

## DAIRY REPORT SUMMARY

### Farm Background:

Conventional-run dairy system based on heavy sedimentary soil. Milking platform 220Ha with 70Ha runoff for dry period, pre-calving grazing.

Historically under guidance of Ravensdown with 600Kg/Ha potassium super applied annual with split dressings of urea totalling 190Kg N/Ha minimum. No lime ever applied. No herbage analysis carried out to assess effectiveness of fertiliser regime or analysis dietary requirements.

### Observations and Results:

Common & expected observations for high input conventional dairy systems under the guidance of sales-driven advice.

There was a historical, long-term soil calcium, magnesium & sodium 'deficiency' in regard to fundamental soil chemistry balance & plant nutrient availability. (Sodium is not a direct factor in plant nutrition but deficiency leads to under-grazed pasture due to poor palatability & contributes to sub-optimal rumination). Soil phosphorus was excessive due to poor utilisation & consequential soil accumulation. Continuous annual input of potassium caused excessive soil K & animal metabolic upset.

Fertiliser regime from 2018 onwards has focused on improving soil structure (& drainage) with increased flocculation through calcium input. Liming has 'unfixed' accumulated soil P previously locked up by iron, aluminium & manganese oxides. Magnesium-based low soluble fertilisers are promoted over soluble, acidic inputs which hinder soil organic turnover. Sodium input has increased pasture palatability, grazing distribution & intake.

Fertiliser effectiveness & animal dietary mineral balance is monitored with regular herbage analysis.

### Seasonal variation:

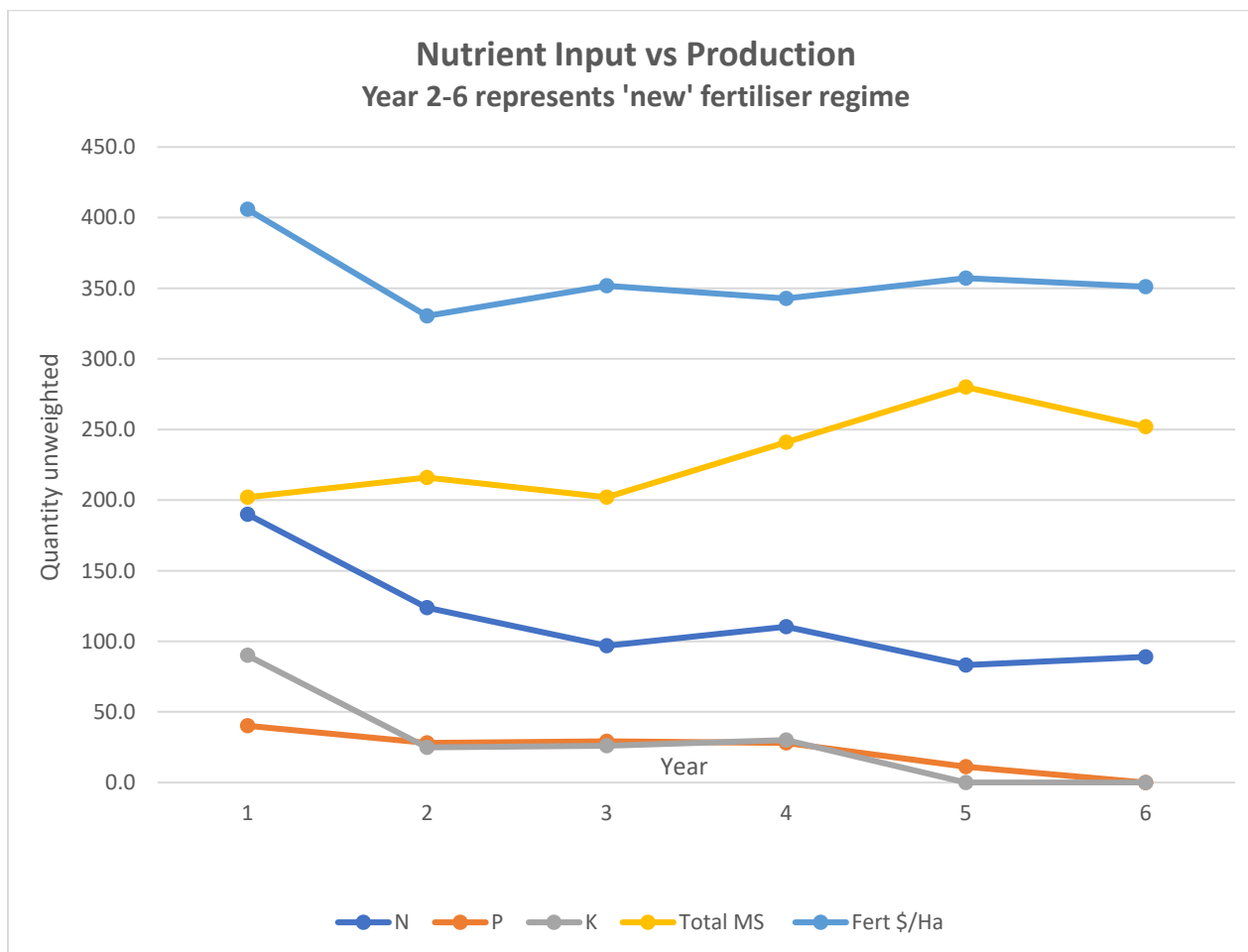
- **2019-2020** significant drought.
- **2020-2021** autumn drought.
- **2021-2022** very good growing season (wet prevented lime application).
- **2022-2023** significant rainfall increasing wet matter content/reducing fibre.

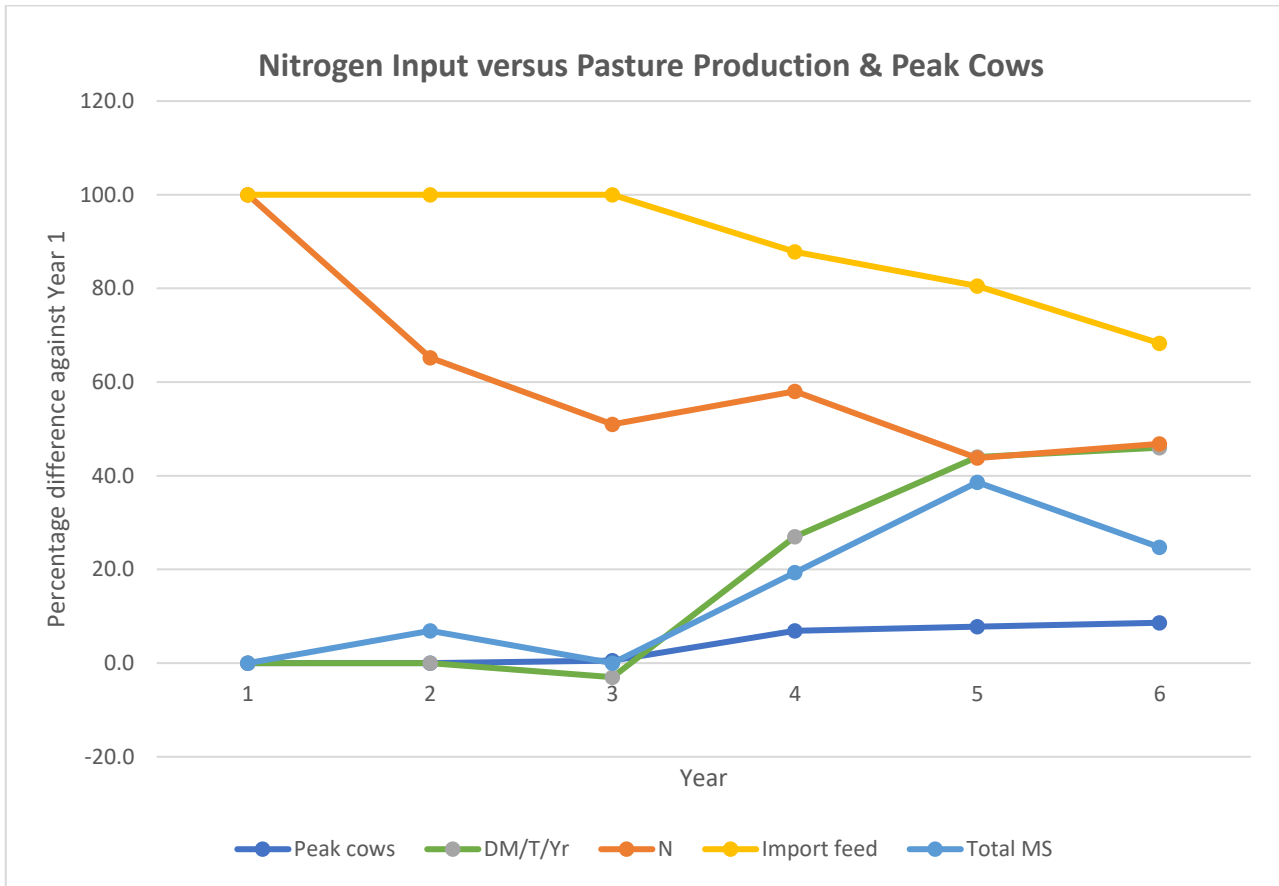
NUTRIENT	SEASON					
	Kg/Ha	2017	2018-19	2019-20	2020-21	2021-22
N	190.0	123.9	96.9	110.3	83.2	88.9
P	40.2	28.0	29.1	28.1	11.1	0.0
K	90.0	25.0	26.0	30.0	0.0	0.0
S	44.4	59.2	74.9	61.2	80.9	68.0
Mg	0.0	14.9	0.0	0.0	41.3	0.0
Na	0.0	0.0	0.0	19.5	39.0	0.0
Aglime	0	0	500	0	1000	0.0
DM/T/Yr	10.0	10.3	9.7	12.7	14.4	14.6
Total MS	202	216	202	241	280	252
Production/Cow		372	346	389	447	401
Peak cows	580	580	583	620	625	630
Production/Ha		1027	961	1149	1331	1202
Fert \$/Ha	405.91	330.40	351.81	342.74	357.20	351.11
% Supplement	41	41	41	36	33	28

Nutrient input for 2017 reflects previous fertiliser regime & costs.

Milk solids data for 2017 (202,000Kg) was a typical long-term, annual production.

2022/2023 Price of nitrogen doubled, rainfall prevented planned lime/Mg application.





**Inputs** are shown on downwards trajectory from 100% input: Current N sits at 46%, supplement imported 68% of original inputs.

**Outputs** on upward trajectory from 0%: 8% increase in cow numbers, 25% increase in production, 46% increase in pasture growth.