SOIL MANAGEMENT PLAN FORM

CURRENT / PLANNED SOIL MANAGEMENT PRACTICES

Site Details	Comments
Management plan for: **KPIN/s:** 3390 8000	
Soil type(s) and/or texture(s): Gely Kaharoa Ash Tarawere Ash *e.g., as noted on soil map(s). Texture can be assessed with DIY field or lab test.* See good practice[1]	
Site specific soil health management considerations (optional): 8000: Banks *e.g., KPINS/blocks prone to compaction, steep slopes, low organic matter, low CEC, high pH, poor drainage, erosion, few earthworms*	

SOIL MANAGEMENT PLAN INSTRUCTIONS

- Review the set of soil management actions listed in the table below
- Tick **(✓)** any that *you are already doing*. Circle or highlight any specific aspects that apply to your KPIN(s)
- Cross **(x)** any that *you are not doing* or are *not relevant* for your KPIN(s)
- Tick **(✓)** in the **CI** column any actions that you may plan to do or have identified as an opportunity for improvement in the future
- Add any additional actions relevant to your KPIN(s) in the blank action rows
- In the comment's column, add action notes and/or details for transfer to the Continuous Improvement Plan. This column can also be used to explain KPIN variations

***NOTE**: Items marked * are specific Zespri GAP Principal Levels; Major or Minor*

CONTINUOUS IMPROVEMENT PLAN REMINDER: Tick in the CI column any actions that you may plan to do or have identified as an opportunity for improvement. Move only action(s) you intend to act on in the next 1-3 years to your continuous improvement plan form (The continuous Improvement plan is in Part B: Section 1.6 of the Grower Manual)

Strategy	Action	✓/ X	Comments	CI Continuous Improvement ✓
Overall considerations				
Take corrective action as per previous inspection(s) *	Ensure that any current risks identified (for example previous land use, storage facilities standards) have been addressed	✓		
Take preventative action as per Site Risk assessment	Take action to prevent soil contamination as appropriate	✓		
Take action in the case of unexpected events	Assess all new risks introduced, and take all action possible to prevent/minimise contamination in response to an unexpected event e.g. flood/ drought	✓		

Strategy	Action	✓/ X	Comments	CI Continuous Improvement ✓

Strategy	Action	✓/ X	Comments	CI Continuous Improvement ✓
Management of soil fertility				
Analyse and monitor soil health status	Monitor soil nutritional (chemical) status e.g. with lab tests (basic soil package plus available nitrogen) See good practice[2]	✓		
	Monitor soil biological status e.g., with lab tests (organic matter, C:N ratio, hot water extractable carbon) and/or visual assessments. See good practice[3]	✓		
	Monitor soil physical status (structure) e.g., with lab tests and/or visual assessments See good practice[3]	✓		
	Keep records of soil analysis See grower tool[4]	✓		
Use qualified consultants * and applicators	Ask for evidence of consultant qualifications (e.g., Certified Nutrient Management Advisor), spreader certification (e.g., Spreadmark) and/or competency	✓	Lynsey Heard Brenmark for fert recomendations Massey University Certificate of Completion: Sustainable Nutrient Management in New Zealand Agriculture March 2005 Primehort or H2 for spreading if using	
Rationalise fertiliser use based	Maintain soil fertility levels at the optimum levels for vine growth (use soil test results as a gauge)	✓	Go on recomenations of certified advisor/assesor	

Strategy	Action	✓/ X	Comments	CI Continuous Improvement ✓
on crop need and orchard properties including soil type and vine age * See good practice[5]	Estimate how much nutrient will be removed by the targeted crop volume, to inform fertiliser applications	✓		
	Use early and mid-season leaf testing to inform side-dressing and/or foliar fertiliser applications	✓		
	Follow the Four Rs of fertiliser use when choosing fertiliser type, rate, application methods/ placement and timings See good practice[5]	✓		
Sense-check nitrogen fertiliser recommendations. See good practice[6]	Consider test results, production and replacement cane results/targets, vine health, overall balance of nitrogen inputs and removals, and on-orchard observations in consultation with fertiliser advisor when setting annual nutrient management plan	✓		
Keep records of fertiliser applications *	Include exact dates, trade name, volume relative to the area treated, the nutrient content of fertiliser applied (NPK ratio), application method and name of applicator See grower tool[7]	✓		
Analysis of supply of organic fertiliser e.g. compost *	Analysis takes into account NPK content, and where known, indicative release rate/seasonal contribution to nutrient budget	✓	Bennets	

Strategy	Action	✓/ X	Comments	CI Continuous Improvement ✓
Manage irrigation to optimise soil moisture levels	Avoid over-watering by proactively managing irrigation scheduling based on soil type, vine needs, and weather conditions (ET and rainfall), to reduce risk of soil drainage and associated nutrient losses below the root zone	✗	No irrigation on either Kpin	
Maintain soil structure and avoid compaction*, improve soil biology				
Vehicle control	Restrict vehicle use and movement on wet soils, use low pressure tyres, minimise vehicle weight	✓	No soft riders during harvest	
	Consider and manage relationship between wheel tracks (vulnerable to compaction) and irrigation and fertiliser application areas (targeting root zone), noting that water and nutrient movement may be constrained in compacted areas	✓		
Add soil amendments	Discuss with your fertiliser advisor first Applications of inorganic fertiliser or pH adjusting products (e.g. lime or sulphur) should be based on soil and leaf analysis	✓		

Strategy	Action	✓/ X	Comments	CI Continuous Improvement ✓
Add organic matter e.g., compost or mulch See good practice[8]	Organic matter such as green waste, vermicast or manure treated appropriately and certified or tested to confirm safe from harmful pathogens or pests	✓		
	Factor nutrient values and timing of application of organic matter into overall nutrient management plan	✓		
Aeration or soil ripping See good practice[9]	Aim to break-up compacted soil and pans that prevent drainage, cause water logging and limit root development	✓	Re-seed grass sward	
	Rip when soil is dry	✓		
	Target compacted areas such as wheel tracks	✓		

Strategy	Action	✓/ X	Comments	CI Continuous Improvement ✓
Cover crop/sward management See good practice[8]	Maintain an appropriate green cover on orchard floor for as much of year as possible	✓		
Reduce soil erosion risk * and water run-off *See good practice[10]*				
Drainage design	Review and design/adjust drainage system to prevent water logging under high rainfall conditions	✓		
	Consider erosion risks from vehicle tracks and minimise with appropriate drainage management	✓		
Control slopes	Review the site for soil erosion risks	✓		
	Reduce slope angles where practical	✓		
	Use retaining walls or deep rooting plants in vulnerable areas See good practice[11]	✓		
Riparian planting	Plant bare slopes, waterway or drain margins, and overland flow paths with appropriate species to reduce erosion risk and absorb excess nutrients before they reach waterways See good practice[12]	✓	Tussock	

Strategy	Action	✓/ X	Comments	CI Continuous Improvement ✓
Sediment control bunds	Identify and appropriately manage overland flow-paths to reduce erosion and trap sediment run-off before it reaches waterways	✓		
Wetland restoration or development	Where appropriate, restore boggy areas as wetlands that can help to trap and filter sediment and nutrient run-off from orchard slopes above See good practice[12]	✓		
Cover crop/sward management See good practice[8]	Maintain an appropriate green cover on orchard floor for as much of year as possible	✓		
Prevent soil contamination				
Select appropriate water sources for the task	Do not use high risk water for irrigation, fertigation or plant protection sprays to prevent contamination of soil with pesticides, excessive minerals etc.	✓		

Strategy	Action	✓/ X	Comments	CI Continuous Improvement ✓
Prevent cross-contamination of fertilisers and bio stimulants *	Ensure stored separately in sealed packaging to ensure accurate control of what is applied	✓		
Prevent general contamination soil inputs	Ensure chemicals and fuel are stored securely and used/disposed of safely in accordance with regulatory and GAP section 4, 6 & 8 requirements *	✓		
Manage herbicide use appropriately	Consider impacts of herbicides on soil biology (e.g. earthworms) and manage weed control methods and target areas to minimise these impacts	✓		
Other				

Strategy	Action	✓/ X	Comments	CI Continuous Improvement ✓

Review:

Date: 30 October 2023	Sign:	Date:	Sign:
Date:	Sign:	Date:	Sign:
Date:	Sign:	Date:	Sign:

ANNEX - Good Practice Links

Strategy	Good Practice #	Link
Site Details	1	https://soils.landcareresearch.co.nz/topics/understanding-soils/get-dirty/
Management of soil fertility	2	https://canopy.zespri.com/EN/industry/pubs/kiwitech/Documents/N43.pdf
	3	https://canopy.zespri.com/EN/grow/crop/plant_nutrition/Documents/DIY-Soil-Health-Assessment-Guide.pdf
	4	https://canopy.zespri.com/EN/grow/GET/GET-webinar-series/Documents/Soil-Testing-Report-Template.xlsx
	5	https://canopy.zespri.com/EN/industry/pubs/need-knows/Documents/NK043.pdf
	6	https://canopy.zespri.com/EN/industry/pubs/need-knows/Documents/NK050.pdf
	7	https://canopy.zespri.com/EN/Pages/FertiliserDiary.aspx
Maintain soil structure and avoid compaction*, improve soil biology	8	https://canopy.zespri.com/EN/industry/pubs/kiwitech/Documents/E004.pdf
	9	https://canopy.zespri.com/EN/industry/pubs/kiwitech/Documents/N95.pdf
Reduce soil erosion risk * and water run-off	10	https://canopy.zespri.com/EN/industry/pubs/Kiwiflier-Spotlight/Documents/KF-Spotlight-16.pdf
	11	https://canopy.zespri.com/EN/industry/aboutzespri/sustainability/Documents/Erosion-control-Plants-with-purpose-summary-infosheet.pdf
	12	https://canopy.zespri.com/EN/industry/aboutzespri/sustainability/Documents/Riparian-planting-Plants-with-purpose-summary-infosheet.pdf
	8	https://canopy.zespri.com/EN/industry/pubs/kiwitech/Documents/E004.pdf