

Sustainable Vegetable Systems

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Turning the Invisible Visible

It's truly remarkable how collaborative efforts among growers can lead to innovative solutions to horticultural challenges. In New Zealand, the vegetable sector is actively transitioning towards more sustainable production practices. Amongst a raft of practices, nitrogen stands out as a key economic and environmental consideration in an extremely complex and ever-changing vegetable growing system. The Sustainable Vegetable Systems project has turned this invisible element into a visible nitrogen budget that integrates the latest modelled flows with soil nitrogen testing.

“A measured number beats a modelled number every time”

Planning requires a model to project into the future, but it is the SVS Tool's ability to overwrite modelled numbers with measured in-season soil tests that has created a powerful decision support tool that reflects this season's actual conditions.

Vegetable growing is extremely complex. All growers have a nitrogen fertiliser plan based on many years of experience. However, plans are for a typical season, and there is never a typical season. The SVS Tool, through the integration of soil testing, helps support a grower's decision making to drive their crop to the end given the season they are facing here and now.

Environmental Sustainability

Achieving environmentally sustainable vegetable production involves managing inputs to meet economic crop production needs, while reducing environmental impact.

To reduce environmental impact and optimise production, a sophisticated approach to crop management is necessary, considering the variability within fields, from field to field and year to year. The SVS Project delivered controlled experiments that informed the development of more accurate models. Alongside this was four years of ground truthing using monitoring sites from right around New Zealand that built grower engagement and trust.

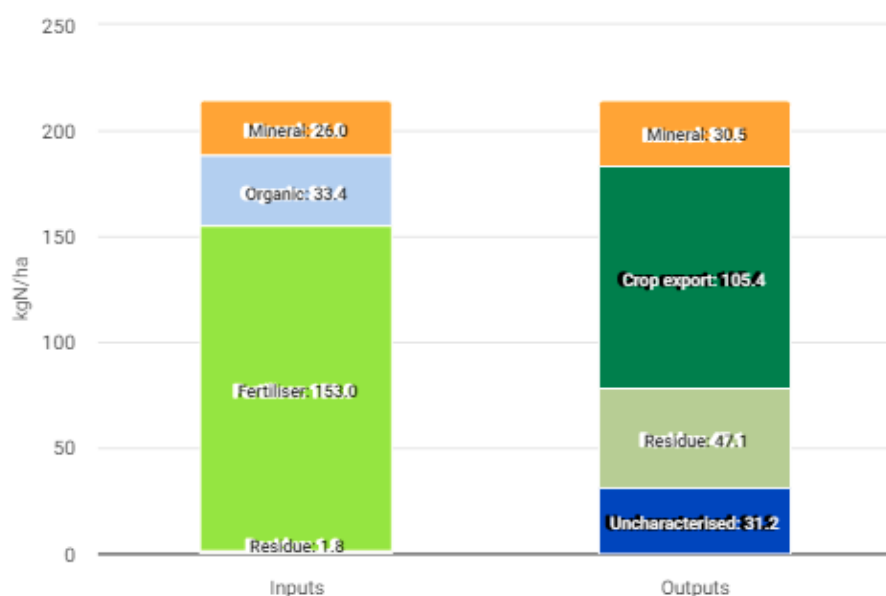
Decision Support Tool

The user base of the SVS Tool is both growers and their trusted advisors, including independent agronomists, fertiliser representatives, and researchers. Ultimately, the SVS Project has improved understanding of nitrogen management, thereby enabling growers to improve nutrient use efficiency through the adoption of management practices that are built upon years of experience and sound scientific knowledge.

The SVS Tool can be accessed here www.svstool.co.nz

The User Guide and the Final Report is available from <https://www.vri.org.nz/environmental-resources/>

Current Crop Nitrogen Balance



Current Crop N Uptake and Soil N

Displays patterns of Crop N uptake and soil mineral N content during the current crops growth period. The tool recommends an N application whenever soil N drops to 30kg/ha and aims to leave this much N in the soil when the crop is harvested.

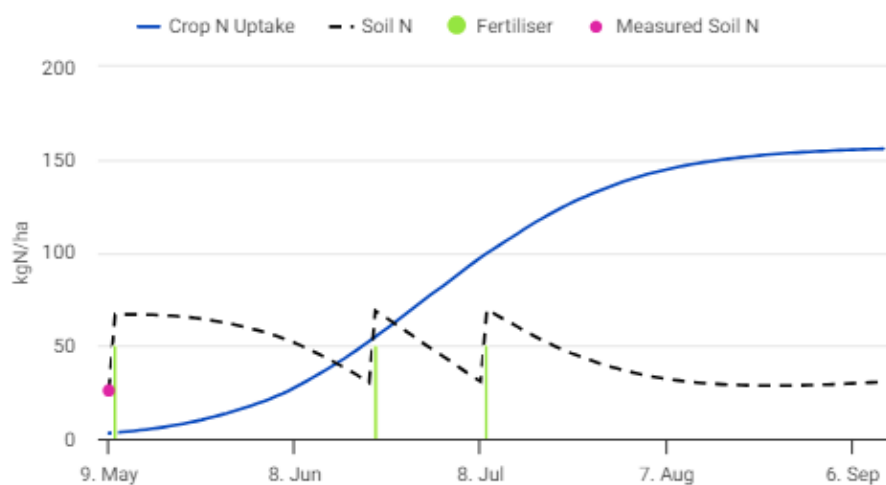


Figure 1. Key outputs from the SVS Tool including nitrogen budget (top) and crop and soil nitrogen curves (bottom) – this example is of an onion crop in Pukekohe.