



# **FARMER LED, FARMER DRIVEN**

**Crop Establishment Success  
Maximising the Potential of Forage Crops  
A Monitor Farm Scotland Innovation Project**



**Kale at Meikle Maldron farm, Torphins**

The Deeside Monitor Farm Forage Crop Innovation Project followed and evaluated several outwintering systems in winter 2024/25.



CROP ESTABLISHMENT SUCCESS

Early establishment success of a forage crop gives an early indication of the crop’s resilience over the growing season. Numerous factors can affect forage crop establishment including,

- Soil moisture
- Soil contact with the seed
- Nutrients available (pH, N, P, K, boron, sulphur, magnesium, etc)
- Weed, pest and disease management

More information on establishment is available at [fas.scot/downloads/technical-note-tn733-forage-crops-for-livestock/](https://fas.scot/downloads/technical-note-tn733-forage-crops-for-livestock/)

CROP RESILIENCE

A crop that grows uniformly from a seed to a healthy viable plant can withstand changes or stress easier and the crop is also likely to have a greater yield.

Crop uniformity makes it easier to calculate the daily allocation of the crop, using stock fences for livestock, and can help reduce waste and increase utilisation.

Ten outwintering crops or systems were followed through the 2024/2025 growing season. There were two fodder beet crops, which allowed establishment rate comparisons.

Established fodder beet plants were counted over five different sites in each field. One was planted at 50cm spacing, so 5 metre rows were counted (if the spacing had been 45cm then 5.5m would have been used), the other was sown using a Horsche drill, and an allowance was made in the calculation for the closer row spacing.

	Fodder Beet 1	Fodder Beet 2
Sown	Horsche Drill	Beet Drill
Sowing Rate	100,000 seeds/ha	125,000 seeds/ha
Total plants established	7.30/m <sup>2</sup>	12.00/m <sup>2</sup>
Establishment Rate	73.04%	100%

Table 1: Comparison of two fodder beet crops

Fodder beet 1 was sited in a dry field, with sandy knowes throughout the field. Fodder beet 1 had a very mixed germination, with plants continuing to germinate over a month’s period.

Fodder beet 2 was grown in fertile soil with a high sowing rate. Establishment was very uniform. The leaves from these two fodder beet crops were analysed at the end of July for dry matter and their mineral status. Crop nutrients are affected by the crop inputs and the soil status. Dry matter was higher in the 2<sup>nd</sup> sample, which had the higher establishment rate.

	Fodder Beet 1	Fodder Beet 2	Typical Leafy Samples
Dry Matter (g/kg)	80.52	87.56	–
Phosphorus (% by Wt DM)	0.362	0.405	0.2 – 0.6
Potassium (% by Wt DM)	4.51	3.47	1.5 – 3.5

Table 2: Fodder beet crop leaf analysis, July 2024

Fodder beet 1 suffered from beet yellows virus Throughout the growing season, resulting in yellow and brittle leaves. Both crops were yield measured and analysed in November.

November 2024	Fodder Beet 1		Fodder Beet 2	
	Leaf	Bulb	Leaf	Bulb
Yield FW/ha	38.00	87.2	63.74	84.92
Dry Matter	10%	19%	15%	21%
Tonnes DM/ha	3.9	16.6	9.6	17.8
Total DM Yield	20.48		27.39	

Table 3: Leaf and bulb analysis November 2024

Fodder Beet 1 was grazed in November.

Fodder beet 2 was not grazed until the turn of the year at this point the yield of this crop dropped greatly.

Yield drop in the leaf would be expected due to die back from frosts, snow, etc. However, the bulb yield dropped by approximately 25% in this period. This shows the importance of yield analysis throughout the growing season to ensure animals' requirements and intakes are estimated and achieved.

January 2025	Fodder Beet 2	
	Leaf	Bulb
Yield FW/ha	29.30	64.33
Dry Matter	15%	21%
Tonnes DM/ha	4.4	13.5
Total DM Yield	17.90	

Table 4: Fodder beet 2 January analysis



Beet Yellow Virus



Good beet crop at Banchory



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