# NU-test crop sampling and growth stages

version 2020.v1 - 11/10/2019

**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 (in red) 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
7. Further information on individual crops is available here

| 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).<br>Sample from the same trees for subsequent sampling. | 30 to 40 shoot tips | up to 5.0<br>7.0-7.2<br>7.3<br>7.4<br>7.5-7.9<br>8.0-8.6<br>8.7-8.9<br>9.0-9.1 | Vegetative<br>Early fruit enlargement/Shuck Fall<br>Mid fruit enlargement<br>Mid fruit enlargement<br>Stone Hardening<br>Fruit Maturation<br>Ripe Fruit for Harvest<br>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<br>7.5-7.9<br>8.0-8.9 | Early-mid fruit<br>Stone hardening<br>Fruit maturation |
| ALMOND (NURSERY) | 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).<br>Sample from the same trees for subsequent sampling. | 40 to 50 shoot tips | 1.5<br>1.6<br>1.7<br>1.8<br>1.9<br>2<br>2.1<br>2.2<br>2.3<br>2.4<br>2.5<br>2.6<br>2.7<br>2.8<br>2.9<br>3<br>3.1<br>3.2 | Vegetative<br>Vegetative<br>Vegetative<br>Vegetative<br>Vegetative<br>Vegetative<br>Vegetative<br>Vegetative<br>Vegetative<br>Vegetative<br>Vegetative<br>Vegetative<br>Vegetative<br>Vegetative<br>Vegetative<br>Vegetative<br>Vegetative<br>Vegetative |
| 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).<br>Sample from the same trees for subsequent sampling. | At least 20 shoot tips | 5.3<br>6.9<br>7.1<br>7.3<br>7.4<br>8.1<br>8.7<br>9.1 | Open cluster<br>End of flowering<br>Fruit development (10mm)<br>Second fruit fall (30mm)<br>T-stage<br>Beginning of ripening<br>Harvest maturity<br>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).<br>Sample from the same trees for subsequent sampling. | At least 20 shoot tips | 3.1 - 3.9<br>5.3<br>6.9<br>7.1<br>7.2<br>7.3<br>7.4<br>7.5<br>8.1<br>8.7 | Shoot development<br>Open cluster<br>End of flowering<br>Fruit development (10mm)<br>Fruit development (20mm)<br>Second fruit fall (30mm)<br>T-stage<br>Fruit development (1/2 final size)<br>Beginning of ripening<br>Harvest maturity |

| Crop Name: | Timing of sampling | Plant Part needed: | Quantity required: | Growth stages available | |
|---|---|---|---|---|---|
| **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**<br>**5.3**<br>**6.9**<br>**7.1**<br>**7.2**<br>**7.3**<br>**7.4**<br>**7.5**<br>**8.1**<br>**8.7** | Shoot development<br>Open cluster<br>End of flowering<br>Fruit development (10mm)<br>Fruit development (20mm)<br>Second fruit fall (30mm)<br>T-stage<br>Fruit development (1/2 final size)<br>Beginning of ripening<br>Harvest maturity |
| **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**<br>**5.3**<br>**6.9**<br>**7.1**<br>**7.2**<br>**7.3**<br>**7.4**<br>**7.5**<br>**8.1**<br>**8.7** | Shoot development<br>Open cluster<br>End of flowering<br>Fruit development (10mm)<br>Fruit development (20mm)<br>Second fruit fall (30mm)<br>T-stage<br>Fruit development (1/2 final size)<br>Beginning of ripening<br>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**<br>**6.9**<br>**7.4** | Open cluster<br>End of flowering<br>T-stage |
| **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**<br>**6.9**<br>**7.3**<br>**7.4** | Open cluster<br>End of flowering<br>Second fruit fall (30mm)<br>T-stage |
| **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**<br>**5.3**<br>**6.9**<br>**7.1**<br>**7.2**<br>**7.3**<br>**7.4**<br>**7.5**<br>**8.1**<br>**8.7** | Shoot development<br>Open cluster<br>End of flowering<br>Fruit development (10mm)<br>Fruit development (20mm)<br>Second fruit fall (30mm)<br>T-stage<br>Fruit development (1/2 final size)<br>Beginning of ripening<br>Harvest maturity |

| Crop Name: | Timing of sampling | Plant Part needed: | Quantity required: | Growth stages available |
|---|---|---|---|---|
| **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).<br>We suggest 10+ apples, more for smaller/younger fruitlets | **7.1** Fruit size up to 10mm<br>**7.2** Fruit size up to 20mm<br>**7.4** Fruit size 40mm, T stage<br>**7.5** Fruit half final size<br>**8.1** Beginning of ripening<br>**8.5** Advanced ripening<br>**8.7** Fruit ripe for harvest<br>**9.1** Post harvest |
| **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).<br>We suggest 10+ apples, more for smaller/younger fruitlets | **7.1** Fruit size up to 10mm<br>**7.2** Fruit size up to 20mm<br>**7.4** Fruit size 40mm, T stage<br>**7.5** Fruit half final size<br>**8.1** Beginning of ripening<br>**8.5** Advanced ripening<br>**8.7** Fruit ripe for harvest<br>**9.1** 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).<br>We suggest 10+ apples, more for smaller/younger fruitlets | **7.1** Fruit size up to 10mm<br>**7.2** Fruit size up to 20mm<br>**7.4** Fruit size 40mm, T stage<br>**7.5** Fruit half final size<br>**8.1** Beginning of ripening<br>**8.5** Advanced ripening<br>**8.7** Fruit ripe for harvest<br>**9.1** 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).<br>We suggest 10+ apples, more for smaller/younger fruitlets | **7.1** Fruit size up to 10mm<br>**7.2** Fruit size up to 20mm<br>**7.4** Fruit size 40mm, T stage<br>**7.5** Fruit half final size<br>**8.1** Beginning of ripening<br>**8.5** Advanced ripening<br>**8.7** Fruit ripe for harvest<br>**9.1** 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).<br>We suggest 10+ apples, more for smaller/younger fruitlets | **7.1** Fruit size up to 10mm<br>**7.2** Fruit size up to 20mm<br>**7.4** Fruit size 40mm, T stage<br>**7.5** Fruit half final size<br>**8.1** Beginning of ripening<br>**8.5** Advanced ripening<br>**8.7** Fruit ripe for harvest<br>**9.1** 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).<br>We suggest 10+ apples, more for smaller/younger fruitlets | **7.1** Fruit size up to 10mm<br>**7.2** Fruit size up to 20mm<br>**7.4** Fruit size 40mm, T stage<br>**7.5** Fruit half final size<br>**8.1** Beginning of ripening<br>**8.5** Advanced ripening<br>**8.7** Fruit ripe for harvest<br>**9.1** 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).<br>We suggest 10+ apples, more for smaller/younger fruitlets | **7.1**<br>**7.2**<br>**7.4**<br>**7.5**<br>**8.1**<br>**8.5**<br>**8.7**<br>**9.1** | Fruit size up to 10mm<br>Fruit size up to 20mm<br>Fruit size 40mm, T stage<br>Fruit half final size<br>Beginning of ripening<br>Advanced ripening<br>Fruit ripe for harvest<br>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).<br>We suggest 10+ apples, more for smaller/younger fruitlets | **7.1**<br>**7.2**<br>**7.4**<br>**7.5**<br>**8.1**<br>**8.5**<br>**8.7**<br>**9.1** | Fruit size up to 10mm<br>Fruit size up to 20mm<br>Fruit size 40mm, T stage<br>Fruit half final size<br>Beginning of ripening<br>Advanced ripening<br>Fruit ripe for harvest<br>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 to determine 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 10cm long. | **6.5**<br>**7.2**<br>**7.5**<br>**7.6**<br>**7.7**<br>**7.8**<br>**8.9** | Flowering<br>Shuck fall<br>Stone hardening<br>Fruit about 60% of final size<br>Fruit about 70% of final size<br>Fruit about 80% of final size<br>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**<br>**6**<br>**6.9**<br>**7.1**<br>**7.5**<br>**8**<br>**8.5**<br>**9** | Pre Flower<br>Fruit set<br>1st Fruit drop<br>2nd Fruit drop<br>Fruit sizing<br>Fruit fill<br>Harvest<br>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**<br>**6.5**<br>**7** | Development of the suckers<br>Fruit sizing<br>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**<br>**21-29**<br>**30-34**<br>**37-49** | 5 or more leaves<br>Tillering 21-29<br>Stem elongation 30-34<br>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**<br>**3.3**<br>**3.9**<br>**4.2**<br>**4.5**<br>**4.9** | Seedling<br>30% Crop Cover<br>90% Crop Cover<br>Bulb 20% of final size<br>Bulb 50% of final size<br>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**<br>**5.5**<br>**6.1**<br>**7.1**<br>**7.5**<br>**8**<br>**8.5**<br>**9** | flower buds visible<br>mid inflorescence emergence<br>early flowering<br>early fruit development<br>50% fruit formed<br>ealry harvest<br>mid harvest<br>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**<br>**6.5**<br>**6.9**<br>**7.2**<br>**7.5**<br>**7.7**<br>**8.1**<br>**8.5**<br>**9.1** | Early shoot development<br>Mid flowering<br>All petals fallen, end of flowering<br>Fruit size up to 20% of final size<br>Fruit about half final size<br>Fruit about 70% of final size<br>Beginning of ripening, pink fruit<br>50% fruit harvested<br>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**<br>**2.2**<br>**2.4**<br>**4.1**<br>**4.3**<br>**4.5**<br>**4.7**<br>**4.9** | Leaf Development<br>Vegetative<br>Head Initiation<br>Buttoning/Early head<br>30% final frame size/Early head<br>50% final frame size/Mid head<br>70% final frame size/late head<br>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**<br>**3.5**<br>**3.8**<br>**4.1**<br>**4.5** | Vegetative<br>Main stem elongation<br>Budding<br>Early sprout growth<br>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**<br>**4.3**<br>**4.5**<br>**4.7**<br>**4.9** | Vegetative<br>Early head development<br>Mid head development<br>Late head development<br>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**<br>**1.8**<br>**3.3**<br>**5.1**<br>**5.3**<br>**5.9**<br>**6.2**<br>**6.5**<br>**6.8**<br>**7.3** | 4 leaves unfolded<br>8 leaves unfolded<br>Stem elongation<br>Rosette (Green bud)<br>Inflorescence emergence<br>Rosette (Yellow bud)<br>Early flowering<br>Mid flowering<br>Late flowering<br>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**<br>**5.1**<br>**6.1**<br>**6.7**<br>**7.3**<br>**7.7**<br>**8.5**<br>**8.9** | Vegetative Growth<br>Inflorescence Emergence<br>Flowering<br>Flowering<br>Fruit development<br>Fruit development<br>Harvest<br>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**<br>**1.1**<br>**1.3**<br>**5.2** | Establishment<br>Early vegetative<br>Late vegetative<br>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**<br>**1.8**<br>**4.2**<br>**4.4**<br>**4.5**<br>**4.6**<br>**4.7**<br>**4.8** | 5th true leaf unfolded<br>8th true leaf unfolded<br>20% expected root diameter<br>40% expected root diameter<br>50% expected root diameter<br>60% expected root diameter<br>70% expected root diameter<br>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**<br>**4.5**<br>**4.6**<br>**4.8** | 20% expected root diameter<br>50% expected root diameter<br>60% expected root diameter<br>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<br>1.6<br>1.7<br>1.9<br>4.3<br>4.5<br>4.7<br>4.8 | Early Establishment<br>Vegetative - 6 leaf<br>Vegetative - 7 leaf<br>Vegetative - 9 leaf<br>Early head formation<br>50% final head size<br>70% final head size<br>80% final head size |
| **CAULIFLOWER** | Begin sampling at stage 1.5 (Early establishment) and continue into mid head development (stage 4.5) at fortnightly intervals. | As above | As above | 1.5<br>2.2<br>4.3<br>4.5 | Early Establishment<br>Vegetative 20% final frame size<br>Early head 30% final head size<br>Midhead 50% 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<br>4<br>4.5<br>4.9 | Early Vegetative<br>Early Bulking<br>Mid Bulking<br>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<br>7.3<br>7.5<br>7.7<br>8.2<br>8.9<br>9.1 | Early fruit development<br>Early-mid fruit development<br>Mid fruit development<br>Mid - late fruit development<br>Fruit colouring<br>Harvest<br>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<br>7.3-7.4<br>7.5-7.6<br>7.7-7.9<br>8.0-8.5<br>8.9 | Early fruit development<br>Early-mid fruit development<br>Mid fruit devlp; early stone hardening<br>Late stone hardening; 70% - 90% final size<br>Fruit colouring<br>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<br>5.5<br>6.2<br>6.5<br>7.5 | Mid Vegetative<br>Inflorescence emerge<br>Early Flowering<br>Mid Flowering<br>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<br>1.8<br>4.3<br>4.5 | 5 Leaf Development<br>8 Leaf Development<br>30% of Head Size<br>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<br>1.1<br>1.3<br>5.2<br>6.1 | Establishment<br>Early vegetative<br>Late vegetative<br>Mid bud development<br>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<br>6<br>7.1<br>7.4<br>7.9<br>8.9 | Inflorescence emerge<br>Flowering<br>Fruit development<br>Fruit development<br>Fruit development<br>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<br>7.9 | Fruit Set<br>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<br>2.9<br>3.1-3.9<br>5.1<br>6.1<br>6.5<br>7.2<br>8.1 | Veg growth (formation of side shoots)<br>Veg growth (9 or more side shoots)<br>Crop cover (plants meet between rows)<br>Bud development (pin-head square)<br>Early flowering (early bloom)<br>Full flowering (mid bloom)<br>20% of bolls final size<br>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<br>1.8<br>4.1<br>4.3<br>4.5<br>4.7 | Leaf Development<br>Leaf Development<br>Early Heart<br>Early-mid Heart<br>Mid Heart<br>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<br>1.8<br>4.1<br>4.3<br>4.5<br>4.7 | Leaf Development<br>Leaf Development<br>Early Heart<br>Early Heart<br>Mid Heart<br>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<br>1.9<br>6.1<br>7.1 | Vegetative<br>Vegetative<br>Flowering<br>Fruit Growth |
| **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<br>5.0-5.9<br>6.0-6.9<br>7.0-7.9<br>8.5-9.0 | Vegetative<br>Flowering<br>Fruit set<br>fruit fill<br>Harvest |

| Crop Name: | Timing of sampling | Plant Part needed: | Quantity required: | Growth stages available | |
|---|---|---|---|---|---|
| **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<br>2.5<br>5.1<br>6.3<br>7.3 | Establishment<br>Vegetative Growth<br>Bud Development<br>Flowering<br>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<br>6.9<br>7.1<br>7.3 | Bud set<br>Flowering<br>Early bean set<br>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<br>1.1<br>1.3<br>5.5<br>6.5<br>8.5 | Establishment<br>Early vegetative<br>Late vegetative<br>Mid bud development<br>Mid flowering<br>Full Flower |
| **FREESIA** | As required | Whole plants from above the ground | 10-15 plants | 1<br>1.1<br>1.3<br>5.5<br>6.5<br>8.3<br>8.4<br>8.5 | Establishment<br>Early vegetative<br>Late vegetative<br>Mid bud development<br>Mid flowering<br>Daughter bulb sized up and white<br>Daughter Bulb Sized up and 50% Coloured<br>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<br>1.4<br>4.1<br>4.1.1<br>4.3<br>4.5<br>4.6<br>4.x | Early Vegetative<br>Early Vegetative<br>Early bulbing<br>Early Bulbing<br>Early-Mid bulbing<br>Mid bulbing<br>Mid bulbing<br>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<br>1.9<br>4.2<br>4.5 | Establishment<br>Establishment<br>Development of Root<br>Development of Root |
| **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<br>6.8<br>7.5<br>7.9<br>8.1<br>8.9 | Inflorescence swelling<br>80% Cap Fall<br>Pea Sized Berries<br>Bunch Closure<br>Veraison<br>Harvest Maturity |

| Crop Name: | Timing of sampling | Plant Part needed: | Quantity required: | Growth stages available | |
|---|---|---|---|---|---|
| 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<br>8.3<br>8.5<br>8.9 | Verasion<br>Berries coloured<br>Softening of berries<br>Berries ripe for harvest |
| GRAPE CABERNET SAUVIGNON | 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<br>6.8<br>7.5<br>7.9<br>8.1<br>8.9 | Inflorescence swelling<br>80% Cap Fall<br>Pea Sized Berries<br>Bunch Closure<br>Veraison<br>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<br>5.5<br>6.8<br>7.5<br>7.9<br>8.1<br>8.9 | Vegetative<br>Inflorescence swelling<br>80% Cap Fall<br>Pea Sized Berries<br>Bunch Closure<br>Veraison<br>Harvest Maturity |
| GRAPE MERLOT | 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<br>6.8<br>7.5<br>7.9<br>8.1<br>8.9 | Inflorescence swelling<br>80% Cap Fall<br>Pea Sized Berries<br>Bunch Closure<br>Veraison<br>Harvest Maturity |
| GRAPE PETIT VERDOT | 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<br>6.8<br>7.5<br>7.9<br>8.1<br>8.9 | Inflorescence swelling<br>80% Cap Fall<br>Pea Sized Berries<br>Bunch Closure<br>Veraison<br>Harvest Maturity |
| GRAPE PINOT GRIS/GRIGIO | 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<br>6.8<br>7.5<br>7.9<br>8.1<br>8.9 | Inflorescence swelling<br>80% Cap Fall<br>Pea Sized Berries<br>Bunch Closure<br>Veraison<br>Harvest Maturity |
| 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<br>6.8<br>7.5<br>7.9<br>8.1<br>8.9 | Inflorescence swelling<br>80% Cap Fall<br>Pea Sized Berries<br>Bunch Closure<br>Veraison<br>Harvest Maturity |
| GRAPE REISLING | 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<br>6.8<br>7.5<br>7.9<br>8.1<br>8.9 | Inflorescence swelling<br>80% Cap Fall<br>Pea Sized Berries<br>Bunch Closure<br>Veraison<br>Harvest Maturity |

| Crop Name: | Timing of sampling | Plant Part needed: | Quantity required: | Growth stages available | |
|---|---|---|---|---|---|
| **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**<br>**6.8**<br>**7.5**<br>**7.9**<br>**8.1**<br>**8.9** | Inflorescence swelling<br>80% Cap Fall<br>Pea Sized Berries<br>Bunch Closure<br>Veraison<br>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**<br>**5.5**<br>**6.8**<br>**7.5**<br>**7.9**<br>**8.1**<br>**8.9** | Vegetative<br>Inflorescence swelling<br>80% Cap Fall<br>Pea Sized Berries<br>Bunch Closure<br>Veraison<br>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**<br>**5.5**<br>**6.8**<br>**7.5**<br>**7.9**<br>**8.1**<br>**8.9** | Vegetative<br>Inflorescence swelling<br>80% Cap Fall<br>Pea Sized Berries<br>Bunch Closure<br>Veraison<br>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**<br>**6.8**<br>**7.5**<br>**7.9**<br>**8.1**<br>**8.9** | Inflorescence swelling<br>80% Cap Fall<br>Pea Sized Berries<br>Bunch Closure<br>Veraison<br>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**<br>**5.5**<br>**6.1**<br>**7.3** | Vegetative<br>Bud set<br>Early flowering<br>Early bean set |
| **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**<br>**2**<br>**3**<br>**4** | 1<br>2<br>3<br>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 |
| **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**<br>**1.9**<br>**2**<br>**6**<br>**7.1**<br>**7.8**<br>**7.9**<br>**8** | Min of 9 leaves<br>Min of 19 leaves<br>1st secondary side shoot visible<br>1st flowers open on main stem<br>1st fruit on main stem reached full size<br>1st fruit on side shoot reached full size<br>Preharvest<br>Fully ripe fruit |

| Crop Name: | Timing of sampling | Plant Part needed: | Quantity required: | Growth stages available | |
|---|---|---|---|---|---|
| **IRIS** | As required | Collect the centre stem when developed, otherwise whole plants above ground | 20-30 centre stems or plants | **1**<br>**1.1**<br>**1.3**<br>**5.5**<br>**6.5**<br>**8.3**<br>**8.4**<br>**8.5** | Establishment<br>Early vegetative<br>Late vegetative<br>Mid bud development<br>Mid flowering<br>Daughter bulb sized up and white<br>Daughter Bulb Sized up and 50% Coloured<br>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**<br>**2**<br>**3**<br>**4** | Non-grazing<br>Non-grazing<br>Grazing<br>Grazing |
| **KALE** | As required | Collect 1 YFEL per plant, remove leaf blade & retain midrib/petiole | 20 midrib/petioles, more if plants are younger | **Wk3**<br>**Wk5** | Week 3<br>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**<br>**6.1 - 6.8**<br>**7.1 - 7.4**<br>**7.5 - 7.9** | Vegetative & pre-flower<br>Flowering<br>Early fruit development<br>Late fruit development |
| **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**<br>**4.1**<br>**4.5**<br>**4.7** | Leaf development<br>10% expected base diameter<br>50% expected base diameter<br>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**<br>**6**<br>**7.1**<br>**7.4**<br>**7.9**<br>**8.9** | Inflorescence emerge<br>Flowering<br>Fruit development<br>Fruit development<br>Fruit development<br>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**<br>**1.1**<br>**1.3**<br>**5.5**<br>**6.5**<br>**8.3**<br>**8.4**<br>**8.5** | Emergence<br>Early Vegetative<br>Late Vegetative<br>Mid Bud Development<br>Mid Flowering<br>Daughter Bulb Sized up and White<br>Daughter Bulb Sized up and 50% Coloured<br>Bulbs Mature |
| **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**<br>**1.8**<br>**4.1**<br>**4.5**<br>**4.7** | 5 True Leaves<br>8 True Leaves<br>Harvest 1<br>Harvest 2<br>Harvest 3 |

| Crop Name: | Timing of sampling | Plant Part needed: | Quantity required: | Growth stages available | |
|---|---|---|---|---|---|
| **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<br>1.8<br>4.1<br>4.5<br>4.7 | 5 True Leaves<br>8 True Leaves<br>Harvest 1<br>Harvest 2<br>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<br>5.1<br>5.5<br>5.9 | Mid Vegetative<br>Early Bud Development<br>Mid Bud Development<br>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<br>2.3<br>2.5<br>5.3<br>5.9<br>6.1<br>6.5<br>7.1 | 5 Leaves unfolded<br>3 side shoots<br>5 side shoots<br>Flowers above leaves<br>Coloured bud<br>10% flowers on main stem open<br>Full flowering<br>10% of pods at final size |
| **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<br>6<br>7<br>unknown | vegetative<br>flowering<br>fruiting<br>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 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. | 1<br>3<br>5<br>7 | Vegetative Flush<br>Shoot Development<br>Flowering<br>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<br>5.3<br>6.5<br>7.1 | Leaf development<br>Tassel emergence<br>Pollination<br>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<br>6<br>7.1<br>7.4<br>7.9<br>8.9 | Inflorescence emerge<br>Flowering<br>Fruit development<br>Fruit development<br>Fruit development<br>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<br>5.5<br>6.4<br>6.8<br>7<br>7.1<br>7.3<br>7.8<br>8.5<br>9.1 | Pre-flowering<br>Mid flower emergence<br>40% flowering<br>80% flowering<br>Full flowering<br>Early fruit set<br>First shedding fruit maturing<br>Fruit reached 80% of final size<br>Fully ripe fruit, ready for harvest<br>Post harvest |

| Crop Name: | Timing of sampling | Plant Part needed: | Quantity required: | Growth stages available | |
|---|---|---|---|---|---|
| **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**<br>**1.9**<br>**5.5**<br>**6.5** | Vegetative<br>Vegetative<br>Bud Set<br>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**<br>**7.2**<br>**7.5**<br>**7.6**<br>**7.7**<br>**7.8**<br>**8.9** | Flowering<br>Shuck fall<br>Stone hardening<br>Fruit about 60% of final size<br>Fruit about 70% of final size<br>Fruit about 80% of final size<br>Harvest |
| **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**<br>**7.5**<br>**7.7** | Fruit about 30% of final size<br>Stone Hardening (50% fruit size)<br>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**<br>**21- 29**<br>**30- 34**<br>**37- 49** | Seedling Growth<br>Tillering<br>Stem elongation<br>Booting |
| **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**<br>**5.1**<br>**6.1**<br>**6.9**<br>**7.1**<br>**8.1**<br>**Fruit** | Shoots reach 30% of final size<br>Flower cluster developm. Starts<br>10% of flowers open<br>Fruit set<br>Fruit about 10% of final size<br>Beginning of fruit colour<br>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**<br>**1.3**<br>**1.4**<br>**1.5**<br>**1.8**<br>**4.1**<br>**4.3**<br>**4.5**<br>**4.7**<br>**4.x** | 1- leaf development<br>1- leaf development<br>1- leaf development<br>1- leaf development<br>1- leaf development<br>4-bulb development<br>4-bulb development<br>4-bulb development<br>4-bulb development<br>4-bulb development |

| Crop Name: | Timing of sampling | Plant Part needed: | Quantity required: | Growth stages available | |
|---|---|---|---|---|---|
| **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<br>5<br>6<br>6.9<br>7.1<br>7.4<br>7.9<br>8.5<br>8.9 | Vegetative (G.S. 2-4.9)<br>Inflorescence emerge<br>Flowering<br>End of Flowering<br>Fruit development<br>Fruit development<br>Fruit development<br>Fruit ripening<br>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<br>5 to 7<br>8 to 9 | Vegetative<br>Flowering & Fruit set<br>Harvest |
| **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<br>3.3<br>4.5<br>4.9 | Leaf Development<br>Stem Elongation<br>Bulking Up<br>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<br>6.5<br>8.9 | Early growth<br>Fruit sizing<br>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<br>2<br>3<br>4 | Vegetative<br>Vegetative<br>Vegetative<br>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<br>2<br>3<br>4 | Vegetative<br>Vegetative<br>Vegetative<br>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<br>3.6<br>5-5.9<br>6-6.9 | 3 Visibly extended internodes<br>6 Visibly extended internodes<br>Flower Budding<br>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<br>7.5<br>7.6<br>7.7<br>7.8<br>8.9 | Shuck fall<br>Stone hardening<br>Fruit about 60% of final size<br>Fruit about 70% of final size<br>Fruit about 80% of final size<br>Harvest |
| **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<br>6.9<br>7.1<br>7.3<br>7.4<br>8.1<br>8.7<br>9.1 | Inflorescence emergence<br>Flowering<br>Fruit development<br>Fruit development<br>Fruit development<br>Fruit ripening<br>Fruit ripening<br>Post-harvest |

| Crop Name: | Timing of sampling | Plant Part needed: | Quantity required: | Growth stages available | |
|---|---|---|---|---|---|
| **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**<br>**7.4**<br>**8.1**<br>**8.5**<br>**8.7** | Fruit size up to 20mm<br>Fruit size 40mm, T stage<br>Beginning of ripening<br>Advanced ripening<br>Fruit ripe for harvest |
| **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**<br>**2**<br>**3**<br>**4** | Non-grazing<br>Non-grazing<br>Grazing<br>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**<br>**2**<br>**3**<br>**4** | Non-grazing<br>Non-grazing<br>Grazing<br>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**<br>**6 to 7** | Vegetative<br>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**<br>**7.7**<br>**8.9** | Main shoot and leaf development<br>Nut hardening<br>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**<br>**7.2**<br>**7.5**<br>**7.6**<br>**7.7**<br>**7.8**<br>**8.9** | Flowering (with leaf & shoot dev.)<br>Shuck fall<br>Stone hardening<br>Fruit about 60% of final size<br>Fruit about 70% of final size<br>Fruit about 80% of final size<br>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**<br>**7.5**<br>**7.7** | Fruit about 30% of final size<br>Stone Hardening (50% fruit size)<br>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**<br>**3.4**<br>**5.3**<br>**6.1** | Rosette<br>Late running up<br>Hook<br>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**<br>**1.7**<br>**1.8**<br>**2.3**<br>**2.7**<br>**3.1**<br>**3.3**<br>**4.1**<br>**4.2**<br>**4.3**<br>**4.4**<br>**4.5**<br>**4.6**<br>**4.7** | Emergence<br>Pre-tuber<br>Begin of tuber initiation<br>Tuber set<br>Tuber set<br>Tuber development<br>Tuber development<br>Early tuber bulking<br>Early tuber bulking<br>Early tuber bulking<br>Mid tuber bulking<br>Mid tuber bulking<br>Mid tuber bulking<br>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**<br>**1.7**<br>**1.8**<br>**2.3**<br>**2.7**<br>**3.1**<br>**3.3**<br>**4.1**<br>**4.2**<br>**4.3**<br>**4.4**<br>**4.5**<br>**4.6**<br>**4.7** | Emergence<br>Pre-tuber<br>Begin of tuber initiation<br>Tuber set<br>Tuber set<br>Tuber development<br>Tuber development<br>Early tuber bulking<br>Early tuber bulking<br>Early tuber bulking<br>Mid tuber bulking<br>Mid tuber bulking<br>Mid tuber bulking<br>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. Return to the same area for subsequent samples. | 20-30 petioles | **1.8**<br>**3.3**<br>**4.3**<br>**4.5**<br>**4.6** | Beginning of Tuber Initiation<br>Tuber 2-2.5cm Diameter<br>Tuber 4-5cm Diameter<br>Tuber 6-7cm Diameter<br>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 subsequent samples. | 20-30 petioles | **1.5**<br>**1.7**<br>**1.8**<br>**2.3 - 2.7**<br>**3.1**<br>**3.3**<br>**4.1**<br>**4.2**<br>**4.3**<br>**4.4**<br>**4.5**<br>**4.6** | Emergence<br>Pre-tuber<br>Begin of tuber initiation<br>Tuber set<br>Tuber development<br>Tuber development<br>Early tuber bulking<br>Early tuber bulking<br>Early tuber bulking<br>Mid tuber bulking<br>Mid tuber bulking<br>Mid tuber bulking |

| Crop Name: | Timing of sampling | Plant Part needed: | Quantity required: | Growth stages available | |
|---|---|---|---|---|---|
| | | | | 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 |
| **POTATO MC CAINS#1** | 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 | Begin of tuber initiation |
| | | | | 3.1 | Tuber development |
| | | | | 3.3 | Tuber development |
| | | | | 4.1 | Early tuber bulking |
| | | | | 4.2 | Early tuber bulking |
| | | | | 4.3 | Early tuber bulking |
| | | | | 4.4 | Mid tuber bulking |
| | | | | 4.5 | Mid tuber bulking |

| Crop Name: | Timing of sampling | Plant Part needed: | Quantity required: | Growth stages available | |
|---|---|---|---|---|---|
| | | | | 4.6 | Mid tuber bulking |
| | | | | 4.7 | Late tuber bulking |
| | | | | 4.8-4.9 | 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 | Emergence |
| | | | | 1.7 | Pre-tuber |
| | | | | 1.8 | Begin of tuber initiation |
| | | | | 2.3 | Tuber set |
| | | | | 2.7 | Tuber set |
| | | | | 3.1 | Tuber development |
| | | | | 3.3 | Tuber development |
| | | | | 4.1 | Early tuber bulking |
| | | | | 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 |
| **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 | Emergence |
| | | | | 1.7 | Pre-tuber |
| | | | | 1.8 | Begin of tuber initiation |
| | | | | 2.3 | Tuber set |
| | | | | 2.7 | Tuber set |
| | | | | 3.1 | Tuber development |
| | | | | 3.3 | Tuber development |
| | | | | 4.1 | Early tuber bulking |
| | | | | 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 |
| | | | | 4.8 | Late tuber bulking |
| **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 | 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 |

| Crop Name: | Timing of sampling | Plant Part needed: | Quantity required: | Growth stages available | |
|---|---|---|---|---|---|
| **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**<br>**1.8**<br>**2.7**<br>**3.1**<br>**3.3**<br>**4.1**<br>**4.2**<br>**4.3**<br>**4.4**<br>**4.5**<br>**4.6**<br>**4.7** | Pre Tuber<br>Beginning of Tuber Initiation<br>Tuber Set<br>Tuber 1-2cm Diameter<br>Tuber 2-2.5cm Diameter<br>Tuber 3-4cm Diameter<br>Tuber 3-4cm Diameter<br>Tuber 4-5cm Diameter<br>Tuber 5-6cm Diameter<br>Tuber 6-7cm Diameter<br>Tuber 7-8cm Diameter<br>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**<br>**1.8**<br>**2.1**<br>**2.3**<br>**3.1**<br>**3.3**<br>**4.1**<br>**4.2**<br>**4.3**<br>**4.4**<br>**4.5**<br>**4.6**<br>**4.7**<br>**4.8**<br>**4.9** | Pre-tuber<br>Begin of tuber initiation<br>Tuber set<br>Tuber set<br>Tuber development<br>Tuber development<br>Early tuber bulking<br>Early tuber bulking<br>Early tuber bulking<br>Mid tuber bulking<br>Mid tuber bulking<br>Mid tuber bulking<br>Late tuber bulking<br>Late tuber bulking<br>Late tuber bulking |
| **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**<br>**1.8**<br>**2.7**<br>**3.1**<br>**3.3**<br>**4.1**<br>**4.2**<br>**4.3**<br>**4.4**<br>**4.5**<br>**4.6**<br>**4.7** | Pre Tuber<br>Beginning of Tuber Initiation<br>Tuber Set<br>Tuber 1-2cm Diameter<br>Tuber 2-2.5cm Diameter<br>Tuber 3-4cm Diameter<br>Tuber 3-4cm Diameter<br>Tuber 4-5cm Diameter<br>Tuber 5-6cm Diameter<br>Tuber 6-7cm Diameter<br>Tuber 7-8cm Diameter<br>Late tuber bulking |

| Crop Name: | Timing of sampling | Plant Part needed: | Quantity required: | Growth stages available | |
|---|---|---|---|---|---|
| **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**<br>**1.8**<br>**2.7**<br>**3.1**<br>**3.3**<br>**4.2**<br>**4.3**<br>**4.4**<br>**4.5**<br>**4.6**<br>**4.7** | Pre-tuber<br>Begin of tuber initiation<br>Tuber set<br>Tuber development<br>Tuber development<br>Early tuber bulking<br>Early tuber bulking<br>Mid tuber bulking<br>Mid tuber bulking<br>Mid tuber bulking<br>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**<br>**1.8**<br>**2.1**<br>**2.3**<br>**3.1**<br>**3.3**<br>**4.1**<br>**4.2**<br>**4.3**<br>**4.4**<br>**4.5**<br>**4.6**<br>**4.7**<br>**4.8**<br>**4.9** | Pre-tuber<br>Begin of tuber initiation<br>Tuber set<br>Tuber set<br>Tuber development<br>Tuber development<br>Early tuber bulking<br>Early tuber bulking<br>Early tuber bulking<br>Mid tuber bulking<br>Mid tuber bulking<br>Mid tuber bulking<br>Late tuber bulking<br>Late tuber bulking<br>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**<br>**3.1 - 3.3**<br>**4.1 - 4.3** | Pre Tuber<br>Tuber 1-2cm Diameter<br>Tuber 3-5cm Diameter |
| **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**<br>**1.7**<br>**1.8**<br>**2.3**<br>**2.7**<br>**3.1**<br>**3.3**<br>**4.1**<br>**4.2**<br>**4.3**<br>**4.4**<br>**4.5**<br>**4.6**<br>**4.7** | Emergence<br>Pre-tuber<br>Begin of tuber initiation<br>Tuber set<br>Tuber set<br>Tuber development<br>Tuber development<br>Early tuber bulking<br>Early tuber bulking<br>Early tuber bulking<br>Mid tuber bulking<br>Mid tuber bulking<br>Mid tuber bulking<br>Late tuber bulking |

| Crop Name: | Timing of sampling | Plant Part needed: | Quantity required: | Growth stages available | |
|---|---|---|---|---|---|
| **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**<br>**1.7**<br>**1.8**<br>**2.3**<br>**2.7**<br>**3.1**<br>**3.3**<br>**4.1**<br>**4.2**<br>**4.3**<br>**4.4**<br>**4.5**<br>**4.6**<br>**4.7** | Emergence<br>Pre-tuber<br>Begin of tuber initiation<br>Tuber set<br>Tuber set<br>Tuber development<br>Tuber development<br>Early tuber bulking<br>Early tuber bulking<br>Early tuber bulking<br>Mid tuber bulking<br>Mid tuber bulking<br>Mid tuber bulking<br>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**<br>**1.7**<br>**1.8**<br>**2.3**<br>**2.7**<br>**3.1**<br>**3.3**<br>**4.1**<br>**4.2**<br>**4.3**<br>**4.4**<br>**4.5**<br>**4.6**<br>**4.7** | Emergence<br>Pre-tuber<br>Begin of tuber initiation<br>Tuber set<br>Tuber set<br>Tuber development<br>Tuber development<br>Early tuber bulking<br>Early tuber bulking<br>Early tuber bulking<br>Mid tuber bulking<br>Mid tuber bulking<br>Mid tuber bulking<br>Late tuber bulking |
| **POTATO TUBER - GENERIC** | At harvest | whole tubers | A representative number (8-12) | **8.9** | At harvest |
| **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**<br>**1.7**<br>**1.8**<br>**2.3**<br>**2.7**<br>**3.1**<br>**3.3**<br>**4.1**<br>**4.2**<br>**4.3**<br>**4.4**<br>**4.5**<br>**4.6**<br>**4.7** | Emergence<br>Pre-tuber<br>Begin of tuber initiation<br>Tuber set<br>Tuber set<br>Tuber development<br>Tuber development<br>Early tuber bulking<br>Early tuber bulking<br>Early tuber bulking<br>Mid tuber bulking<br>Mid tuber bulking<br>Mid tuber bulking<br>Late tuber bulking |

| Crop Name: | Timing of sampling | Plant Part needed: | Quantity required: | Growth stages available | |
|---|---|---|---|---|---|
| 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<br>2<br>5<br>6<br>7.1<br>7.3<br>7.5<br>7.7<br>8 | Leaf development<br>Formation of side shoots<br>Inflorescence emergence<br>Flowering<br>Early fruit development<br>Early-mid fruit development<br>Mid fruit development<br>Mid - late fruit development<br>Ripening of fruit and seed |
| PYRETHRUM | Sample during active growth | 10cm growing tip | approx 30-50 tips | Unknown | Unknown |
| RASPBERRY LONGCANE | 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<br>3.5<br>4<br>5<br>6.1<br>7.1<br>8.2<br>8.5<br>8.9<br>9 | Early veg growth (new canes 1-30 cm, Sept)<br>Mid veg growth (new canes 31-60 cm, early Oct)<br>Late veg growth (laterals ext, mid-late Oct)<br>Inflorescence emergence (late Oct)<br>First flowers (buds & open flowers, Nov)<br>Fruit forming (none ripe, earlyDec)<br>First Pick/early harvest (mid Dec)<br>Mid harvest (50% complete, early-mid Jan)<br>Late Harvest (late Jan)<br>Post harvest (late Feb) |
| RASPBERRY PRIMOCANE | 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. | 3.2<br>3.5<br>3.8<br>5<br>6.1<br>7.1<br>8.1<br>8.3<br>8.5<br>9 | Early veg growth (1-30 cm, early Oct)<br>Mid veg growth (31-60 cm, late Oct)<br>Late veg growth (61-90 cm, Nov)<br>Inflorescence emergence (early Dec)<br>First flowers (buds & open flowers, mid Dec)<br>Fruit forming (none ripe, Jan)<br>First Pick (late Jan-early Feb)<br>Early harvest (Feb)<br>Harvest (50% complete, end Feb - March)<br>Post harvest (April) |
| RHUBARB | As required | Stem of the youngest fully expanded leaf. Remove leaf blade, retaining the stem. | 10-15 stem sections 10cm long | 1.3<br>1.5<br>1.9 | Early Vegetative<br>Mid Vegetative<br>Late Vegetative |
| 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<br>WK 4<br>WK 5<br>WK 6<br>WK 7-8<br>WK 9 | Early Vegetative Growth<br>Early Vegetative Growth<br>Mid Vegetative Growth<br>Mid Vegetative Growth<br>Mid-Late Vegetative Growth<br>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<br>1.9<br>2<br>6<br>7.1<br>7.8<br>7.9<br>8 | Min of 9 leaves<br>Min of 19 leaves<br>1st secondary side shoot visible<br>1st flowers open on main stem<br>1st fruit on main stem reached full size<br>1st fruit on side shoot reached full size<br>Preharvest<br>Fully ripe fruit |

| Crop Name: | Timing of sampling | Plant Part needed: | Quantity required: | Growth stages available | |
|---|---|---|---|---|---|
| RYE | As required | Stem (youngest fully expanded/ side tiller) | 10-20 stems (more if younger) | 12 to 15<br>21-29<br>30-34<br>37-49 | 5 or more leaves<br>Tillering 21-29<br>Stem elongation 30-34<br>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<br>2<br>3<br>4 | Non-grazing<br>Non-grazing<br>Grazing<br>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<br>3.1-3.9<br>5.1-5.9<br>6.1-6.9 | Vegetative growth<br>Early reproductive growth<br>Booting<br>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<br>1.9<br>5.5<br>6.5 | Vegetative<br>Vegetative<br>Bud Set<br>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<br>WK 4<br>WK 5<br>WK 6<br>WK 8<br>WK 9-10 | Early Vegetative Growth<br>Early Vegetative Growth<br>Mid Vegetative Growth<br>Mid Vegetative Growth<br>Late Vegetative Growth<br>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<br>5.5<br>6.5<br>6.7<br>6.9<br>7.3<br>8.1<br>8.5<br>8.9 | More than 9 leaves<br>Trusses emerge<br>50% bloom<br>Full bloom<br>90% Petal fall<br>Seeds visible<br>First colour<br>First fruit full colour<br>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<br>7.3<br>7.5<br>8.1<br>8.5<br>8.9 | 50% bloom<br>Seeds visible<br>Thimble-size fruit on 1st bloom<br>First colour<br>First fruit full colour<br>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<br>1.9<br>5.5<br>6.5<br>6.7<br>6.9<br>7.3<br>8.1<br>8.5<br>8.9 | More than 7 leaves<br>More than 9 leaves<br>Trusses emerge<br>50% bloom<br>Full bloom<br>90% Petal fall<br>Seeds visible<br>First colour<br>First fruit full colour<br>Main harvest |

| Crop Name: | Timing of sampling | Plant Part needed: | Quantity required: | Growth stages available | |
|---|---|---|---|---|---|
| **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**<br>**1.9**<br>**5.5**<br>**6.5**<br>**6.7**<br>**6.9**<br>**7.3**<br>**8.1**<br>**8.5**<br>**8.9** | More than 7 leaves<br>More than 9 leaves<br>Trusses emerge<br>50% bloom<br>Full bloom<br>90% Petal fall<br>Seeds visible<br>First colour<br>First fruit full colour<br>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 |
| **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** | 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**<br>**3.0-3.4**<br>**3.5-3.9**<br>**5.0-5.9**<br>**6.0-6.9**<br>**7.1-7.5**<br>**8.5-8.9** | Leaf development<br>Stem elongation - < 4 nodes<br>Stem elongation - >4 nodes<br>Tassel emergence<br>Pollination<br>Mid cob<br>Mature cob |
| **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**<br>**7.8**<br>**8.1**<br>**8.9** | Fruit Development - Pea Sized Berries<br>Ripening of Berries- Verasion<br>Softening of Berries<br>Berries ripe for harvest |
| **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**<br>**5.5**<br>**6.8**<br>**7.5**<br>**7.9**<br>**8.1**<br>**8.9** | Vegetative<br>Inflorescence swelling<br>80% Cap Fall<br>Pea Sized Berries<br>Bunch Closure<br>Veraison<br>Harvest Maturity |
| **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**<br>**5.5**<br>**6.8**<br>**7.5**<br>**7.9**<br>**8.1**<br>**8.9** | Vegetative<br>Inflorescence swelling<br>80% Cap Fall<br>Pea Sized Berries<br>Bunch Closure<br>Veraison<br>Harvest Maturity |

| Crop Name: | Timing of sampling | Plant Part needed: | Quantity required: | Growth stages available | |
|---|---|---|---|---|---|
| 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<br>5.5<br>6.8<br>7.5<br>7.9<br>8.1<br>8.9 | Vegetative<br>Inflorescence swelling<br>80% Cap Fall<br>Pea Sized Berries<br>Bunch Closure<br>Veraison<br>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<br>5.5<br>6.8<br>7.5<br>7.9<br>8.1<br>8.9 | Vegetative<br>Inflorescence swelling<br>80% Cap Fall<br>Pea Sized Berries<br>Bunch Closure<br>Veraison<br>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<br>3.1<br>3.3<br>3.5<br>4.1<br>4.3<br>4.5<br>5.2 | Vegetative<br>Flowering - early<br>Flowering - mid<br>Flowering - late<br>Fruit Set & Growth<br>Fruit Set & Growth<br>Fruit Set & Growth<br>Colouring (breaker) |
| 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<br>3.2<br>3.4<br>3.6<br>4.1<br>4.3<br>4.5<br>4.7<br>5.1 | Vegetative growth<br>Early Flowering<br>Mid Flowering<br>Late Flowering<br>Fruit set & growth<br>Fruit set & growth<br>Fruit set & growth<br>Fruit set & growth<br>Breaker |
| TOMATO FRUIT - FRESH MARKET | As required | Whole fruit with or without stems | A representative number of fruit (eg >10, more if smaller fruit) | Unknown | Unknown |
| TOMATO FRUIT - PROCESSING | As required | Whole fruit with or without stems | A representative number of fruit (eg >10, more if smaller fruit) | Unknown | Unknown |
| 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<br>3.2<br>3.4<br>3.6<br>4.1<br>4.3<br>4.5<br>4.7<br>4.9<br>5.1<br>5.2 | Vegetative growth<br>Early Flowering<br>Mid Flowering<br>Late Flowering<br>Fruit set & growth<br>Fruit set & growth<br>Fruit set & growth<br>Fruit set & growth<br>Fruit set & growth<br>Breaker<br>Breaker - early to mid fruit ripening |

| Crop Name: | Timing of sampling | Plant Part needed: | Quantity required: | Growth stages available | |
|---|---|---|---|---|---|
| **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**<br>**4.1**<br>**4.2**<br>**4.3**<br>**4.4**<br>**4.5**<br>**4.6**<br>**4.7**<br>**4.8**<br>**4.9**<br>**5.1**<br>**6.1**<br>**7+** | Early Flowering<br>Early fruit set & growth<br>Early fruit set & growth<br>Fruit set & growth<br>Fruit set & growth<br>Fruit set & growth<br>Fruit set & growth<br>Late fruit set & growth<br>Late fruit set & growth<br>Late fruit set & growth<br>Breaker<br>Fruit Ripening - maturity<br>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**<br>**3.1**<br>**3.3**<br>**3.5**<br>**4.1**<br>**4.3**<br>**4.5**<br>**5.2** | Vegetative<br>Flowering<br>Flowering<br>Flowering<br>Fruit Set & Growth<br>Fruit Set & Growth<br>Fruit Set & Growth<br>Colouring (breaker) |
| **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**<br>**4.5**<br>**4.7**<br>**5.1** | Early fruit set & growth<br>Fruit set & growth<br>Late fruit set & growth<br>Breaker |
| **TRITICALE** | As required | Stem (youngest fully expanded/ side tiller) | 10-20 stems (more if younger) | **11 to 18**<br>**20-29**<br>**30-39**<br>**40-49**<br>**50-59** | Seedling Growth<br>Tillering<br>Stem Elongation<br>Booting<br>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**<br>**1.1**<br>**1.3**<br>**5.5**<br>**6.5**<br>**8.3**<br>**8.4**<br>**8.5** | Establishment<br>Early vegetative<br>Late vegetative<br>Mid bud development<br>Mid flowering<br>Daughter bulb sized up and white<br>Daughter Bulb Sized up and 50% Coloured<br>Bulbs Mature |

| Crop Name: | Timing of sampling | Plant Part needed: | Quantity required: | Growth stages available | |
|---|---|---|---|---|---|
| **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<br>2<br>3<br>4<br>5<br>6<br>7<br>8<br>9<br>10 | Vegetative<br>Vegetative<br>Vegetative<br>Vegetative<br>Vegetative<br>Vegetative<br>Vegetative<br>Vegetative<br>Vegetative<br>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 (e.g. 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<br>6.2<br>6.5<br>7.5 | Mid Vegetative<br>Early Flowering<br>Mid Flowering<br>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<br>7<br>8<br>8.9 | Oct: Inflorecence Emergence & Flowering<br>Nov/Dec: Fruit Development<br>Dec: Fruit Ripening<br>Dec/Jan: Mature |
| **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<br>1.9<br>2<br>5<br>5.5<br>6<br>6.5<br>6.7<br>7<br>7.1<br>7.3<br>7.5<br>7.9<br>8<br>8.9 | Min of 15 leaves<br>Min of 19 leaves<br>1st secondary side shoot visible<br>Infloresence Emergence - first flower<br>Infloresence Emergence - fifth flower<br>Flowering: 1st flower open on main stem<br>Flowering: 5th flower open on main stem<br>Flowering: 7th flower open on main stem<br>Fruit Development<br>Fruit on main stem reached 10% size<br>Fruit on main stem reached 30% size<br>Fruit on main stem reached 50% size<br>1st fruit on side shoot reached size<br>First fully ripe fruit<br>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<br>1.5<br>1.9<br>2<br>5<br>6<br>7.1<br>7.5<br>7.9<br>8 | Minimum of 9 leaves<br>Minimum of 15 leaves<br>Minimum of 19 leaves<br>1st secondary side shoot visible<br>Infloresence Emergence - first flower<br>Flowering: 1st flower open on main stem<br>Fruit on main stem reached 10% size<br>Fruit on main stem reached 50% size<br>1st fruit on side shoot reached size<br>First fully ripe fruit |

| Crop Name: | Timing of sampling | Plant Part needed: | Quantity required: | Growth stages available | |
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| **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**<br>**1.5**<br>**1.9**<br>**2**<br>**5**<br>**6**<br>**7.1**<br>**7.9**<br>**8** | Minimum of 9 leaves<br>Minimum of 15 leaves<br>Minimum of 19 leaves<br>1st secondary side shoot visible<br>Infloresence Emergence - first flower<br>Flowering: 1st flower open on main stem<br>Fruit on main stem reached 10% size<br>1st fruit on side shoot reached size<br>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**<br>**1.5**<br>**1.9**<br>**2**<br>**5**<br>**6**<br>**7.1**<br>**7.9**<br>**8** | Minimum of 9 leaves<br>Minimum of 15 leaves<br>Minimum of 19 leaves<br>1st secondary side shoot visible<br>Infloresence Emergence - first flower<br>Flowering: 1st flower open on main stem<br>Fruit on main stem reached 10% size<br>1st fruit on side shoot reached size<br>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**<br>**15-18**<br>**20-29**<br>**30-39**<br>**41-49**<br>**51-59**<br>**61-69**<br>**71-77** | Early vegetative growth<br>Seedling Growth<br>Tillering<br>Stem Elongation<br>Booting<br>Inflorescence Emergence<br>Anthesis<br>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**<br>**1.9**<br>**5.5**<br>**6.1-6.9**<br>**7.1**<br>**7.3**<br>**7.5** | Vegetative<br>Vegetative<br>Infloresence emergence<br>Flowering<br>Fruit Set<br>Fruit Set<br>Fruit Growth |