NU-test crop sampling and growth stage guidelines 2023

USER NOTES:

1. Find the crop name from the first column
2. Note the recommended timing (which links to our available growth stages)
3. Note the required plant part - it is critically important to follow these guidelines so analytical results can be compared against our NU-test Desirable Levels which are based exclusively on these plant parts
4. Note the quantity required - if we receive insufficient sample material, analysis will not proceed
5. Please write the corresponding Growth Stage number (listed in red below) in the marked column on the Sample information label, which can be accessed from our website or through the link: here
6. Note that if a growth stage is not included on your sample information sheet, your results will not be reported against our Desirable Levels for that crop

version: 2023.v1 (29/05/2023)

Crop Name:	Timing of sampling	Plant Part needed:	Quantity required:	Growth stages available	
ALMOND	Begin sampling at or just before GS 7.2 (shuck fall). A second sample should be taken at stone hardening (7.5). Nutrition should be monitored throughout nut development by taking 2-3 samples at equal intervals apart. A final sample should be taken at harvest.	Collect 10 cm of new shoot tips from current season's growth at mid crown height (or shoulder height for large trees). Sample from the same trees for subsequent sampling.	30 to 40 shoot tips	**up to 5.0** **7.0-7.2** **7.3** **7.4** **7.5-7.9** **8.0-8.6** **8.7-8.9** **9.0-9.1**	Vegetative Early fruit enlargement/Shuck Fall Mid fruit enlargement Mid fruit enlargement Stone Hardening Fruit Maturation Ripe Fruit for Harvest Post-harvest
ALMOND KERNEL	Sample at a growth stage 7.2-7.4 (fruit 20-40% size) through to pre-harvest.	Whole almonds are selected from around the whole tree (10-20 representative trees).	At least 40 almonds	**7.2-7.4** **7.5-7.9** **8.0-8.9**	Early-mid fruit Stone hardening Fruit maturation
APPLE	Begin sampling at fruit set, then take three samples during fruit development at equal weeks apart. Sample again at harvest and take a final sample post harvest to monitor any post harvest application	Collect 10 cm of new shoot tips from current season's growth at mid crown height (or shoulder height for large trees). Sample from the same trees for subsequent sampling.	At least 20 shoot tips	**5.3** **6.9** **7.1** **7.3** **7.4** **8.1** **8.7** **9.1**	Open cluster End of flowering Fruit development (10mm) Second fruit fall (30mm) T-stage Beginning of ripening Harvest maturity Post Harvest
APPLE FUJI	Begin sampling at fruit set, then take three samples during fruit development at equal weeks apart. Sample again at harvest and take a final sample post harvest to monitor any post harvest application	Collect 10 cm of new shoot tips from current season's growth at mid crown height (or shoulder height for large trees). Sample from the same trees for subsequent sampling.	At least 20 shoot tips	**3.1 - 3.9** **5.3** **6.9** **7.1** **7.2** **7.3** **7.4** **7.5** **8.1** **8.7**	Shoot development Open cluster End of flowering Fruit development (10mm) Fruit development (20mm) Second fruit fall (30mm) T-stage Fruit development (1/2 final size) Beginning of ripening Harvest maturity
APPLE GALA	Begin sampling at fruit set, then take three samples during fruit development at equal weeks apart. Sample again at harvest and take a final sample post harvest to monitor any post harvest application	Collect 10 cm of new shoot tips from current season's growth at mid crown height (or shoulder height for large trees). Sample from the same trees for subsequent sampling.	At least 20 shoot tips	**3.1 - 3.9** **5.3** **6.9** **7.1** **7.2** **7.3** **7.4** **7.5** **8.1** **8.7**	Shoot development Open cluster End of flowering Fruit development (10mm) Fruit development (20mm) Second fruit fall (30mm) T-stage Fruit development (1/2 final size) Beginning of ripening Harvest maturity

Crop Name:	Timing of sampling	Plant Part needed:	Quantity required:	Growth stages available	
APPLE GRANNY SMITH	Begin sampling at fruit set, then take three samples during fruit development at equal weeks apart. Sample again at harvest and take a final sample post harvest to monitor any post harvest application	Collect 10 cm of new shoot tips from current season's growth at mid crown height (or shoulder height for large trees). Sample from the same trees for subsequent sampling.	At least 20 shoot tips	3.1 - 3.9 5.3 6.9 7.1 7.2 7.3 7.4 7.5 8.1 8.7	Shoot development Open cluster End of flowering Fruit development (10mm) Fruit development (20mm) Second fruit fall (30mm) T-stage Fruit development (1/2 final size) Beginning of ripening Harvest maturity
APPLE JAZZ	Begin sampling at fruit set, then take three samples during fruit development at equal weeks apart. Sample again at harvest and take a final sample post harvest to monitor any post harvest application	Collect 10 cm of new shoot tips from current season's growth at mid crown height (or shoulder height for large trees). Sample from the same trees for subsequent sampling.	At least 20 shoot tips	5.3 6.9 7.4 8.1	Open cluster End of flowering T-stage Beginning of ripening
APPLE KANZI	Begin sampling at fruit set, then take three samples during fruit development at equal weeks apart. Sample again at harvest and take a final sample post harvest to monitor any post harvest application	Collect 10 cm of new shoot tips from current season's growth at mid crown height (or shoulder height for large trees). Sample from the same trees for subsequent sampling.	At least 20 shoot tips	5.3 6.9 7.3 7.4 8.1	Open cluster End of flowering Second fruit fall (30mm) T-stage Beginning of ripening
APPLE PINK LADY	Begin sampling at fruit set, then take three samples during fruit development at equal weeks apart. Sample again at harvest and take a final sample post harvest to monitor any post harvest application	Collect 10 cm of new shoot tips from current season's growth at mid crown height (or shoulder height for large trees). Sample from the same trees for subsequent sampling.	At least 20 shoot tips	3.1 - 3.9 5.3 6.9 7.1 7.2 7.3 7.4 7.5 8.1 8.7	Shoot development Open cluster End of flowering Fruit development (10mm) Fruit development (20mm) Second fruit fall (30mm) T-stage Fruit development (1/2 final size) Beginning of ripening Harvest maturity
APPLE FRUIT	Begin sampling at early as GS 7.1 (10mm fruitlets) through to harvest (to determine storage capacity)	Send whole fruit (not halved) in secure plastic bags. Be aware of bruising and loss of juice when packing.	We require a representative number of pieces of fruit per sample (which should be weighed up against the cost of freight). We suggest 10+ apples, more for smaller/younger fruitlets	7.1 7.2 7.4 7.5 8.1 8.5 8.7 9.1	Fruit size up to 10mm Fruit size up to 20mm Fruit size 40mm, T stage Fruit half final size Beginning of ripening Advanced ripening Fruit ripe for harvest Post harvest

Crop Name:	Timing of sampling	Plant Part needed:	Quantity required:	Growth stages available	
Apple Fruit (Fuji)	Begin sampling at early as GS 7.1 (10mm fruitlets) through to harvest (to determine storage capacity)	Send whole fruit (not halved) in secure plastic bags. Be aware of bruising and loss of juice when packing.	We require a representative number of pieces of fruit per sample (which should be weighed up against the cost of freight). We suggest 10+ apples, more for smaller/younger fruitlets	7.1 7.2 7.4 7.5 8.1 8.5 8.7 9.1	Fruit size up to 10mm Fruit size up to 20mm Fruit size 40mm, T stage Fruit half final size Beginning of ripening Advanced ripening Fruit ripe for harvest Post harvest
Apple Fruit (Gala)	Begin sampling at early as GS 7.1 (10mm fruitlets) through to harvest (to determine storage capacity)	Send whole fruit (not halved) in secure plastic bags. Be aware of bruising and loss of juice when packing.	We require a representative number of pieces of fruit per sample (which should be weighed up against the cost of freight). We suggest 10+ apples, more for smaller/younger fruitlets	7.1 7.2 7.4 7.5 8.1 8.5 8.7 9.1	Fruit size up to 10mm Fruit size up to 20mm Fruit size 40mm, T stage Fruit half final size Beginning of ripening Advanced ripening Fruit ripe for harvest Post harvest
Apple Fruit (Granny Smith)	Begin sampling at early as GS 7.1 (10mm fruitlets) through to harvest (to determine storage capacity)	Send whole fruit (not halved) in secure plastic bags. Be aware of bruising and loss of juice when packing.	We require a representative number of pieces of fruit per sample (which should be weighed up against the cost of freight). We suggest 10+ apples, more for smaller/younger fruitlets	7.1 7.2 7.4 7.5 8.1 8.5 8.7 9.1	Fruit size up to 10mm Fruit size up to 20mm Fruit size 40mm, T stage Fruit half final size Beginning of ripening Advanced ripening Fruit ripe for harvest Post harvest
Apple Fruit (Jazz)	Begin sampling at early as GS 7.1 (10mm fruitlets) through to harvest (to determine storage capacity)	Send whole fruit (not halved) in secure plastic bags. Be aware of bruising and loss of juice when packing.	We require a representative number of pieces of fruit per sample (which should be weighed up against the cost of freight). We suggest 10+ apples, more for smaller/younger fruitlets	7.1 7.2 7.4 7.5 8.1 8.5 8.7 9.1	Fruit size up to 10mm Fruit size up to 20mm Fruit size 40mm, T stage Fruit half final size Beginning of ripening Advanced ripening Fruit ripe for harvest Post harvest
Apple Fruit (Kanzi)	Begin sampling at early as GS 7.1 (10mm fruitlets) through to harvest (to determine storage capacity)	Send whole fruit (not halved) in secure plastic bags. Be aware of bruising and loss of juice when packing.	We require a representative number of pieces of fruit per sample (which should be weighed up against the cost of freight). We suggest 10+ apples, more for smaller/younger fruitlets	7.1 7.2 7.4 7.5 8.1 8.5 8.7 9.1	Fruit size up to 10mm Fruit size up to 20mm Fruit size 40mm, T stage Fruit half final size Beginning of ripening Advanced ripening Fruit ripe for harvest Post harvest

Crop Name:	Timing of sampling	Plant Part needed:	Quantity required:	Growth stages available	
Apple Fruit (Pink Lady)	Begin sampling at early as GS 7.1 (10mm fruitlets) through to harvest (to determine storage capacity)	Send whole fruit (not halved) in secure plastic bags. Be aware of bruising and loss of juice when packing.	We require a representative number of pieces of fruit per sample (which should be weighed up against the cost of freight). We suggest 10+ apples, more for smaller/younger fruitlets	**7.1** **7.2** **7.4** **7.5** **8.1** **8.5** **8.7** **9.1**	Fruit size up to 10mm Fruit size up to 20mm Fruit size 40mm, T stage Fruit half final size Beginning of ripening Advanced ripening Fruit ripe for harvest Post harvest
Apple Fruit (Rosy Glow)	Begin sampling at early as GS 7.1 (10mm fruitlets) through to harvest (to determine storage capacity)	Send whole fruit (not halved) in secure plastic bags. Be aware of bruising and loss of juice when packing.	We require a representative number of pieces of fruit per sample (which should be weighed up against the cost of freight). We suggest 10+ apples, more for smaller/younger fruitlets	**7.1** **7.2** **7.4** **7.5** **8.1** **8.5** **8.7** **9.1**	Fruit size up to 10mm Fruit size up to 20mm Fruit size 40mm, T stage Fruit half final size Beginning of ripening Advanced ripening Fruit ripe for harvest Post harvest
APRICOT	Begin sampling at stage 7.2 (shuck fall). A Second sample should be taken at stone hardening (7.5). Nutrition should be monitored during fruit growth by taking three samples at equal weeks apart. A Final sample should be taken at harvest.	Collect 10 cm of new shoot tips from current season's growth at mid crown height (or shoulder height for large trees); sample from the same trees for subsequent sampling.	40 shoot tips, each 10cm long.	**6.5** **7.2** **7.5** **7.6** **7.7** **7.8** **8.9**	Flowering Shuck fall Stone hardening Fruit about 60% of final size Fruit about 70% of final size Fruit about 80% of final size 8.9 Harvest
ASPARAGUS	Sample during active fern growth	The fern stem	approx 10 ferns	**Unknown**	Unknown
AVOCADO	Begin sampling by fruit set. A second sample should be taken by 2nd fruit drop (7.1). Nutrition should be monitored during fruit growth by taking three samples at equal weeks apart. A final sample should be taken at harvest to determine post harvest applications.	Collect either 15cm of fresh shoot tips, or full leaves with the entire leaf petiole intact.	20 shoot tips, each 15cm long; or 40+ leaves	**5** **6** **6.9** **7.1** **7.5** **8** **8.5** **9**	Pre Flower Fruit set 1st Fruit drop 2nd Fruit drop Fruit sizing Fruit fill Harvest Dormant
AVOCADO FRUIT	As required	Whole fruit	Minimum of 10-12 pieces of fruit	**Unknown**	Unknown
BANANA	Sample at stage 4.9 (sucker development), then at 6.5 and again at 7.0.	Collect 15 cm of midrib from where the leaf blade begins on the 3rd leaf from the top of the main plant, counting the youngest still furled leaf as the first.	10 leaf midribs.	**4.9** **6.5** **7**	Development of the suckers Fruit sizing Fruit fill
BARLEY	Sample 7-10 days prior to intended fertiliser applications, e.g. at tillering (21-29), stem elongation (30-34), and/or booting stages (37-49)	Select whole plants from a 1-2 ha representative area of the crop. Retain the entire top of the plant before tillering, or 10cm of the basal plant part; remove all roots prior to postage to avoid soil contaminating	50 –100 plants, with roots removed	**12 to 15** **21-29** **30-34** **37-49**	5 or more leaves Tillering 21-29 Stem elongation 30-34 Booting 37-49

Crop Name:	Timing of sampling	Plant Part needed:	Quantity required:	Growth stages available	
BASIL	Sample as required. Sampling early in a crop's life gives a better chance of correcting deficiencies and maintaining good nutrient levels and balances	Collect one stem or side shoot per plant; select a stem or side shoot with young, but fully expanded leaves. Discard the leaves and retain the stems or shoots for analysis	30 -100 stems or side shoots, depending on stem or shoot size (if individual pieces are 5cm or longer, 30 pieces are sufficient)	**Unknown**	Unknown
BEETROOT	Commence sampling by stage 3.3, and sample fortnightly until stage 4.5. Alternatively, sample 1 week prior to intended fertiliser applications.	Take the first fully expanded leaf, usually the forth or fifth leaf out from the growing point of the plant. Discard the leaf blades and retain the petiole (leaf stalk) for analysis.	Minimum of 30 petioles	**1.4** **3.3** **3.9** **4.2** **4.5** **4.9**	Seedling 30% Crop Cover 90% Crop Cover Bulb 20% of final size Bulb 50% of final size Harvest
BLACKBERRY	Begin sampling once in full leaf, and monitor fortnightly or as required until harvest begins.	Take sample from main stems, taking the first fully expanded trifoliate leaves from a representative area of the planting. Collect as much of the petiole as possible, and strip leaf blade carefully	Minimum of 50 trifoliate leaves, retaining the leaf stalk.	**5** **5.5** **6.1** **7.1** **7.5** **8** **8.5** **9**	flower buds visible mid inflorescence emergence early flowering early fruit development 50% fruit formed ealry harvest mid harvest post harvest
BLUEBERRY	Begin sampling at early fruit set; take three samples during fruit development. Diagnostic sample may be taken at any time. Use the shoot and fruit development stages as a guide.	Collect 10 cm of new shoot growth (tip) at mid bush height. Sample the same plants or at least from the same area for subsequent sampling.	25-30 shoot tips.	**3.1** **6.5** **6.9** **7.2** **7.5** **7.7** **8.1** **8.5** **9.1**	Early shoot development Mid flowering All petals fallen, end of flowering Fruit size up to 20% of final size Fruit about half final size Fruit about 70% of final size Beginning of ripening, pink fruit 50% fruit harvested Harvest compl, foliage still fully green
BROAD BEAN	Sample as required. Note our available data range are limited	Select the youngest fully expanded leaf and strip leaf blades, retaining the petioles.	20-25 petioles of the YFEL	**5.1-6.9**	Pre-flowering to flowering
BROCCOLI	Begin sampling by stage 2.2 (vegetative) and continue until 30%-50% of the expected head size is reached (stage 4.3) at fortnightly intervals. If not fortnightly, sample a minimum of 3 times between stage 2.2 & 4.3.	Collect 1 leaf per plant from a representative area of the crop. Select the youngest fully expanded leaf (YFEL), usually the tallest leaf. Strip the leaf matter away leaving the petiole and midrib for analysis	20 petioles from 20 plants in the early stages; reduce the sample size to a minimum 15 as the plant matures	**1.7** **2.2** **2.4** **4.1** **4.3** **4.5** **4.7** **4.9**	Leaf Development Vegetative Head Initiation Buttoning/Early head 30% final frame size/Early head 50% final frame size/Mid head 70% final frame size/late head Harvest/Head tightly closed
BRUSSELS SPROUTS	Begin sampling at stage 1.8 (vegetative) and continue into mid sprout growth (stage 4.5) at fortnightly intervals.	Select the youngest fully expanded leaf (YFEL), usually the tallest leaf in young plants. Collect 1 leaf per plant. Strip the leaf matter away leaving the petiole and midrib for analysis	20 petioles in the early stages; reduce the sample size to 15 as the plant matures	**1.8** **3.5** **3.8** **4.1** **4.5**	Vegetative Main stem elongation Budding Early sprout growth Mid sprout growth

Crop Name:	Timing of sampling	Plant Part needed:	Quantity required:	Growth stages available	
BUFFEL GRASS	As required	Collect fresh grass above ground parts only	select approx 20 random sites across the paddock, to completely fill a zip-lock plastic bag	**Unknown**	Unknown
CABBAGE	Begin sampling at stage 1.8 (early vegetative growth) and continue into stage 4.5 (Mid head development).	Collect 1 leaf per plant from a representative area of the crop. Select the YFEL, usually the tallest leaf. Strip the leaf matter away leaving the petiole and midrib for analysis	20 petioles.	**1.8** **4.3** **4.5** **4.7** **4.9**	Vegetative Early head development Mid head development Late head development Peak harvest
CANOLA	Begin sampling stage 1.8, and monitor until the end of flowering as required	Select the youngest fully expanded leaf (YFEL, the tallest leaf at rosette stage, or later, the 3rd or 4th leaf down from the growing tip of the plant). For seedlings, send entire plants. Remove the leaf blade, retaining the midrib/petiole for analysis. Remove roots and leaf blades from seedlings	40-50 plants; from large plants the sampling volume may be reduced 20-30 plants	**1.4** **1.8** **3.3** **5.1** **5.3** **5.9** **6.2** **6.5** **6.8** **7.3**	4 leaves unfolded 8 leaves unfolded Stem elongation Rosette (Green bud) Inflorescence emergence Rosette (Yellow bud) Early flowering Mid flowering Late flowering Pod development
CAPSICUM	Begin sampling at stage 2.1 (vegetative) and monitor every 10-14 days until stage 7.7 or as required	Collect 1 leaf or shoot per plant, select the youngest fully expanded leaf (YFEL), usually the forth leaf from the top, from actively growing plants. If leaves are small, collect young side shoots	50 petioles (if plants are very small, more than 50 petioles may have to be collected)	**2.1** **5.1** **6.1** **6.7** **7.3** **7.7** **8.5** **8.9**	Vegetative Growth Inflorescence Emergence Flowering Flowering Fruit development Fruit development Harvest Harvest
CARNATION	Begin sampling at early vegetative stage, and go to stage 5.2 (mid bud development).	A 10cm long new growing tip from representative plants (1 per plant). Remove the leaflets and retain the shoot tip for analysis	Collect 30-50 shoot tips	**1** **1.1** **1.3** **5.2**	Establishment Early vegetative Late vegetative Mid bud development
CARROT	Begin sampling at stage 1.5 (Vegetative growth), continue fortnightly until stage 4.6	Send entire tops of young plants. Later, the root and leaflets should be removed, retaining the center petioles and stalks for testing. Collect 15-20 roots, making sure all dirt has been wiped clean. Remove tops prior to postage	30 plants for stage 1, later 15-20 plants. Return to the same representative sampling area for subsequent sampling. A representative number of roots are required, we suggest at least 10-12 past GS 4.2	**1.5** **1.8** **4.2** **4.4** **4.5** **4.6** **4.7** **4.8**	5th true leaf unfolded 8th true leaf unfolded 20% expected root diameter 40% expected root diameter 50% expected root diameter 60% expected root diameter 70% expected root diameter 80% expected root diameter
CARROT ROOT	As required when root development has commenced	whole roots with no top. Please ensure roots are clean with no soil contamination	Minimum 6-8 roots per sample	**4.2** **4.5** **4.6** **4.8**	20% expected root diameter 50% expected root diameter 60% expected root diameter 80% expected root diameter

Crop Name:	Timing of sampling	Plant Part needed:	Quantity required:	Growth stages available	
CAULIFLOWER FRESH MARKET	Begin sampling at stage 1.6 (6 leaf) and continue into late head development (stage 4.7) or at fortnightly intervals.	Collect 1 leaf per plant. Select the youngest fully expanded leaf (YFEL) usually the tallest leaf. Strip the leaf matter away leaving the petiole and midrib for analysis.	20 petioles in the early stages; reduce the sample size to 15 as the plant matures. Return to the same representative sampling area for subsequent samples.	1.3 1.6 1.7 1.9 2.2 4.3 4.5 4.7 4.8	Early Establishment Vegetative - 6 leaf Vegetative - 7 leaf Vegetative - 9 leaf Formation of side shoots Early head formation 50% final head size 70% final head size 80% final head size
CELERY	Begin sampling at early vegetative (stage 1.5) through to mid bulking up (stage 4.5)	Collect the stem of the YFEL, usually the tallest leaf in young plants. Discard leaves; retain about 20 cm from base of stem	20 stems (30-40 from very young plants)	1.5 4 4.5 4.9	Early Vegetative Early Bulking Mid Bulking Late Bulking
CHERRY	Begin at stage 7.2. A second sample should be taken at mid fruit development (7.5). Nutrition should be monitored during fruit growth by taking three samples at equal weeks apart. A final sample should be taken prior to post harvest applications	Collect 10 cm of new shoot tips from current season's growth at mid crown height (or shoulder height for large trees); sample from the same trees for subsequent sampling.	40 shoot tips, each 10-15cm long.	7.2 7.3 7.5 7.7 8.2 8.9 9.1	Early fruit development Early-mid fruit development Mid fruit development Mid - late fruit development Fruit colouring Harvest Post harvest
CHERRY FRUIT	Select fruitlets from around the whole tree during fruit development (GS 7.0 - 7.9). It is recommended to sample fruit at the same time as shoots.	Whole fruit with or without stems	A minimum number of pieces of fruit to be representative: - 20+ fruitlets decreasing as fruit size approaches full size	7.0-7.2 7.3-7.4 7.5-7.6 7.7-7.9 8.0-8.5 8.9	Early fruit development Early-mid fruit development Mid fruit devlp; early stone hardening Late stone hardening; 70% - 90% final size Fruit colouring Harvest
CHICK PEA	Begin sampling stage 2.5, and monitor until the end of flowering as required.	Select the YFEL (the tallest leaf at rosette stage, or later, the 3rd or 4th leaf down from the growing tip of the plant). For seedlings, send entire plants. Remove the leaf blade, retaining the midrib petiole for analysis. Remove roots from seedlings.	40-50 plants; If sampling large plants the volume may be reduced to 20-30 plants.	2.5 5.5 6.2 6.5 7.5	Mid Vegetative Inflorescence emerge Early Flowering Mid Flowering Pod Development
CHINESE CABBAGE	Begin sampling at stage 1.5 (early vegetative growth) and continue into stage 4.5 (Mid head development).	Select the YFEL, usually the tallest leaf. Strip the leaf blade, leaving the petiole and midrib for analysis	Collect 1 leaf per plant from a representative area of the crop. 20 petioles IN TOTAL	1.5 1.8 4.3 4.5	5 Leaf Development 8 Leaf Development 30% of Head Size 50% of Head Size
CHRYSANTHEMUM	Begin sampling at early vegetative stage, and go to stage 5.2 (mid bud development).	A 10cm long new growing tip from representative plants (1 per plant). Remove the leaflets and retain the shoot tip for analysis	Collect 30-50 shoot tips	1 1.1 1.3 5.2 6.1	Establishment Early vegetative Late vegetative Mid bud development Flowering

Crop Name:	Timing of sampling	Plant Part needed:	Quantity required:	Growth stages available	
CITRUS	Begin sampling at pre bloom, take a second sample at flowering. Take four samples at equal distance apart during the fruit growth stage. Take a final sample at harvest.	Collect 10 cm of new shoot tips from current season's growth at mid crown height (or shoulder height for large trees). Sample from the same trees for subsequent sampling.	20-25 shoot tips.	5 6 7.1 7.4 7.9 8.9	Inflorescence emerge Flowering Fruit development Fruit development Fruit development Fruit ripening
CITRUS FRUIT	Fruitlets should be collected from stage 7.4 through to harvest. Valuable data is obtained when sampling fruit at the same time as shoots	Fruitlets from a consistent position per tree from representative trees	20 fruitlets. The quantity should remain constant when repeat sampling.	7.4 7.9	Fruit Set Fruit Set
CLOVER	As required	Whole plants above ground	A zip-lock plastic bag full	UNKNOWN	UNKNOWN
CORIANDER	Sample as required. Sampling early in a crop's life gives a better chance of correcting deficiencies and maintaining good nutrient levels and balances	Collect one stem or side shoot per plant; select a stem or side shoot with young, but fully expanded leaves. Discard the leaves and retain the stems or shoots for analysis	30 -100 stems or side shoots, depending on stem or shoot size (if individual pieces are 5cm or longer, 30 pieces are sufficient)	UNKNOWN	UNKNOWN
COTTON	Sample at 14 day intervals, from as early as the unfolding of the seventh or eighth leaf (1.7 or 1.8) through to 1 week prior to the final fertiliser application or cutout.	From randomly selected plants, collect the youngest fully expanded leaf (YFL), which generally is on the fourth or fifth node below the terminal. Discard the leaf blade and retain the petioles for analysis	50-80 petioles, depending on the growth stage (more when younger)	2.1-2.8 2.9 3.1-3.9 5.1 6.1 6.5 7.2 8.1	Veg growth (formation of side shoots) Veg growth (9 or more side shoots) Crop cover (plants meet between rows) Bud development (pin-head square) Early flowering (early bloom) Full flowering (mid bloom) 20% of bolls final size Start of boll opening (NAWF)
CRISP HEAD LETTUCE	Begin sampling at stage 1.8, follow with a second sample at stage 4.1, and a final sample at 4.5 (mid heart development) Sample more frequently, if imbalances have to be corrected.	Remove the YFEL (usually the leaf wrapping the head). Remove the leaf blade, retaining the petiole and midrib for analysis.	20 leaves, more if plants are young/small	1.5 1.8 4.1 4.3 4.5 4.7	Leaf Development Leaf Development Early Heart Early-mid Heart Mid Heart Pre Harvest
CRISP HEAD LETTUCE - Iceberg	Begin sampling at stage 1.8, follow with a second sample at stage 4.1, and a final sample at 4.5 (mid heart development) Sample more frequently, if imbalances have to be corrected.	Remove the YFEL (usually the leaf wrapping the head). Remove the leaf blade, retaining the petiole and midrib for analysis.	20 leaves, more if plants are young/small	1.5 1.8 4.1 4.3 4.5 4.7	Leaf Development Leaf Development Early Heart Early Heart Mid Heart Pre Harvest
CUCUMBER	Begin sampling at stage 1.5 and continue fortnightly or until stage 7.1.	Select the youngest fully expanded leaf (YFEL), usually the 4th or 5th leaf back from the growing tip of the plant)	20 - 40 petioles (depending on size). Remove leaf blade and retain the petiole for analysis	1.5 1.9 6.1 7.1	Vegetative Vegetative Flowering Fruit Growth

Crop Name:	Timing of sampling	Plant Part needed:	Quantity required:	Growth stages available	
CUSTARD APPLE	Begin sampling at fruit set, then take three samples during fruit development at equal weeks apart. Sample again at harvest	Collect 10-15 cm of new shoot tips from current season's growth at mid crown height (or shoulder height for large trees).	20 shoot tips, each 10-5cm long	1.0-3.9 5.0-5.9 6.0-6.9 7.0-7.9 8.5-9.0	Vegetative Flowering Fruit set fruit fill Harvest
EGGPLANT	Begin sampling by stage 2.5, and monitor every 10-14 days until stage 7.3	Collect 1 leaf per plant, select the YFEL (fourth leaf down from the growing point) from actively growing, representative plants. Retain the petioles for analysis.	Minimum of 40 petioles.	1.5 2.5 5.1 6.3 7.3	Establishment Vegetative Growth Bud Development Flowering Fruit Development
FABA BEAN	Begin sampling by stage 5.3 and continue sampling until stage 7.3. Sample every 2 weeks or at least 3 times during the season	Select one YFEL per plant, including the entire petiole emerging from the stem. Discard the leaf blades and retain the petiole. For small plants sample the entire stem.	50 petioles (if plants are very small more than 50 may have to be collected).	5.3 6.9 7.1 7.3	Bud set Flowering Early bean set Mid bean set
FENNEL	As required	10cm section of YFEL stem (above the bulb). 1 per plant	15-20 stem sections	unknown	Unknown
FLOWER - GENERIC	Begin sampling at stage 1.3 late vegetative) and go to stage 6.5 (mid flowering).	Collect the YFEL or a 10cm long new growing tip (1 leaf or shoot tip per plant). Remove the leave blades or leaflets and retain the petiole or shoot tip for analysis	50-100 leaves or 30-50 shoot tips depending on flower type	1 1.1 1.3 5.5 6.5 8.5	Establishment Early vegetative Late vegetative Mid bud development Mid flowering Full Flower
FREESIA	As required	Whole plants from above the ground	10-15 plants	1 1.1 1.3 5.5 6.5 8.3 8.4 8.5	Establishment Early vegetative Late vegetative Mid bud development Mid flowering Daughter bulb sized up and white Daughter Bulb Sized up and 50% Coloured Bulbs Mature
GARLIC	Begin sampling at stage 1.3 (3-4 leaf) and continue at fortnightly intervals or as required through to stage 4.6	Retain whole young plants (remove roots). For older plants remove the tips of leaves and bulb, retaining 20cm of plant collar above the bulb.	20-50 plants (more plants while small)	1.3 1.4 4.1 4.1.1 4.3 4.5 4.6 4.x	Early Vegetative Early Vegetative Early bulbing Early Bulbing Early-Mid bulbing Mid bulbing Mid bulbing Mid-Late bulbing
GINGER	Begin sampling at stage 1.5 (Vegetative growth), continue fortnightly until stage 4.5	Collect entire tops of young plants. Later, the rhizome and leaflets should be removed, retaining 10cm of the lower stalk for testing	30 plants for stage 1, later 10-20 plants	1.5 1.9 4.2 4.5	Establishment Establishment Development of Root Development of Root

Crop Name:	Timing of sampling	Plant Part needed:	Quantity required:	Growth stages available	
GRAPE	Begin sampling as early as stage 1.5 (vegetative growth) and go to stage 8.9 (harvest). Sample 3-5 times	Select the YFEL from healthy shoots at mid canopy. Once bunches have formed you may decide to collect leaves from opposite the basal bunch (bunch at the bottom of the cane) as well, or exclusively, to judge nutrient supply to berries.	Collect 30-50 petioles, discard all leaf blade prior to posting	**5.5** **6.8** **7.5** **7.9** **8.1** **8.9**	Inflorescence swelling 80% Cap Fall Pea Sized Berries Bunch Closure Veraison Harvest Maturity
GRAPE BERRIES - GENERIC	As required - A berry analysis will provide good information on nutrient translocation to the fruit	Berries on the stalk. Be aware that fruit may crush during transport and leak juice, affecting the analysis	Approx 6 bunches - if sampling a larger vineyard, collect 10-12 berries per vine from a representative number of vines	**8.1** **8.3** **8.5** **8.9**	Verasion Berries coloured Softening of berries Berries ripe for harvest
GRAPE CABERNET SAUVIGNON	Begin sampling as early as stage 5.5 (infloresence swelling) and go to stage 8.9 (harvest). Sample 3-5 times	Select the YFEL from healthy shoots at mid canopy, or opposite the basal bunch to judge nutrient supply to berries. Discard leaf blade and retain petioles	Collect 30-50 petioles	**5.5** **6.8** **7.5** **7.9** **8.1** **8.9**	Inflorescence swelling 80% Cap Fall Pea Sized Berries Bunch Closure Veraison Harvest Maturity
GRAPE CHARDONNAY	Begin sampling as early as stage 1.5 (vegetative growth) and go to stage 8.9 (harvest). Sample 3-5 times	Select the YFEL from healthy shoots at mid canopy, or opposite the basal bunch to judge nutrient supply to berries. Discard leaf blade and retain petioles	Collect 30-50 petioles	**1.5** **5.5** **6.8** **7.5** **7.9** **8.1** **8.9**	Vegetative Inflorescence swelling 80% Cap Fall Pea Sized Berries Bunch Closure Veraison Harvest Maturity
GRAPE MERLOT	Begin sampling as early as stage 5.5 (infloresence swelling) and go to stage 8.9 (harvest). Sample 3-5 times	Select the YFEL from healthy shoots at mid canopy, or opposite the basal bunch to judge nutrient supply to berries. Discard leaf blade and retain petioles	Collect 30-50 petioles	**5.5** **6.8** **7.5** **7.9** **8.1** **8.9**	Inflorescence swelling 80% Cap Fall Pea Sized Berries Bunch Closure Veraison Harvest Maturity
GRAPE PETIT VERDOT	Begin sampling as early as stage 5.5 (infloresence swelling) and go to stage 8.9 (harvest). Sample 3-5 times	Select the YFEL from healthy shoots at mid canopy, or opposite the basal bunch to judge nutrient supply to berries. Discard leaf blade and retain petioles	Collect 30-50 petioles	**5.5** **6.8** **7.5** **7.9** **8.1** **8.9**	Inflorescence swelling 80% Cap Fall Pea Sized Berries Bunch Closure Veraison Harvest Maturity
GRAPE PINOT GRIS/GRIGIO	Begin sampling as early as stage 5.5 (infloresence swelling) and go to stage 8.9 (harvest). Sample 3-5 times	Select the YFEL from healthy shoots at mid canopy, or opposite the basal bunch to judge nutrient supply to berries. Discard leaf blade and retain petioles	Collect 30-50 petioles	**5.5** **6.8** **7.5** **7.9** **8.1** **8.9**	Inflorescence swelling 80% Cap Fall Pea Sized Berries Bunch Closure Veraison Harvest Maturity

Crop Name:	Timing of sampling	Plant Part needed:	Quantity required:	Growth stages available	
GRAPE PINOT NOIR	Begin sampling as early as stage 5.5 (inflorescence swelling) and go to stage 8.9 (harvest). Sample 3-5 times	Select the YFEL from healthy shoots at mid canopy, or opposite the basal bunch to judge nutrient supply to berries. Discard leaf blade and retain petioles	Collect 30-50 petioles	**5.5** **6.8** **7.5** **7.9** **8.1** **8.9**	Inflorescence swelling 80% Cap Fall Pea Sized Berries Bunch Closure Veraison Harvest Maturity
GRAPE RIESLING	Begin sampling as early as stage 5.5 (inflorescence swelling) and go to stage 8.9 (harvest). Sample 3-5 times	Select the YFEL from healthy shoots at mid canopy, or opposite the basal bunch to judge nutrient supply to berries. Discard leaf blade and retain petioles	Collect 30-50 petioles	**5.5** **6.8** **7.5** **7.9** **8.1** **8.9**	Inflorescence swelling 80% Cap Fall Pea Sized Berries Bunch Closure Veraison Harvest Maturity
GRAPE SAUVIGNON BLANC	Begin sampling as early as stage 5.5 (inflorescence swelling) and go to stage 8.9 (harvest). Sample 3-5 times	Select the YFEL from healthy shoots at mid canopy, or opposite the basal bunch to judge nutrient supply to berries. Discard leaf blade and retain petioles	Collect 30-50 petioles	**5.5** **6.8** **7.5** **7.9** **8.1** **8.9**	Inflorescence swelling 80% Cap Fall Pea Sized Berries Bunch Closure Veraison Harvest Maturity
GRAPE SEMILLON	Begin sampling as early as stage 1.5 (vegetative growth) and go to stage 8.9 (harvest). Sample 3-5 times	Select the YFEL from healthy shoots at mid canopy, or opposite the basal bunch to judge nutrient supply to berries. Discard leaf blade and retain petioles	Collect 30-50 petioles	**1.5** **5.5** **6.8** **7.5** **7.9** **8.1** **8.9**	Vegetative Inflorescence swelling 80% Cap Fall Pea Sized Berries Bunch Closure Veraison Harvest Maturity
GRAPE SHIRAZ	Begin sampling as early as stage 1.5 (vegetative growth) and go to stage 8.9 (harvest). Sample 3-5 times	Select the YFEL from healthy shoots at mid canopy, or opposite the basal bunch to judge nutrient supply to berries. Discard leaf blade and retain petioles	Collect 30-50 petioles	**1.5** **5.5** **6.8** **7.5** **7.9** **8.1** **8.9**	Vegetative Inflorescence swelling 80% Cap Fall Pea Sized Berries Bunch Closure Veraison Harvest Maturity
GRAPE VIOGNIER	Begin sampling as early as stage 5.5 (inflorescence swelling) and go to stage 8.9 (harvest). Sample 3-5 times	Select the YFEL from healthy shoots at mid canopy, or opposite the basal bunch to judge nutrient supply to berries. Discard leaf blade and retain petioles	Collect 30-50 petioles	**5.5** **6.8** **7.5** **7.9** **8.1** **8.9**	Inflorescence swelling 80% Cap Fall Pea Sized Berries Bunch Closure Veraison Harvest Maturity
GREEN BEAN	Begin sampling at stage 5.5 (bud set) and go to stage 7.3	Collect 1 trifoliate leaf per plant; select the YFEL including the entire petiole. Discard the leaf blades and retain the petioles.	50 petioles (if plants are very small, more than 50 petioles may have to be collected)	**1.9** **5.5** **6.1** **7.3**	Vegetative Bud set Early flowering Early bean set

Crop Name:	Timing of sampling	Plant Part needed:	Quantity required:	Growth stages available	
HAZELNUT	As required	Collect 10 cm of new shoot tips from current season's growth at mid crown height (or shoulder height for large trees).	20 shoot tips, each 10-5cm long	1 2 3 4	1 2 3 4
HEMP	As required	Select one YFEL per plant, including the entire petiole emerging from the stem. Discard the leaf blades and retain the petiole. For small plants sample the entire stem.	40-50 petioles, more when younger plants are sampled	unknown	Unknown
HERB	As required	Typically select the YFEL and remove leaf blade from the petiole. Stems also acceptable	20-50 petioles/stems depending on size	unknown	Unknown
HONEYDEW MELON	Begin sampling at stage 1.9 and continue fortnightly or until stage 7.9	Select the youngest fully expanded leaf (YFEL), usually the 4th or 5th leaf back from the growing tip of the plant	20 - 40 petioles (depending on size). Remove leaf blade and retain the petiole for analysis	1 1.9 2 6 7.1 7.8 7.9 8	Min of 9 leaves Min of 19 leaves 1st secondary side shoot visible 1st flowers open on main stem 1st fruit on main stem reached full size 1st fruit on side shoot reached full size Preharvest Fully ripe fruit
HOPS	As required	Select the youngest fully expanded leaf (YFEL), usually the 4th or 5th leaf back from the growing tip of the plant	20 - 40 petioles (depending on size). Remove leaf blade and retain the petiole for analysis	unknown	Unknown
IRIS	As required	Collect the centre stem when developed, otherwise whole plants above ground	20-30 centre stems or plants	1 1.1 1.3 5.5 6.5 8.3 8.4 8.5	Establishment Early vegetative Late vegetative Mid bud development Mid flowering Daughter bulb sized up and white Daughter Bulb Sized up and 50% Coloured Bulbs Mature
ITALIAN RYE GRASS	As required, or prior to fertiliser applications	Collect fresh grass (above ground parts only)	Completely fill a zip-lock plastic bag with grass	1 2 3 4	Non-grazing Non-grazing Grazing Grazing
KALE	As required	Collect 1 YFEL per plant, remove leaf blade & retain midrib/petiole	20 midrib/petioles, more if plants are younger	Wk3 Wk5	Week 3 Week 5
KIKUYU TURF	As required	Collect fresh grass (above ground parts only)	Completely fill a zip-lock plastic bag with grass	Unknown	Unknown
KIWI FRUIT	Begin sampling by stage 5, and continue until stage 7.9 as required. Monitoring early in the season is important for setting up a good crop.	Select the youngest, fully expanded leaf (YFEL) including the entire petiole. Discard the leaf blade and retain the petiole for analysis.	80 petioles (if plants are very small, more than 80 petioles may have to be collected).	1 & 5 6.1 - 6.8 7.1 - 7.4 7.5 - 7.9	Vegetative & pre-flower Flowering Early fruit development Late fruit development

Crop Name:	Timing of sampling	Plant Part needed:	Quantity required:	Growth stages available	
LEEK	Begin sampling at stage 1.5 (4-5 leaf) and continue at fortnightly intervals through to stage 4.7	Retain whole young plants. For older plants remove the tips of leaves and base of the collar, retaining 10-15cm of collar	10-15 collars, more if sampling younger plants	**1.5** **4.1** **4.5** **4.7**	Leaf development 10% expected base diameter 50% expected base diameter 70% expected base diameter
LEMON	Begin sampling at pre bloom, take a second sample at flowering. Take 3-4 samples at equal distance apart during the fruit growth stage. Take a final sample at harvest.	Collect 10-15 cm of new shoot tips from current season's growth at mid crown height (or shoulder height for large trees). Sample from the same trees for subsequent sampling.	20-25 shoot tips.	**5** **6** **7.1** **7.4** **7.9** **8.9**	Inflorescence emerge Flowering Fruit development Fruit development Fruit development Fruit ripening
LENTIL	As required	The main stem, remove leaves	40-50 stems, more if small plants	**unknown**	Unknown
LILLIUM	As required	Collect the centre stem when developed, otherwise whole plants above ground	20-30 centre stems or plants	**1** **1.1** **1.3** **5.5** **6.5** **8.3** **8.4** **8.5**	Emergence Early Vegetative Late Vegetative Mid Bud Development Mid Flowering Daughter Bulb Sized up and White Daughter Bulb Sized up and 50% Coloured Bulbs Mature
LINSEED (tentative)	As required	When young, collect entire plant above ground level. Stems stripped of leaves past this timing.	40-50 whole plants or stems	**unknown**	Unknown
LOOSE LEAF LETTUCE	Begin sampling from GS 1.5 as required, taking 2-4 samples throughout the crop (more frequently if imbalances need correcting)	Collect the YFEL from randomly selected plants. Remove the leaf blade, retaining the petiole and midrib for analysis.	20-50 leaves, depending on variety/size	**1.5** **1.8** **4.1** **4.5** **4.7**	5 True Leaves 8 True Leaves Harvest 1 Harvest 2 Harvest 3
LOOSE LEAF LETTUCE - COS	Begin sampling from GS 1.5 as required, taking 2-4 samples throughout the crop (more frequently if imbalances need correcting)	Collect the YFEL from randomly selected plants. Remove the leaf blade, retaining the petiole and midrib for analysis.	20-50 leaves, depending on variety/size	**1.5** **1.8** **4.1** **4.5** **4.7**	5 True Leaves 8 True Leaves Harvest 1 Harvest 2 Harvest 3
LUCERNE	Begin sampling at stage 1.5 (mid vegetative) and sample from then on as required.	Collect 20cm long new growing tips from representative plants. Remove small leaflets.	Bewteen 50 & 100 tips are required (more if dryland or stunted)	**1.5** **5.1** **5.5** **5.9**	Mid Vegetative Early Bud Development Mid Bud Development Late Bud Development
LUPIN	Begin sampling at stage 2.3, and monitor until the end of flowering as required.	Select the youngest fully expanded leaf (YFEL, the tallest leaf at rosette stage, or later, the 3rd or 4th leaf down from the growing tip of the plant). For seedlings, send entire plants. Remove the leaf blade, retaining the midrib/petiole for analysis	40-50 plants; from large plants the sampling volume may be reduced 20-30 plants	**1.5** **2.3** **2.5** **5.3** **5.9** **6.1** **6.5** **7.1**	5 Leaves unfolded 3 side shoots 5 side shoots Flowers above leaves Coloured bud 10% flowers on main stem open Full flowering 10% of pods at final size

Crop Name:	Timing of sampling	Plant Part needed:	Quantity required:	Growth stages available	
LYCHEE	Begin sampling prior to flowering and a further 2-3 times during fruit growth.	Collect 10-15 cm of new shoot tips from current season's growth at mid crown height (or shoulder height for large trees)	30-40 shoot tips	**1 or 9** **6** **7** **unknown**	vegetative flowering fruiting no growth stage
MACADAMIA	Begin sampling at or just before flowering. Nutrition should be monitored throughout nut development by taking two to three samples at equal intervals apart.	Collect YFEL at mid crown height (or shoulder height for large trees). Retain whole leaves, and as much leaf petiole as possible.	100+ leaves (petiole plus leaf blade)	**1** **3** **5** **7**	Vegetative Flush Shoot Development Flowering Fruit Development
MAIZE	Begin sampling at primary stage 1 (leaf development) or 3 (stem elongation) and sample as required	From a representative area of the crop, select the entire plant at stage 1. From Stage 3 on, cut a 7-10 cm stem piece from above ground.	Stage 1: 20-30 plants; From stage 3 onwards: 15-20 stem segments (less as stems increase in thickness)	**1.5** **5.3** **6.5** **7.1**	Leaf development Tassel emergence Pollination Mid cob
MANDARIN	Begin sampling at pre bloom, take a second sample at flowering. Take four samples at equal distance apart during the fruit growth stage. Take a final sample at harvest if required.	Collect 10 cm of new shoot tips from current season's growth at mid crown height (or shoulder height for large trees). Sample from the same trees for subsequent sampling.	20-30 shoot tips.	**5** **6** **7.1** **7.4** **7.9** **8.9**	Inflorescence emerge Flowering Fruit development Fruit development Fruit development Fruit ripening
MANGO	Begin sampling prior to flowering and a further 2-3 times during fruit growth.	Collect 10 - 15cm of new shoot tips from current season's growth at mid crown height (or shoulder height for large trees). Sample from the same trees for subsequent sampling.	20-30 shoot tips	**5** **5.5** **6.4** **6.8** **7** **7.1** **7.3** **7.8** **8.5** **9.1**	Pre-flowering Mid flower emergence 40% flowering 80% flowering Full flowering Early fruit set First shedding fruit maturing Fruit reached 80% of final size Fully ripe fruit, ready for harvest Post harvest
MUNG BEAN	Begin sampling at stage 1.9 and go to 6.5. Sample every 2 weeks or at least 3 times during the season	Select one YFEL per plant, including the entire petiole emerging from the stem. Discard the leaf blades and retain the petiole. For small plants (e.g. to growth stage 1.9) sample the entire stem.	50 petioles (if plants are very small more than 50 may have to be collected).	**1.5** **1.9** **5.5** **6.5**	Vegetative Vegetative Bud Set Mid Flowering
NECTARINE	Begin at stage 7.2 (shuck fall). A second sample should be taken at stone hardening (7.5). Nutrition should be monitored during fruit growth by taking three samples at equal weeks apart. A Final sample should be taken prior to post harvest applications	Collect 10-15 cm of new shoot tips from current season's growth at mid crown height (or shoulder height for large trees); sample from the same trees for subsequent sampling.	40 shoot tips, each 10-15cm long.	**6.9** **7.2** **7.5** **7.6** **7.7** **7.8** **8.9**	Flowering Shuck fall Stone hardening Fruit about 60% of final size Fruit about 70% of final size Fruit about 80% of final size Harvest

Crop Name:	Timing of sampling	Plant Part needed:	Quantity required:	Growth stages available	
NECTARINE FRUIT	Select fruitlets from around the whole tree during fruit development (GS 7.3 - 7.7). It is recommended to sample fruit at the same time as shoots.	Whole fruit with or without stems	A minimum number of pieces of fruit to be representative: - 20+ fruitlets decreasing as fruit size approaches full size	**7.3** **7.5** **7.7**	Fruit about 30% of final size Stone Hardening (50% fruit size) Fruit about 70% of final size.
OATS	Sample 7-10 days prior to intended fertiliser applications, e.g. at tillering (21-29), stem elongation (30-34), and/or booting stages (37-49)	Select whole plants from a 1-2 ha representative area of the crop. Retain the entire top of the plant before tillering, or 10cm of the basal plant part; remove all roots prior to postage to avoid soil contaminating the sample.	50 –100 plants (depending on growth stage) with roots removed	**11 to 18** **21- 29** **30- 34** **37- 49**	Seedling Growth Tillering Stem elongation Booting
OKRA	As required	Petiole of the YFEL (no leaf blade)	10-15 20cm sections of stem	**Unknown**	Unknown
OLIVE	Begin sampling at stage 3 (shoot growth), and continue through to stage 8.1 (late fruit growth) or as required.	Collect 20-30 cm of the new shoot tips from current season's growth at mid crown height (or shoulder height for large trees) from around the whole tree. Sample from a representative area of the grove	100 – 150 shoot tips (the less succulent the shoots are, the more tips are needed to express the required amount of sap). Approx 40 olives are required for fruit analysis	**3** **5.1** **6.1** **6.9** **7.1** **8.1** **Fruit**	Shoots reach 30% of final size Flower cluster developm. Starts 10% of flowers open Fruit set Fruit about 10% of final size Beginning of fruit colour Fruit analysis
ONION	Begin sampling at stage 1.3 (3-4 leaf) and continue at fortnightly intervals through to stage 4.5	Retain whole young plants. For older plants remove the tips of leaves and bulb, retaining 20cm of plant collar above the bulb. Always remove roots below the bulb, and when bulb is greater than approx 50mm diametre, remove bulb retaining the collar only. Contact AgVita if unsure	50 whole plants while small, decreasing as plants mature. Approx 12 collars only past GS 4.5 required	**1.2** **1.3** **1.4** **1.5** **1.8** **4.1** **4.3** **4.5** **4.7** **4.x**	1- leaf development 1- leaf development 1- leaf development 1- leaf development 1- leaf development 4-bulb development 4-bulb development 4-bulb development 4-bulb development 4-bulb development
ORANGE	Begin sampling at pre bloom, take a second sample at flowering. Take four samples at equal distance apart during the fruit growth stage. Take a final sample at harvest if required.	Collect 10 cm of new shoot tips from current season's growth at mid crown height (or shoulder height for large trees). Sample from the same trees for subsequent sampling.	20-25 shoot tips.	**3** **5** **6** **6.9** **7.1** **7.4** **7.9** **8.5** **8.9**	Vegetative (G.S. 2-4.9) Inflorescence emerge Flowering End of Flowering Fruit development Fruit development Fruit development Fruit ripening Fruit ripe - harvest ready
PAPAYA	As required	15 cm portion of leaf petiole midway between the leaf blade and the main plant	10-12 portions of petiole	**1 to 3** **5 to 7** **8 to 9**	Vegetative Flowering & Fruit set Harvest

Crop Name:	Timing of sampling	Plant Part needed:	Quantity required:	Growth stages available	
PARSLEY	As required through the growth cycle of the crop	Collect one stem per plant (from the YFEL) and retain the petiole only	30-100 stems (if stems are at least 5cm long, 30 will suffice)	1.9 3.3 4.5 4.9	Leaf Development Stem Elongation Bulking Up Harvest
PASSIONFRUIT	Begin sampling by stage 4.9, and continue as required. Monitoring early in the season is important for setting up a good crop.	Select the youngest, fully expanded leaf (YFEL) including the entire petiole. Discard the leaf blade and retain the petiole.	30-40 petioles (more if youger/smaller leaves are sampled)	4.9 6.5 8.9	Early growth Fruit sizing Harvest
PASTURE	As required, typically at 2nd leaf stage	Above ground parts only. From 15-20 random patches across the paddock, select proportional amounts of all species	A full zip-lock sandwich bag of pasture is required	1 2 3 4	Vegetative Vegetative Vegetative Vegetative
PASTURE LEGUMES	As required	Above ground parts only. From 15-20 random patches across the paddock, select proportional amounts of all species	A full zip-lock sandwich bag of pasture is required	1 2 3 4	Vegetative Vegetative Vegetative Flowering
PEA	Begin sampling at stage 3.3 (stem elongation). Continue through to stage 6.9 as required	Select the youngest fully expanded side shoots per plant, retain the entire shoot for analysis	50 shoots until stage 5; later 20-30 shoots	3.3 3.6 5-5.9 6-6.9	3 Visibly extended internodes 6 Visibly extended internodes Flower Budding First flower buds visible outside leaves
PEACH	Begin at stage 7.2 (shuck fall). A second sample should be taken at stone hardening (7.5). Nutrition should be monitored during fruit growth by taking 3 samples at equal weeks apart. A Final sample should be taken prior to post harvest applications	Collect 10-15 cm of new shoot tips from current season's growth at mid crown height (or shoulder height for large trees); sample from the same trees for subsequent sampling.	40 shoot tips, each 10-15cm long.	7.2 7.5 7.6 7.7 7.8 8.9	Shuck fall Stone hardening Fruit about 60% of final size Fruit about 70% of final size Fruit about 80% of final size Harvest
PEANUT	As required	Select the youngest, fully expanded leaf (YFEL) including the entire petiole. Discard the leaf blade and retain the petiole.	Collect 1 leaf from 40-50 plants	unknown	UNKNOWN
PEAR	Begin at stage 7.1 (fruit dev). A second sample should be taken at stone hardening (7.4). Nutrition should be monitored during fruit growth by taking 3 samples at equal weeks apart. A final sample should be taken prior to post harvest applications	Collect 10-15 cm of new shoot tips from current season's growth at mid crown height (or shoulder height for large trees); sample from the same trees for subsequent sampling.	40 shoot tips, each 10-15cm long.	5.3 6.9 7.1 7.3 7.4 8.1 8.7 9.1	Inflorescence emergence Flowering Fruit development Fruit development Fruit development Fruit ripening Fruit ripening Post-harvest
PEAR FRUIT	Select fruitlets from around the whole tree during fruit sizing (GS 7.2 – 8.1). It is recommended to sample fruit at the same time as shoots.	Whole fruit with or without stems	A minimum number of pieces of fruit to be representative: - 20+ fruitlets decreasing as fruit size approaches full size	7.2 7.4 8.1 8.5 8.7	Fruit size up to 20mm Fruit size 40mm, T stage Beginning of ripening Advanced ripening Fruit ripe for harvest

Crop Name:	Timing of sampling	Plant Part needed:	Quantity required:	Growth stages available	
PERENNIAL RYE GRASS	As required, typically at 2nd leaf stage	Above ground parts only from 15-20 random patches across the paddock	A full zip-lock sandwich bag of grass is required	1 2 3 4	Non-grazing Non-grazing Grazing Grazing
PERSIMMON	As required	Collect 10-15 cm of new shoot tips from current season's growth at mid crown height (or shoulder height for large trees)	40 shoot tips, each 10-15cm long.	unknown	UNKNOWN
PHALARIS	As required, typically at 2nd leaf stage or post grazing	Above ground parts only from 15-20 random patches across the paddock	A full zip-lock sandwich bag of grass is required	1 2 3 4	Non-grazing Non-grazing Grazing Grazing
PINEAPPLE	Begin sampling at 3 months, then every 2-3 months until fertiliser applications are finished	Take the YFEL - usually the fourth or fifth leaf out from the centre of the crown (also the leaf that appears the tallest inside the crown). Retain the bottom part of the leaf (10-15cm) for analysis	20 - 30 leaves, depending on size.	1 to 2 6 to 7	Vegetative Generative (flowering, fruiting)
PISTACHIO	As required	Collect 10 cm of new shoot tips from current season's growth at mid crown height	40 shoot tips.	7 7.7 8.9	Main shoot and leaf development Nut hardening Pre-harvest
PLUM	Begin at stage 7.2 (shuck fall). A second sample should be taken at stone hardening (7.5). Nutrition should be monitored during fruit growth by taking 3 samples at equal weeks apart. A Final sample should be taken prior to post harvest applications	Collect 10-15 cm of new shoot tips from current season's growth at mid crown height (or shoulder height for large trees); sample from the same trees for subsequent sampling.	40 shoot tips, each 10-15cm long.	6 7.2 7.5 7.6 7.7 7.8 8.9	Flowering (with leaf & shoot dev.) Shuck fall Stone hardening Fruit about 60% of final size Fruit about 70% of final size Fruit about 80% of final size Fruit ripe for harvest
PLUM FRUIT	As required	Whole fruit with or without stems	A minimum representative number of fruit - 20+ fruitlets decreasing as fruit size peaks	7.3 7.5 7.7	Fruit about 30% of final size Stone Hardening (50% fruit size) Fruit about 70% of final size.
POMEGRANATE	As required	Collect 10 cm of new shoot tips from current season's growth at mid crown height	40 shoot tips.	Unknown	UNKNOWN
POPPY	Commence sampling at rosette stage, and sample again at hook and pre-flowering.	Select one YFEL per plant from a representative portion of the paddock. Retain the whole leaf and leaf stalk (petiole) for analysis.	30-40 leaves	3.1 3.4 5.3 6.1	Rosette Late running up Hook Early flowering

Crop Name:	Timing of sampling	Plant Part needed:	Quantity required:	Growth stages available	
POTATO	Begin sampling at stage 1.7 (vegetative, pre-tuber) and go to stage 4.6 (mid tuber bulking). Fortnightly sampling through tuber bulking is recommended	Collect 1 leaf per plant; select the youngest fully expanded leaf (YFEL), usually the fourth leaf from the top. Discard the leaflets and retain the petioles for analysis. Collect samples from a representative area in the crop. Return to the same area for subsequent samples.	20-30 petioles	**1.5** **1.7** **1.8** **2.3** **2.7** **3.1** **3.3** **4.1** **4.2** **4.3** **4.4** **4.5** **4.6** **4.7**	Emergence Pre-tuber Begin of tuber initiation Tuber set Tuber set Tuber development Tuber development Early tuber bulking Early tuber bulking Early tuber bulking Mid tuber bulking Mid tuber bulking Mid tuber bulking Late tuber bulking
POTATO ATLANTIC	Begin sampling at stage 1.7 (vegetative, pre-tuber) and go to stage 4.6 (mid tuber bulking). Fortnightly sampling through tuber bulking is recommended	Collect 1 leaf per plant; select the youngest fully expanded leaf (YFEL), usually the fourth leaf from the top. Discard the leaflets and retain the petioles for analysis. Collect samples from a representative area in the crop. Return to the same area for subsequent samples.	20-30 petioles	**1.5** **1.7** **1.8** **2.3** **2.7** **3.1** **3.3** **4.1** **4.2** **4.3** **4.4** **4.5** **4.6** **4.7**	Emergence Pre-tuber Begin of tuber initiation Tuber set Tuber set Tuber development Tuber development Early tuber bulking Early tuber bulking Early tuber bulking Mid tuber bulking Mid tuber bulking Mid tuber bulking Late tuber bulking
POTATO DESIREE	Begin sampling at stage 1.8 (vegetative, pre-tuber) and go to stage 4.6 (mid tuber bulking). Fortnightly sampling through tuber bulking is recommended	Collect 1 leaf per plant; select the youngest fully expanded leaf (YFEL), usually the fourth leaf from the top. Discard the leaflets and retain the petioles for analysis. Collect samples from a representative area in the crop.	20-30 petioles	**1.8** **3.3** **4.3** **4.5** **4.6**	Beginning of Tuber Initiation Tuber 2-2.5cm Diameter Tuber 4-5cm Diameter Tuber 6-7cm Diameter Tuber 7-8cm Diameter
POTATO FL SERIES	Begin sampling at stage 1.7 (vegetative, pre-tuber) and go to stage 4.6 (mid tuber bulking). Fortnightly sampling through tuber bulking is recommended	Collect 1 leaf per plant; select the youngest fully expanded leaf (YFEL), usually the fourth leaf from the top. Discard the leaflets and retain the petioles for analysis. Collect samples from a representative area in the crop. Return to the same area for	20-30 petioles	**1.5** **1.7** **1.8** **2.3 - 2.7** **3.1** **3.3** **4.1**	Emergence Pre-tuber Begin of tuber initiation Tuber set Tuber development Tuber development Early tuber bulking

Crop Name:	Timing of sampling	Plant Part needed:	Quantity required:	Growth stages available	
POTATO FL SERIES		subsequent samples.		**4.2**	Early tuber bulking
				4.3	Early tuber bulking
				4.4	Mid tuber bulking
				4.5	Mid tuber bulking
				4.6	Mid tuber bulking
				4.7	Late tuber bulking
				4.8	Late tuber bulking
POTATO FRESH MARKET	Begin sampling at stage 1.7 (vegetative, pre-tuber) and go to stage 4.6 (mid tuber bulking). Fortnightly sampling through tuber bulking is recommended	Collect 1 leaf per plant; select the youngest fully expanded leaf (YFEL), usually the fourth leaf from the top. Discard the leaflets and retain the petioles for analysis. Collect samples from a representative area in the crop. Return to the same area for subsequent samples.	20-30 petioles	**1.7**	Pre Tuber
				1.8	Beginning of Tuber Initiation
				2.7	Tuber Set
				3.1	Tuber 1-2cm Diameter
				3.3	Tuber 2-2.5cm Diameter
				4.1	Tuber 3-4cm Diameter
				4.2	Tuber 3-4cm Diameter
				4.3	Tuber 4-5cm Diameter
				4.4	Tuber 5-6cm Diameter
				4.5	Tuber 6-7cm Diameter
				4.6	Tuber 7-8cm Diameter
				4.7	Late tuber bulking
				4.8	Late tuber bulking
				4.9	Late tuber bulking
POTATO LADY CRYSTAL	Begin sampling at stage 1.7 (vegetative, pre-tuber) and go to stage 4.6 (mid tuber bulking). Fortnightly sampling through tuber bulking is recommended	Collect 1 leaf per plant; select the youngest fully expanded leaf (YFEL), usually the fourth leaf from the top. Discard the leaflets and retain the petioles for analysis. Collect samples from a representative area in the crop. Return to the same area for subsequent samples.	20-30 petioles	**1.7**	Pre Tuber
				1.8	Beginning of Tuber Initiation
				2.7	Tuber Set
				3.1	Tuber 1-2cm Diameter
				3.3	Tuber 2-2.5cm Diameter
				4.1	Tuber 3-4cm Diameter
				4.2	Tuber 3-4cm Diameter
				4.3	Tuber 4-5cm Diameter
				4.4	Tuber 5-6cm Diameter
				4.5	Tuber 6-7cm Diameter
				4.6	Tuber 7-8cm Diameter
				4.7	Late tuber bulking
POTATO LAURA	Begin sampling at stage 1.7 (vegetative, pre-tuber) and go to stage 4.6 (mid tuber bulking). Fortnightly sampling through tuber bulking is recommended	Collect 1 leaf per plant; select the youngest fully expanded leaf (YFEL), usually the fourth leaf from the top. Discard the leaflets and retain the petioles for analysis. Collect samples from a representative area in the crop. Return to the same area for subsequent samples.	20-30 petioles	**1.7**	Pre Tuber
				1.8	Beginning of Tuber Initiation
				2.7	Tuber Set
				3.1	Tuber 1-2cm Diameter
				3.3	Tuber 2-2.5cm Diameter
				4.1	Tuber 3-4cm Diameter
				4.2	Tuber 3-4cm Diameter
				4.3	Tuber 4-5cm Diameter
				4.4	Tuber 5-6cm Diameter
				4.5	Tuber 6-7cm Diameter
				4.6	Tuber 7-8cm Diameter
				4.7	Late tuber bulking

Crop Name:	Timing of sampling	Plant Part needed:	Quantity required:	Growth stages available	
POTATO INNOVATOR	(ex-McCains #1 crop type) Begin sampling at stage 1.7 (vegetative, pre-tuber) and go to stage 4.6 (mid tuber bulking). Fortnightly sampling through tuber bulking is recommended	Collect 1 leaf per plant; select the youngest fully expanded leaf (YFEL), usually the fourth leaf from the top. Discard the leaflets and retain the petioles for analysis. Collect samples from a representative area in the crop. Return to the same area for subsequent samples.	20-30 petioles	**1.7** **1.8** **3.1** **3.3** **4.1** **4.2** **4.3** **4.4** **4.5** **4.6** **4.7** **4.8-4.9**	Pre-tuber Begin of tuber initiation Tuber development Tuber development Early tuber bulking Early tuber bulking Early tuber bulking Mid tuber bulking Mid tuber bulking Mid tuber bulking Late tuber bulking Late tuber bulking
POTATO MELODY	Begin sampling at stage 1.7 (vegetative, pre-tuber) and go to stage 4.6 (mid tuber bulking). Fortnightly sampling through tuber bulking is recommended	Collect 1 leaf per plant; select the youngest fully expanded leaf (YFEL), usually the fourth leaf from the top. Discard the leaflets and retain the petioles for analysis. Collect samples from a representative area in the crop. Return to the same area for subsequent samples.	20-30 petioles	**1.5** **1.7** **1.8** **2.3** **2.7** **3.1** **3.3** **4.1** **4.2** **4.3** **4.4** **4.5** **4.6** **4.7**	Emergence Pre-tuber Begin of tuber initiation Tuber set Tuber set Tuber development Tuber development Early tuber bulking Early tuber bulking Early tuber bulking Mid tuber bulking Mid tuber bulking Mid tuber bulking Late tuber bulking
POTATO NADINE	Begin sampling at stage 1.7 (vegetative, pre-tuber) and go to stage 4.6 (mid tuber bulking). Fortnightly sampling through tuber bulking is recommended	Collect 1 leaf per plant; select the youngest fully expanded leaf (YFEL), usually the fourth leaf from the top. Discard the leaflets and retain the petioles for analysis. Collect samples from a representative area in the crop. Return to the same area for subsequent samples.	20-30 petioles	**1.5** **1.7** **1.8** **2.3** **2.7** **3.1** **3.3** **4.1** **4.2** **4.3** **4.4** **4.5** **4.6** **4.8**	Emergence Pre-tuber Begin of tuber initiation Tuber set Tuber set Tuber development Tuber development Early tuber bulking Early tuber bulking Early tuber bulking Mid tuber bulking Mid tuber bulking Mid tuber bulking Late tuber bulking

Crop Name:	Timing of sampling	Plant Part needed:	Quantity required:	Growth stages available	
POTATO NICOLA	Begin sampling at stage 1.7 (vegetative, pre-tuber) and go to stage 4.6 (mid tuber bulking). Fortnightly sampling through tuber bulking is recommended	Collect 1 leaf per plant; select the youngest fully expanded leaf (YFEL), usually the fourth leaf from the top. Discard the leaflets and retain the petioles for analysis. Collect samples from a representative area in the crop. Return to the same area for subsequent samples.	20-30 petioles	**1.7** **1.8** **2.7** **3.1** **3.3** **4.1** **4.2** **4.3** **4.4** **4.5** **4.6** **4.7** **4.8** **4.9**	Pre Tuber Beginning of Tuber Initiation Tuber Set Tuber 1-2cm Diameter Tuber 2-2.5cm Diameter Tuber 3-4cm Diameter Tuber 3-4cm Diameter Tuber 4-5cm Diameter Tuber 5-6cm Diameter Tuber 6-7cm Diameter Tuber 7-8cm Diameter Late tuber bulking Late tuber bulking Late tuber bulking
POTATO ORCHESTRA	Begin sampling at stage 1.7 (vegetative, pre-tuber) and go to stage 4.6 (mid tuber bulking). Fortnightly sampling through tuber bulking is recommended	Collect 1 leaf per plant; select the youngest fully expanded leaf (YFEL), usually the fourth leaf from the top. Discard the leaflets and retain the petioles for analysis. Collect samples from a representative area in the crop. Return to the same area for subsequent samples.	20-30 petioles	**1.7** **1.8** **2.7** **3.1** **3.3** **4.1** **4.2** **4.3** **4.4** **4.5** **4.6** **4.7**	Pre Tuber Beginning of Tuber Initiation Tuber Set Tuber 1-2cm Diameter Tuber 2-2.5cm Diameter Tuber 3-4cm Diameter Tuber 3-4cm Diameter Tuber 4-5cm Diameter Tuber 5-6cm Diameter Tuber 6-7cm Diameter Tuber 7-8cm Diameter Late tuber bulking
POTATO PIKE	Collect sample for analysis at mid-bulking (GS4.3)	Collect 1 leaf per plant; select the youngest fully expanded leaf (YFEL), usually the fourth leaf from the top. Discard the leaflets and retain the petioles for analysis.	20-30 petioles	**4.3**	Tuber Formation / bulking
POTATO RANGER RUSSET	Begin sampling at stage 1.7 (vegetative, pre-tuber) and go to stage 4.6 (mid tuber bulking). Fortnightly sampling through tuber bulking is recommended	Collect 1 leaf per plant; select the youngest fully expanded leaf (YFEL), usually the fourth leaf from the top. Discard the leaflets and retain the petioles for analysis. Collect samples from a representative area in the crop. Return to the same area for subsequent samples.	20-30 petioles	**1.7** **1.8** **2.1** **2.3** **3.1** **3.3** **4.1** **4.2** **4.3** **4.4** **4.5** **4.6** **4.7** **4.8** **4.9**	Pre-tuber Begin of tuber initiation Tuber set Tuber set Tuber development Tuber development Early tuber bulking Early tuber bulking Early tuber bulking Mid tuber bulking Mid tuber bulking Mid tuber bulking Late tuber bulking Late tuber bulking Late tuber bulking

Crop Name:	Timing of sampling	Plant Part needed:	Quantity required:	Growth stages available	
POTATO RODEO	Begin sampling at stage 1.7 (vegetative, pre-tuber) and go to stage 4.6 (mid tuber bulking). Fortnightly sampling through tuber bulking is recommended	Collect 1 leaf per plant; select the youngest fully expanded leaf (YFEL), usually the fourth leaf from the top. Discard the leaflets and retain the petioles for analysis. Collect samples from a representative area in the crop. Return to the same area for subsequent samples.	20-30 petioles	**1.7** **1.8** **2.7** **3.1** **3.3** **4.1** **4.2** **4.3** **4.4** **4.5** **4.6** **4.7**	Pre Tuber Beginning of Tuber Initiation Tuber Set Tuber 1-2cm Diameter Tuber 2-2.5cm Diameter Tuber 3-4cm Diameter Tuber 3-4cm Diameter Tuber 4-5cm Diameter Tuber 5-6cm Diameter Tuber 6-7cm Diameter Tuber 7-8cm Diameter Late tuber bulking
POTATO ROYAL BLUE	Begin sampling at stage 1.7 (vegetative, pre-tuber) and go to stage 4.6 (mid tuber bulking). Fortnightly sampling through tuber bulking is recommended	Collect 1 leaf per plant; select the youngest fully expanded leaf (YFEL), usually the fourth leaf from the top. Discard the leaflets and retain the petioles for analysis. Collect samples from a representative area in the crop. Return to the same area for subsequent samples.	20-30 petioles	**1.7** **1.8** **2.7** **3.1** **3.3** **4.2** **4.3** **4.4** **4.5** **4.6** **4.7**	Pre-tuber Begin of tuber initiation Tuber set Tuber development Tuber development Early tuber bulking Early tuber bulking Mid tuber bulking Mid tuber bulking Mid tuber bulking Late tuber bulking
POTATO RUSSET BURBANK	Begin sampling at stage 1.7 (vegetative, pre-tuber) and go to stage 4.6 (mid tuber bulking). Fortnightly sampling through tuber bulking is recommended	Collect 1 leaf per plant; select the youngest fully expanded leaf (YFEL), usually the fourth leaf from the top. Discard the leaflets and retain the petioles for analysis. Collect samples from a representative area in the crop. Return to the same area for subsequent samples.	20-30 petioles	**1.7** **1.8** **2.1** **2.3** **3.1** **3.3** **4.1** **4.2** **4.3** **4.4** **4.5** **4.6** **4.7** **4.8** **4.9**	Pre-tuber Begin of tuber initiation Tuber set Tuber set Tuber development Tuber development Early tuber bulking Early tuber bulking Early tuber bulking Mid tuber bulking Mid tuber bulking Mid tuber bulking Late tuber bulking Late tuber bulking Late tuber bulking
POTATO SEBAGO	Begin sampling at pre-tuber stage, and collect samples for analysis through tomid tuber bulking.	Collect 1 leaf per plant; select the youngest fully expanded leaf (YFEL), usually the fourth leaf from the top. Discard the leaflets and retain the petioles for analysis.	20-30 petioles	**1.5 - 1.8** **3.1 - 3.3** **4.1 - 4.3**	Pre Tuber Tuber 1-2cm Diameter Tuber 3-5cm Diameter

Crop Name:	Timing of sampling	Plant Part needed:	Quantity required:	Growth stages available	
POTATO SHEPODY	Begin sampling at stage 1.7 (vegetative, pre-tuber) and go to stage 4.6 (mid tuber bulking). Fortnightly sampling through tuber bulking is recommended	Collect 1 leaf per plant; select the youngest fully expanded leaf (YFEL), usually the fourth leaf from the top. Discard the leaflets and retain the petioles for analysis. Collect samples from a representative area in the crop. Return to the same area for subsequent samples.	20-30 petioles	**1.5** **1.7** **1.8** **2.3** **2.7** **3.1** **3.3** **4.1** **4.2** **4.3** **4.4** **4.5** **4.6** **4.7**	Emergence Pre-tuber Begin of tuber initiation Tuber set Tuber set Tuber development Tuber development Early tuber bulking Early tuber bulking Early tuber bulking Mid tuber bulking Mid tuber bulking Mid tuber bulking Late tuber bulking
POTATO SNOWDEN	Begin sampling at stage 1.7 (vegetative, pre-tuber) and go to stage 4.6 (mid tuber bulking). Fortnightly sampling through tuber bulking is recommended	Collect 1 leaf per plant; select the youngest fully expanded leaf (YFEL), usually the fourth leaf from the top. Discard the leaflets and retain the petioles for analysis. Collect samples from a representative area in the crop. Return to the same area for subsequent samples.	20-30 petioles	**1.5** **1.7** **1.8** **2.3** **2.7** **3.1** **3.3** **4.1** **4.2** **4.3** **4.4** **4.5** **4.6** **4.7**	Emergence Pre-tuber Begin of tuber initiation Tuber set Tuber set Tuber development Tuber development Early tuber bulking Early tuber bulking Early tuber bulking Mid tuber bulking Mid tuber bulking Mid tuber bulking Late tuber bulking
POTATO TOPCAT	Begin sampling at stage 1.7 (vegetative, pre-tuber) and go to stage 4.6 (mid tuber bulking). Fortnightly sampling through tuber bulking is recommended	Collect 1 leaf per plant; select the youngest fully expanded leaf (YFEL), usually the fourth leaf from the top. Discard the leaflets and retain the petioles for analysis. Collect samples from a representative area in the crop. Return to the same area for subsequent samples.	20-30 petioles	**1.5** **1.7** **1.8** **2.3** **2.7** **3.1** **3.3** **4.1** **4.2** **4.3** **4.4** **4.5** **4.6** **4.7**	Emergence Pre-tuber Begin of tuber initiation Tuber set Tuber set Tuber development Tuber development Early tuber bulking Early tuber bulking Early tuber bulking Mid tuber bulking Mid tuber bulking Mid tuber bulking Late tuber bulking
POTATO TUBER - GENERIC	At harvest	whole tubers	A representative number (8-12)	**8.9**	At harvest

Crop Name:	Timing of sampling	Plant Part needed:	Quantity required:	Growth stages available	
POTATO WARE & CRISPING	Begin sampling at stage 1.7 (vegetative, pre-tuber) and go to stage 4.6 (mid tuber bulking). Fortnightly sampling through tuber bulking is recommended	Collect 1 leaf per plant; select the youngest fully expanded leaf (YFEL), usually the fourth leaf from the top. Discard the leaflets and retain the petioles for analysis. Collect samples from a representative area in the crop. Return to the same area for subsequent samples.	20-30 petioles	**1.5** **1.7** **1.8** **2.3** **2.7** **3.1** **3.3** **4.1** **4.2** **4.3** **4.4** **4.5** **4.6** **4.7**	Emergence Pre-tuber Begin of tuber initiation Tuber set Tuber set Tuber development Tuber development Early tuber bulking Early tuber bulking Early tuber bulking Mid tuber bulking Mid tuber bulking Mid tuber bulking Late tuber bulking
PUMPKIN	Begin sampling at stage 1.5 and continue as required to stage 7.7	Select the youngest fully expanded leaf (YFEL), usually the 4th or 5th leaf back from the growing tip of the plant). Remove leaf blade and retain the petiole	15-25 petioles	**1.0 - 1.5** **2** **5** **6** **7.1** **7.3** **7.5** **7.7** **8**	Leaf development Formation of side shoots Inflorescence emergence Flowering Early fruit development Early-mid fruit development Mid fruit development Mid - late fruit development Ripening of fruit and seed
PYRETHRUM	Sample during active growth	10cm growing tip	approx 30-50 tips	**Unknown**	Unknown
RADISH	As required	Petiole of the YFEL (no leaf blade)	approx 30-50 petioles	**Unknown**	Unknown
RASPBERRY	Begin sampling once in full leaf, and monitor fortnightly until harvest begins.	Take sample from main stems, taking the first fully expanded trifoliate leaves from a representative area of the planting. It is critical to retain as much petiole of this trifoliate as possible. Return to the same area for subsequent samples.	Minimum of 50 leaves, retaining the leaf stalk.	**3.1** **3.2** **3.5** **3.8** **4** **5** **6.1** **7.1** **8.1** **8.2** **8.3** **8.5** **9**	Early veg growth (new canes 1-30 cm, Sept) Early veg growth (1-30 cm, early Oct) Mid veg growth (31-60 cm, late Oct) Late veg growth (61-90 cm, Nov) Late veg growth (laterals extending, Nov) Inflorescence emergence (Dec) First flowers (buds & flowers, mid-Dec) Fruit forming (none ripe, Dec-Jan) First Pick (late Dec-early Feb) First Pick/early harvest (Jan-Feb) Early harvest (Feb) Mid harvest (50% complete, Feb-March) Post harvest
RHUBARB	As required	Stem of the youngest fully expanded leaf. Remove leaf blade, retaining the stem.	10-15 stem sections 10cm long	**1.3** **1.5** **1.9**	Early Vegetative Mid Vegetative Late Vegetative
RICE	Begin sampling prior to intended fertiliser application (eg at tillering) or as required.	Collect entire young plants (no roots) up to tillering. From later stages, cut a 10 cm stem piece from above ground.	Early stage: 50-80 whole plants; Post tillering: 30-50 lower stem segments	**2.5** **3.4**	Tillering Stem elongation

Crop Name:	Timing of sampling	Plant Part needed:	Quantity required:	Growth stages available	
ROCKET	As required from early vegetative stage, sampling no more than 2 weeks apart is recommended.	Entire leaf (YFEL) - 1 leaf per plant, strip leaf blade off and retain the petiole	30-40 leaf petioles	WK 3 WK 4 WK 5 WK 6 WK 7-8 WK 9	Early Vegetative Growth Early Vegetative Growth Mid Vegetative Growth Mid Vegetative Growth Mid-Late Vegetative Growth LateVegetative Growth
ROCKMELON	Begin sampling at stage 1.9 and continue as required to stage 7.9	Select the youngest fully expanded leaf (YFEL), usually the 4th or 5th leaf back from the growing tip of the plant. Remove leaf blade and retain the petiole	20-30 petioles depending on size	1 1.9 2 6 7.1 7.8 7.9 8	Min of 9 leaves Min of 19 leaves 1st secondary side shoot visible 1st flowers open on main stem 1st fruit on main stem reached full size 1st fruit on side shoot reached full size Preharvest Fully ripe fruit
RYE	As required	Stem (youngest fully expanded/ side tiller)	10-20 stems (more if younger)	12 to 15 21-29 30-34 37-49	5 or more leaves Tillering 21-29 Stem elongation 30-34 Booting 37-49
RYE GRASS	As required, typically at 2nd leaf stage	Above ground parts only from 15-20 random patches across the paddock	A full zip-lock sandwich bag of grass is required	1 2 3 4	Non-grazing Non-grazing Grazing Grazing
SILVERBEET	As required	Petiole of the YFEL (no leaf blade)	10-20 petioles	Unknown	Unknown
SORGHUM	Begin sampling at primary stage 1 (vegetative growth) or 3 (early reproductive growth) and sample fortnightly or as required.	Collect entire young plants (no roots) during stage 1. From larger plants (stage 3+), cut a 10 cm stem piece from above ground.	Stage 1: 20-30 plants; Stage 3 onwards: 15-20 lower stem segments	1.3-1.5 3.1-3.9 5.1-5.9 6.1-6.9	Vegetative growth Early reproductive growth Booting Flowering 30% bloom
SOY BEAN	Begin sampling by stage 1.9 and go to 6.5. Sample every 2 weeks or at least 3 times during the season.	Collect the YFEL, including the entire petiole emerging from the stem. Discard the leaf blades and retain the petiole. Sample the entire stem of younger plants.	collect 1 leaf per plant from 40-50 plants when young, decreasing to 20-30 petioles when more mature	1.5 1.9 5.5 6.5	Vegetative Vegetative Bud Set Mid Flowering
SPINACH	Begin sampling at week 2-3 and continue fortnightly as required	Collect the Youngest Fully Expanded Leaf (YFEL) with as much petiole (stalk) as possible. Remove leaf blade keeping petiole and midrib for analysis	1 leaf per plant from 40-50 plants (more when younger)	WK 2 WK 4 WK 5 WK 6 WK 8 WK 9-10	Early Vegetative Growth Early Vegetative Growth Mid Vegetative Growth Mid Vegetative Growth Late Vegetative Growth Late Vegetative Growth
STRAWBERRY - ALBION	Begin sampling at stage 1.9 (new leaves) and continue through to harvest as required	Select the youngest fully expanded leaves (YFEL) from 40-50 plants from a representative portion of the crop. Retain as much petioles as possible, and discard the leaves, retainning the leaf stalk/ petiole for analysis.	40-50 petioles initially, less as older plants are sampled	1.9 5.5 6.5 6.7 6.9 7.3	More than 9 leaves Trusses emerge 50% bloom Full bloom 90% Petal fall Seeds visible

Crop Name:	Timing of sampling	Plant Part needed:	Quantity required:	Growth stages available	
STRAWBERRY - ALBION				**8.1** **8.5** **8.9**	First colour First fruit full colour Main harvest
STRAWBERRY - AMESTI	Begin sampling at stage 6.5 and continue through to harvest as required	Select the youngest fully expanded leaves (YFEL) from 40-50 plants from a representative portion of the crop. Retain as much petioles as possible, and discard the leaves	40-50 petioles initially, less as older plants are sampled. Retain the leaf stalk/petiole for analysis.	**6.5** **7.3** **7.5** **8.1** **8.5** **8.9**	50% bloom Seeds visible Thimble-size fruit on 1st bloom First colour First fruit full colour Main harvest
STRAWBERRY - FESTIVAL	Begin sampling at stage 1.9 (new leaves) and continue through to harvest as required	Select the youngest fully expanded leaves (YFEL) from 40-50 plants from a representative portion of the crop. Retain as much petioles as possible, and discard the leaves, retainning the leaf stalk/ petiole for analysis.	40-50 petioles initially, less as older plants are sampled	**1.7** **1.9** **5.5** **6.5** **6.7** **6.9** **7.3** **8.1** **8.5** **8.9**	More than 7 leaves More than 9 leaves Trusses emerge 50% bloom Full bloom 90% Petal fall Seeds visible First colour First fruit full colour Main harvest
STRAWBERRY FRUIT	As required	Whole fruit with or without stems	A minimum representative number is required, usually 15-20 pieces of fruit	**Unknown**	Unknown
STRAWBERRY - GENERIC	Begin sampling at stage 1.9 (new leaves) and continue through to harvest as required	Select the youngest fully expanded leaves (YFEL) from 40-50 plants from a representative portion of the crop. Retain as much petioles as possible, and discard the leaves, retainning the leaf stalk/ petiole for analysis.	40-50 petioles initially, less as older plants are sampled	**1.7** **1.9** **5.5** **6.5** **6.7** **6.9** **7.3** **8.1** **8.5** **8.9**	More than 7 leaves More than 9 leaves Trusses emerge 50% bloom Full bloom 90% Petal fall Seeds visible First colour First fruit full colour Main harvest
SUGAR CANE	As required	Select leaves from stems of average height. Sample the third leaf from the top of the stem, this usually corresponds with the first visible dewlap	20-30 leaves from large plants, 30 whole plants for small plants	**5.5**	tassel emergence
SWEDE/TURNIP	As required	Petiole of the YFEL (no leaf blade)	25-30 petioles (one per plant)	**Unknown**	Unknown
SWEET CORN	Begin sampling at primary stage 1 (leaf development) or 3 (stem elongation) and sample as required	Select plants from a representative area of the crop. Sample entire plant at stage 1. From Stage 3 plus cut a 7-10 cm stem piece from above ground level.	Stage 1: 20-30 plants; From stage 3 onwards: 15-20 stem segments	**1.2-1.9** **3.0-3.4** **3.5-3.9** **5.0-5.9** **6.0-6.9** **7.1-7.5** **8.5-8.9**	Leaf development Stem elongation - < 4 nodes Stem elongation - >4 nodes Tassel emergence Pollination Mid cob Mature cob

Crop Name:	Timing of sampling	Plant Part needed:	Quantity required:	Growth stages available	
SWEET POTATO	As required	Petiole of the YFEL (no leaf blade)	25-30 petioles (one per plant)	Unknown	Unknown
TABLE GRAPE PETIOLE - GENERIC	Begin sampling when vegetative growth commences and go to stage 8.9 (harvest). Sample 3-5 times	Select the youngest fully expanded leaf (YFEL) from healthy shoots at mid canopy (one leaf per vine). Remove the leaf blade and retain the petiole for analysis	50 petioles in vegetative stages, decreasing to 25 petioles by harvest	1.5 5.5 6.8 7.5 7.9 8.1 8.5 8.9	Vegetative Inflorescence swelling 80% Cap Fall Pea Sized Berries Bunch Closure Veraison Berry softening (EL37) Harvest Maturity
TABLE GRAPE BERRIES - GENERIC	Sample berries at the same time and from the same vines as petioles. Alternatively, entire bunches may be collected during early fruit development.	Collect berries from 50 basal bunches (bunch at the bottom of the cane), picking along the length of the bunch.	Minimum of 50 berries. Consider a leak-proof container for posting samples.	7.5 7.8 8.1 8.9	Fruit Development - Pea Sized Berries Ripening of Berries- Verasion Softening of Berries Berries ripe for harvest
TABLE GRAPE BLACK	Begin sampling when vegetative growth commences and go to stage 8.9 (harvest). Sample 3-5 times	Select the youngest fully expanded leaf (YFEL) from healthy shoots at mid canopy (one leaf per vine). Remove the leaf blade and retain the petiole for analysis	50 petioles in vegetative stages, decreasing to 25 petioles by harvest	1.5 5.5 6.8 7.5 7.9 8.1 8.9	Vegetative Inflorescence swelling 80% Cap Fall Pea Sized Berries Bunch Closure Veraison Harvest Maturity
TABLE GRAPE RED	Begin sampling when vegetative growth commences and go to stage 8.9 (harvest). Sample 3-5 times	Select the youngest fully expanded leaf (YFEL) from healthy shoots at mid canopy (one leaf per vine). Remove the leaf blade and retain the petiole for analysis	50 petioles in vegetative stages, decreasing to 25 petioles by harvest	1.5 5.5 6.8 7.5 7.9 8.1 8.9	Vegetative Inflorescence swelling 80% Cap Fall Pea Sized Berries Bunch Closure Veraison Harvest Maturity
TABLE GRAPE WHITE	Begin sampling when vegetative growth commences and go to stage 8.9 (harvest). Sample 3-5 times	Select the youngest fully expanded leaf (YFEL) from healthy shoots at mid canopy (one leaf per vine). Remove the leaf blade and retain the petiole for analysis	50 petioles in vegetative stages, decreasing to 25 petioles by harvest	1.5 5.5 6.8 7.5 7.9 8.1 8.9	Vegetative Inflorescence swelling 80% Cap Fall Pea Sized Berries Bunch Closure Veraison Harvest Maturity
TOMATO - GENERIC	Begin sampling at stage 2 (vegetative) and monitor every 10-14 days until maturity. In protected cropping, timing may be dictated by date/fertifgation cycles rather than plant growth stages, by sampling the same position from the growing tip.	Collect 1 composite leaf per plant, select the youngest fully expanded leaf (YFEL), usually the forth leaf from the top, from actively growing plants. Discard the leaflets and retain the centre petioles for analysis	20-30 petioles	2 3.1 3.3 3.5 4.1 4.3 4.5 5.2	Vegetative Flowering - early Flowering - mid Flowering - late Fruit Set & Growth Fruit Set & Growth Fruit Set & Growth Colouring (breaker)

Crop Name:	Timing of sampling	Plant Part needed:	Quantity required:	Growth stages available	
TOMATO ENTICE	Begin sampling at stage 2 (vegetative) and monitor every 10-14 days until maturity. In protected cropping, timing may be dictated by date/fertifgation cycles rather than plant growth stages, by sampling the same position from the growing tip.	Collect 1 composite leaf per plant, select the youngest fully expanded leaf (YFEL), usually the forth leaf from the top, from actively growing plants. Discard the leaflets and retain the centre petioles for analysis	20-30 petioles	**2** **3.2** **3.4** **3.6** **4.1** **4.3** **4.5** **4.7** **5.1**	Vegetative growth Early Flowering Mid Flowering Late Flowering Fruit set & growth Fruit set & growth Fruit set & growth Fruit set & growth Breaker
TOMATO FRESH MARKET	Begin sampling at stage 2 (vegetative) and monitor every 10-14 days until maturity. In protected cropping, timing may be dictated by date/fertifgation cycles rather than plant growth stages, by sampling the same position from the growing tip.	Collect 1 composite leaf per plant, select the youngest fully expanded leaf (YFEL), usually the forth leaf from the top, from actively growing plants. Discard the leaflets and retain the centre petioles for analysis	20-30 petioles	**2** **3.2** **3.4** **3.6** **4.1** **4.3** **4.5** **4.7** **4.9** **5.1** **5.2**	Vegetative growth Early Flowering Mid Flowering Late Flowering Fruit set & growth Fruit set & growth Fruit set & growth Fruit set & growth Fruit set & growth Breaker Breaker - early to mid fruit ripening
TOMATO FRUIT	As required	Whole fruit with or without stems	A representative number of fruit (eg >10, more if smaller fruit)	**Unknown**	Unknown
TOMATO PINNACLE	Begin sampling at early flowering (stage 3.1) and monitor every 10-14 days until maturity. In protected cropping, timing may be dictated by date/fertifgation cycles rather than plant growth stages, by sampling the same position from the growing tip each round.	Collect 1 composite leaf per plant, select the youngest fully expanded leaf (YFEL), usually the forth leaf from the top, from actively growing plants. Discard the leaflets and retain the centre petioles for analysis	20-30 petioles	**3.1** **4.1** **4.2** **4.3** **4.4** **4.5** **4.6** **4.7** **4.8** **4.9** **5.1** **6.1** **7+**	Early Flowering Early fruit set & growth Early fruit set & growth Fruit set & growth Fruit set & growth Fruit set & growth Fruit set & growth Late fruit set & growth Late fruit set & growth Late fruit set & growth Breaker Fruit Ripening - maturity Harvest
TOMATO PROCESSING	Begin sampling at stage 2 (vegetative) and monitor every 10-14 days until maturity.	Collect 1 composite leaf per plant, select the youngest fully expanded leaf (YFEL), usually the forth leaf from the top, from actively growing plants. Discard the leaflets and retain the centre petioles for analysis	20-30 petioles	**2** **3.1** **3.3** **3.5** **4.1** **4.3** **4.5** **5.2**	Vegetative Flowering Flowering Flowering Fruit Set & Growth Fruit Set & Growth Fruit Set & Growth Colouring (breaker)

Crop Name:	Timing of sampling	Plant Part needed:	Quantity required:	Growth stages available	
TOMATO SYLVANIA	Begin sampling at stage 4.1 (early fruit set) and monitor every 10-14 days until maturity.	Collect 1 composite leaf per plant, select the youngest fully expanded leaf (YFEL), usually the forth leaf from the top, from actively growing plants. Discard the leaflets and retain the centre petioles for analysis	20-30 petioles	**4.1** **4.3** **4.5** **4.7** **5.1**	Early fruit set & growth Fruit set & growth Fruit set & growth Late fruit set & growth Breaker
TRITICALE	As required	Stem (youngest fully expanded/ side tiller)	10-20 stems (more if younger)	**11 to 18** **20-29** **30-39** **40-49** **50-59**	Seedling Growth Tillering Stem Elongation Booting Inflorescence Emergence
TULIP	Begin sampling at mid vegetative stage and go through to stage 6.5 (mid flowering).	Collect the Youngest Fully Expanded Leave (YFEL) from 30 randomly selected plants in a representative area of the crop. Retain the entire leaf for analysis.	20-30 leaves, depending on size	**1** **1.1** **1.3** **5.5** **6.5** **8.3** **8.4** **8.5**	Establishment Early vegetative Late vegetative Mid bud development Mid flowering Daughter bulb sized up and white Daughter Bulb Sized up and 50% Coloured Bulbs Mature
TURF	As required	whole grass blades above ground (no root material). Mower cuttings are acceptable	A full zip-lock sandwich bag of grass is required	**1** **2** **3** **4** **5** **6** **7** **8** **9** **10**	Vegetative Vegetative Vegetative Vegetative Vegetative Vegetative Vegetative Vegetative Vegetative Vegetative
VETCH	Begin sampling at stage 2.5 and go to 6.5. Sample every 2 weeks or at least 3 times during the season	Select one YFEL per plant, including the entire petiole emerging from the stem. Discard the leaf blades and retain the petiole. For small plants (to late vegetative) sample the entire stem.	50 petioles/stems (if plants are very small more than 50 may have to be collected).	**2.5** **6.2** **6.5** **7.5**	Mid Vegetative Early Flowering Mid Flowering Pod Development
WALNUT	As required	Collect 10 cm of new shoot tips from current season's growth at mid crown height (or shoulder height for large trees)	30-40 shoot tips	**5&6** **7** **8** **8.9**	Oct: Inflorecence Emergence & Flowering Nov/Dec: Fruit Development Dec: Fruit Ripening Dec/Jan: Mature

Crop Name:	Timing of sampling	Plant Part needed:	Quantity required:	Growth stages available	
WATERMELON - GENERIC	Begin sampling by stage 1.9 and continue fortnightly or until stage 7.9	Select the youngest fully expanded leaf (YFEL), usually the 4th or 5th leaf back from the growing tip of the plant)	20 - 40 petioles (depending on size). Remove leaf blade and retain the petiole for analysis	1.5 1.9 2 5 5.5 6 6.5 6.7 7 7.1 7.3 7.5 7.9 8 8.9	Min of 15 leaves Min of 19 leaves 1st secondary side shoot visible Infloresence Emergence - first flower Infloresence Emergence - fifth flower Flowering: 1st flower open on main stem Flowering: 5th flower open on main stem Flowering: 7th flower open on main stem Fruit Development Fruit on main stem reached 10% size Fruit on main stem reached 30% size Fruit on main stem reached 50% size 1st fruit on side shoot reached size First fully ripe fruit Harvest
WATERMELON - JAVELIN WATERMELON - JAVELIN	Begin sampling by stage 1.9 and continue fortnightly or until stage 7.9	Select the youngest fully expanded leaf (YFEL), usually the 4th or 5th leaf back from the growing tip of the plant)	20 - 40 petioles (depending on size). Remove leaf blade and retain the petiole for analysis	1.5 1.9 2 5 5.5 6 6.5 6.7 7 7.1 7.3 7.5 7.9 8 8.9	Min of 15 leaves Min of 19 leaves 1st secondary side shoot visible Infloresence Emergence - first flower Infloresence Emergence - fifth flower Flowering: 1st flower open on main stem Flowering: 5th flower open on main stem Flowering: 7th flower open on main stem Fruit Development Fruit on main stem reached 10% size Fruit on main stem reached 30% size Fruit on main stem reached 50% size 1st fruit on side shoot reached size First fully ripe fruit Harvest
WATERMELON - NIGHTSHADE	Begin sampling by stage 1.9 and continue fortnightly or until stage 7.9	Select the youngest fully expanded leaf (YFEL), usually the 4th or 5th leaf back from the growing tip of the plant)	20 - 40 petioles (depending on size). Remove leaf blade and retain the petiole for analysis	1 1.5 1.9 2 5 6 7.1 7.5 7.9 8	Minimum of 9 leaves Minimum of 15 leaves Minimum of 19 leaves 1st secondary side shoot visible Infloresence Emergence - first flower Flowering: 1st flower open on main stem Fruit on main stem reached 10% size Fruit on main stem reached 50% size 1st fruit on side shoot reached size First fully ripe fruit

Crop Name:	Timing of sampling	Plant Part needed:	Quantity required:	Growth stages available	
WATERMELON - ROYAL ARMARDA	Begin sampling by stage 1.9 and continue fortnightly or until stage 7.9	Select the youngest fully expanded leaf (YFEL), usually the 4th or 5th leaf back from the growing tip of the plant)	20 - 40 petioles (depending on size). Remove leaf blade and retain the petiole for analysis	**1** **1.5** **1.9** **2** **5** **6** **7.1** **7.9** **8**	Minimum of 9 leaves Minimum of 15 leaves Minimum of 19 leaves 1st secondary side shoot visible Infloresence Emergence - first flower Flowering: 1st flower open on main stem Fruit on main stem reached 10% size 1st fruit on side shoot reached size First fully ripe fruit
WATERMELON - SEEDLESS	Begin sampling by stage 1.9 and continue fortnightly or until stage 7.9	Select the youngest fully expanded leaf (YFEL), usually the 4th or 5th leaf back from the growing tip of the plant)	20 - 40 petioles (depending on size). Remove leaf blade and retain the petiole for analysis	**1** **1.5** **1.9** **2** **5** **6** **7.1** **7.3-7.5** **7.9** **8**	Minimum of 9 leaves Minimum of 15 leaves Minimum of 19 leaves 1st secondary side shoot visible Infloresence Emergence - first flower Flowering: 1st flower open on main stem Fruit on main stem reached 10% size 1st fruit on side shoot reached 50% size 1st fruit on side shoot reached size First fully ripe fruit
WHEAT	Sample 7-10 days prior to intended fertiliser applications, e.g. at tillering (20-29), stem elongation (30-39), and/or booting stages (41-49) or as required	Select whole plants from a 1-2 ha representative area of the crop. Retain the entire top of the plant before tillering, or 10cm of the basal plant part; remove all roots and loose dirt	50 –100 plants, with roots removed	**11 to 14** **15-18** **20-29** **30-39** **41-49** **51-59** **61-69** **71-77**	Early vegetative growth Seedling Growth Tillering Stem Elongation Booting Inflorescence Emergence Anthesis Milk Development
ZUCCHINI	Begin sampling by stage 1.9 and continue fortnightly or until stage 7.5	Select the youngest fully expanded leaf (YFEL), usually the 4th or 5th leaf back from the growing tip of the plant)	20 - 30 petioles (depending on size). Remove leaf blade and retain the petiole for analysis	**1.5** **1.9** **5.5** **6.1-6.9** **7.1** **7.3** **7.5**	Vegetative Vegetative Infloresence emergence Flowering Fruit Set Fruit Set Fruit Growth