



SOVGOLD KALE

MULTI-YEAR TRIAL REVIEW

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SOVGOLD YIELD

SovGold was trialled across 24 sites over 4 years. These trials have been replicated throughout New Zealand in plot trials and as large scale paddock demonstrations. Results from trials and farmer testimonials have shown that **SovGold** has great yield potential while demonstrating an improvement in stem quality compared to Sovereign. *Table 1* below shows that the average yield of **SovGold** was 14.7 t DM/ha from the 24 yielded trials while the average yield of Sovereign was 13.7 t DM/ha across 27 trials. These trials also highlight that in the breeding of **SovGold** there was a focus on achieving greater leaf yield rather than just increasing the size of the stem which is generally the lowest quality part of the plant. *Table 1* shows this with **SovGold's** average leaf yield being 5.3 t DM/ha compared to Sovereign with an average leaf yield of 4.9 t DM/ha.

Table 1. Multi-year, multi-site analysis comparing SovGold to Sovereign.

	Number of Trials	Total Yield (t/ha)	Leaf Yield (t/ha)
SovGold	24	14.7	5.3
Sovereign	27	13.7	4.9

SovGold and Sovereign have been trialled in a number of split paddocks, where **SovGold** outperformed Sovereign in both yield and quality. *Table 2* shows the average yield difference between **SovGold** and Sovereign from five split paddocks in Canterbury from the 2018/2019 season. **SovGold** yielded, on average, 7% more than Sovereign with an average yield of 9,892 kg DM/ha and a lower drymatter percent in both the leaf and the stem.



Image 1: Split paddock in Rangitata Sovereign left and SovGold right

SOVGOLD QUALITY

Split paddock trials from the 2017/18 and the 2018/19 seasons show that **SovGold** has outstanding quality throughout the whole plant. Using NIRS quality analysis, the average MJ ME/kg DM for **SovGold** was 12.9 in the 2017/18 season trials. In the 2018/19 trials the average MJ ME/kg DM for **SovGold** was 12.6. From the trial sites, **SovGold** has shown exceptional quality throughout its stem with advantages of up to 1.5 MJ ME/kg DM being observed in parts of the stem when compared to Sovereign (*Tables 3 and 4*).

Trials to date have consistently shown that **SovGold** has a higher quality throughout both the stem and leaf.

Table 2: Average yield (kg DM/ha) and stem to leaf breakdown of SovGold VS Sovereign from five canterbury split paddock trials.

	Leaf (kg DM/ha)	Stem (kg DM/ha)	Total (kg DM/ha)	Leaf (DM %)	Stem (DM %)	Leaf (% of total yield)	Stem (% of total yield)
SovGold	4,491	5,401	9,892	13.0%	16.2%	45%	55%
Sovereign	4,365	4,938	9,303	13.3%	19.1%	47%	53%



Image 2: Split paddock trial in Canterbury, Sovereign left and SovGold right.

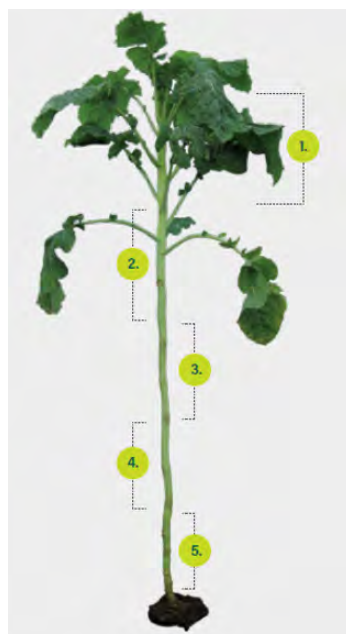
Table 3: Crude protein (cp %) and metabolisable energy content (MJ ME/kg DM) for different parts of the kale plant from sovgold and sovereign from two split paddocks over the 2017/18 season.

Sovereign				SovGold		
Plant Parts	% of total DM	CP % of DM	Energy (MJ ME/kg DM)	% of Total DM	CP % of DM	Energy (MJ ME/kg DM)
1. Leaf	45	14.6	13.8	41	17.8	14.0
2. Upper Stem	10	14.0	13.4	9	13.1	13.5
3. Upper Mid	14	10.0	12.4	17	8.4	13.0
4. Lower Mid	15	8.9	10.9	16	7.8	12.0
5. Lower	16	7.5	9.7	17	7.6	10.7

Table 4: Crude protein (cp %) and metabolisable energy content (MJ ME/kg DM) for different parts of the kale plant from sovgold and sovereign from four split paddocks over the 2018/19 season.

Sovereign				SovGold		
Plant Parts	% of total DM	CP % of DM	Energy (MJ ME/kg DM)	% of Total DM	CP % of DM	Energy (MJ ME/kg DM)
1. Leaf	44	17.7	13.6	40.5	19.3	13.7
2. Upper Stem	10.1	11.9	13.6	10.3	11.7	13.8
3. Upper Mid	15.2	8	11.6	15.3	8.2	13.1
4. Lower Mid	15.4	6.6	11.1	17.1	6.5	11.9
5. Lower	15.3	6.4	8.7	16.8	6.3	9.3

NIRS carried out by Hills Laboratories



SOVGOLD FLOWERING DATE

Having a kale that flowers late in the season allows for more time to graze the crop at its peak quality before the plant starts to put its energy into flowering; it also minimises the risk of running into the potential animal health issues that come with flowering brassicas. **SovGold** is the latest flowering kale on the market, as shown in *Image 3*, making it a very attractive option for those wanting to extend their grazing window. *Image 3* was taken on the 11th of September when **SovGold** had not yet started to flower, while other commercial cultivars had.



Image 3: SovGold pictured left on the 11th of September with a competitor's kale on the right. SovGold has not flowered.



"Commericalising Sovereign and seeing it become such a go-to wintering option for such a large number of farmers was significant for me and one that I thought would be hard to beat in my career. However, bringing **SovGold** to the market has been a highlight for me and is one of the best examples of improving yield while actually improving quality that I have seen."

Allister Moorhead
Product Development Manager

SOWING RATES

In 2019/20 a sowing rate trial was run with five different sowing rates, these were 2 kg/ha, 3 kg/ha, 4 kg/ha, 5 kg/ha and 6 kg/ha. The aim of this trial was to determine the optimum sowing rate for kale and at which point yield was negatively effected based on not enough plants per hectare. The results from this trial showed that as sowing rates increased, yield also increased (shown in *Figure 1*). The data also showed that when plant numbers dropped below 20 this had the greatest impact on yield, as seen in the 2 kg/ha sowing rate in *Figure 2*.

Based on the results of this trial, kale should be planted at a rate of 4-5 kg per hectare to optimise plant numbers and yield per hectare. While good yields were achieved with 3 kg/ha, this was observed in perfect conditions and would leave no room for error or plant losses due to environmental pressures or other factors that make establishment difficult. Sowing at a rate of 6 kg/ha didn't necessarily result in a significant increase in yield over the 4 and 5 kg/ha sowing rates, so is not recommended.

Figure 1: Total yield of kale at different sowing rates 2019/20 season.

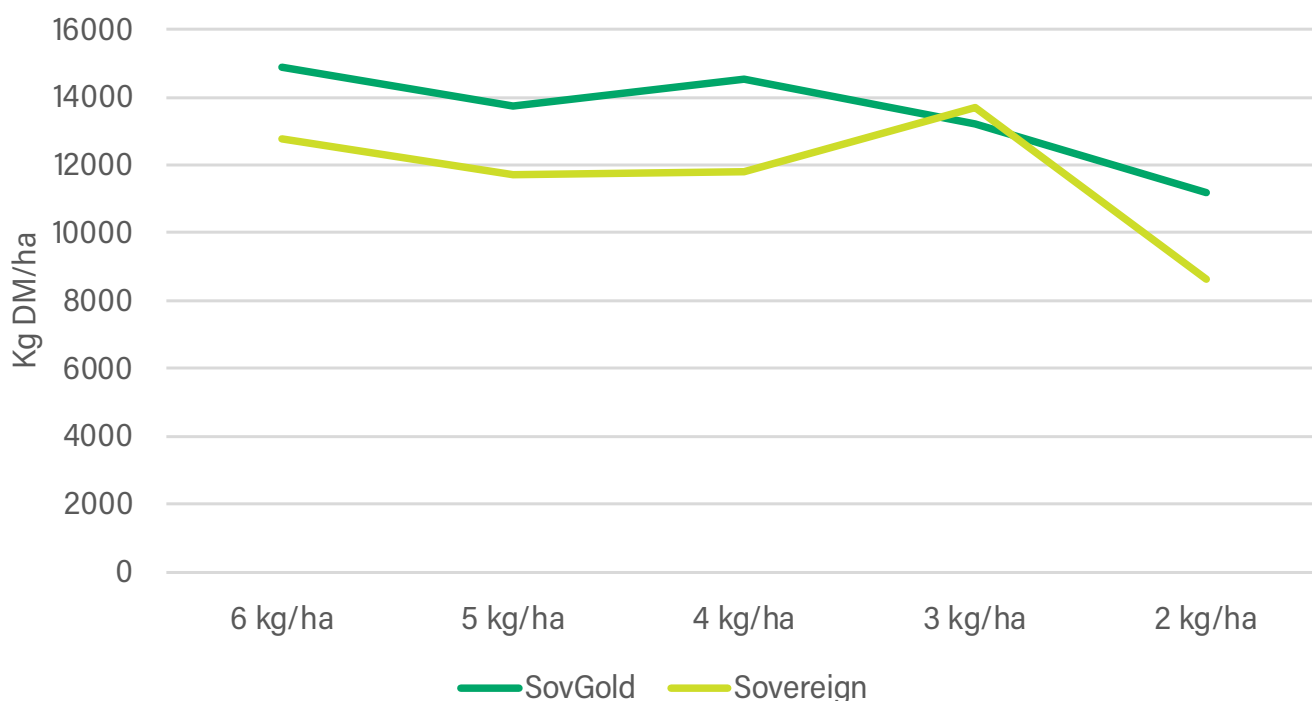


Figure 2: Total yield of kale at different sowing rates and plant number count per square metre from the 2019/20 season.

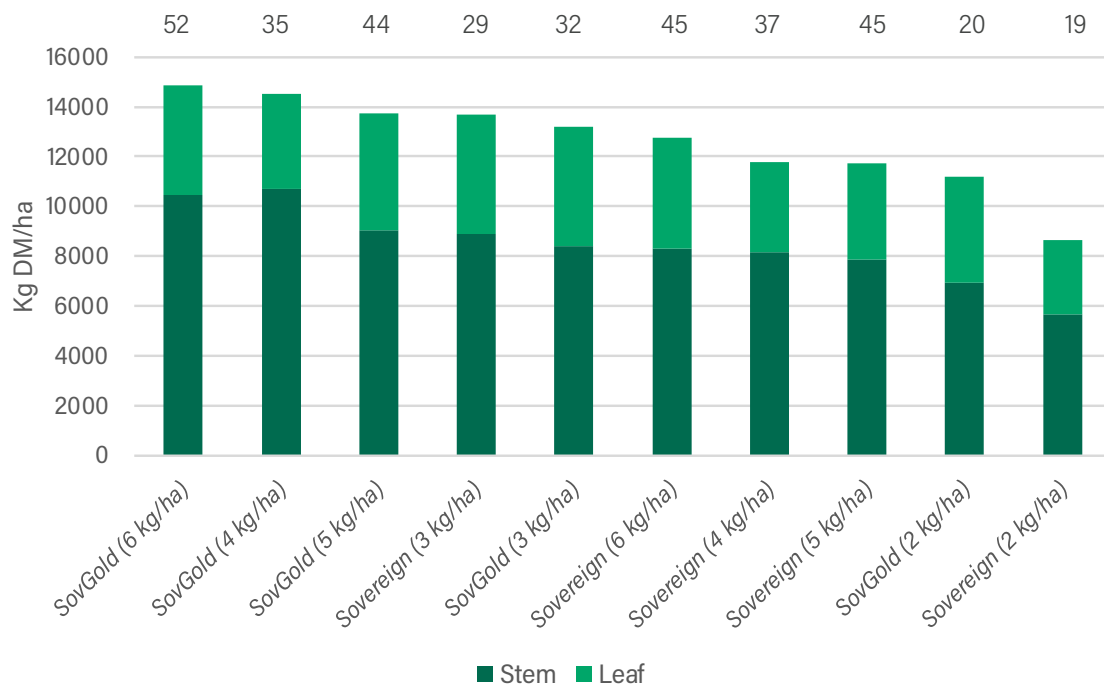


Image 4: Upper South Island Extension Agronomist Fraser Harrison in a split paddock trial in Canterbury holding Sovereign on the left and SovGold on the right.

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