover content and plant N components can be manipulated by farmers. However, the value of this is still uncertain.

Table 1: Measurements on 17 severe and 10 nil bloat farms in the South Auckland-Waikato region.

| | | severe Bloat | Nil Bloat | Difference (%) | Value for 5% sig. |
|---|---|---|---|---|---|
| **Production and management** | | | | | |
| Area (h) | | 61 | 49 | -19 | -26 |
| Herd size | | 171 | 110 | -35 | -27 |
| Stocking rate (su/ha) | | 25 | 20 | 17 | 21 |
| Milkfat (kg/cow) | | 153 | 157 | 3 | 11 |
| Milkfat (kg/ha) | | 453 | 371 | -18 | -16 |
| Typical pregrazing DM (kg/ha) | | 2966 | 3473 | 17 | 17 |
| Typical postgrazing DM (kg/ha) | | 1629 | 2104 | 29 | 17 |
| Area grazed/cow/day ($m^2$)[1] | | 135 | 306 | 126 | 44 |
| DM Offered/cow/day (kg)' | | 38 | 90 | 137 | 40 |
| **Fertiliser inputs** (kg element/ha) | | | | | |
| P | | 33 | 25 | -24 | |
| S | | 38 | 27 | -29 | |
| K | | 46 | 43 | -6 | |
| Mg | | 2 | 3 | (+) | |
| Na | | 6 | 3 | (-) | |
| N | | 2 | 0 | (-) | |
| Lime | | 274 | 235 | -14 | |
| **MAF Soil Quick tests** | | | | | |
| pH | (5.8)[3] | 5.9 | 5.8 | | |
| Ca | | 10 | 9 | | |
| P | (20) | 32 | 25 | | |
| K | (8) | 13 | 10 | | |
| Mg | (8-10) | 27 | 31 | | |
| Na | | 10 | IO | | |
| **Pasture composition** (%) | | | | | |
| Grass | | 63 | 73 | 16 | 16 |
| Clover | | 32 | 24 | -33 | -29 |
| Weeds | | 4 | 2 | (-) | |
| **Mineral analysis** (%) | | | | | |
| N | | 4.09 | 3.62 | -11 | -11 |
| P | | 0.41 | 0.39 | - 4 | -12 |
| K | | 3.35 | 3.39 | | 14 |
| Na | | 0.20 | 0.18 | (-) | |
| K:Na | | 17 | 19 | (+) | |

[1] Effective dairying area of farm ÷ number of paddocks X paddocks grazed/day "umber of cows.
[2] Area grazed/cow/day X pre-grazing DM
[3] Optimum levels (Feyter C. 1987. Effect on dairy production of reduced topdressing. NZ *Farmer 108: 50* )

Table 2: Total N, soluble N, soluble protein N, soluble non-protein N and insoluble N analyses of mixed pasture samples from 17 severe and 10 nil bloat farms in the South Auckland-Waikato region.

| Analyses (%) | Severe Bloat | Nil Bloat | Difference (%) | Value for 5% sig |
|---|---|---|---|---|
| Total N | 4.22 | 3.70 | -12 | -11 |
| Soluble N | 1.14 | 1.08 | -5 | -13 |
| Soluble protein N | 0.42 | 0.32 | -24 | -21 |
| Soluble "on-protein N[1] | 0.72 | 0.76 | 5 | 19 |
| Insoluble N[2] | 3.08 | 2.72 | -13 | 12 |

[1] Soluble N minus soluble protein N, [2] Total N minus soluble N.

**References**


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