

Western Fertilizer Handbook (see above)

UCANR Publication: "Organic Soil Amendments and Fertilizers"

Can be purchased at <http://anrcatalog.ucdavis.edu/Items.aspx?search=organic%20soil> or at your local UC Cooperative Extension office for \$5.

Item #9: Soil - Available N in Root Zone (Annualized, lbs/acre)

Rule of thumb: 20-40 lb N per acre for each 1% Soil Organic Matter (SOM)

Soil test results for NO₃-N: lb N/ac = Soil NO₃-N (ppm) × 4

Item #10: N in Irrigation Water (Annualized, lbs/ac)

N in irrigation water (lbs/ac) = Inches of water applied x lbs NO₃-N per inch of irrigation water

Inches applied =
$$\frac{(\text{Flow in cfs}) \times (\text{Irrigation set time in hours})}{(\text{Irrigated acres})}$$

Inches applied =
$$\frac{(\text{Flow in gpm} \div 449) \times (\text{Irrigation set time in hours})}{(\text{Irrigated acres})}$$

lbs N/ac-in = ppm (NO₃-N) x 0.23

N in Water Unit conversions:

ppm (NO₃-N) = ppm (NO₃) x 0.226

FYI: No longer required on worksheets: N Removed in Crop

UCCE Nitrogen concentrations in harvested plant parts - A literature overview by Daniel

Geissler includes nitrogen removed coefficients for most CA Central Crops.

~~[http://www20220](#)~~

USDA Tool to Calculate Nutrient (N, P, K) Removal by Harvested Crop

Crop Nutrient Tool at following website has information about N, P, and sometimes K of crop residues. Need to input yield and know what the harvested portion is.

<http://plants.usda.gov/npk/main>

International Plant Nutrition Institute Crop Nutrient Removal Calculator app for i-Phone or i-Pad

Download the free app from App Store or i-Tunes to your i-Phone or i-Pad. About 80 crops are available, but be aware that some are listed in components (such as sugar beet tops and sugar beet roots) that you would need to add together if all components are removed from field.

<https://itunes.apple.com/us/app/crop-nutrient-removal-calculator/id914110406?mt=8>

POTENTIAL RANGES OF IRRIGATION EFFICIENCY (%)
FOR TYPICAL IRRIGATION METHODS AND VARYING LEVELS OF IRRIGATION MANAGEMENT
(Adapted based upon information cited in UC ANR Publication 8571, Table 3)

Irrigation Method/System	Range in Potential Irrigation Efficiency (%)	Potential Irrigation Efficiency (%) (high level mgt)¹	Potential Irrigation Efficiency (mid-level mgt)²	Potential Irrigation Efficiency (low level mgt)³
Mini/Microsprinkler				
Solid set, rotator, > 1 gpm nozzle	70 to 90	90	80	70
Minisprinkler, rotator, < 1 gpm nozzle	75 to 90	90	83	75
Microsprinkler – gph flow, fixed spray pattern	80 to 90	90	85	80
Drip irrigation	80 to 95	95	88	80
Subsurface drip irrigation	80 to 95	95	88	80
Sprinkler				
Solid set	70 to 85	85	78	70
Hand move	65 to 85	85	75	65
Side roll	65 to 85	85	75	65
Traveling gun (big gun)	65 to 75	75	70	65
Center pivot	75 to 90	90	83	75
Linear move	75 to 90	90	83	75
LEPA (Low Energy Precise Application) ⁴	80 to 90	90	85	80
Surface				
Conventional furrow	45 to 65	65	55	45
Conventional furrow with tailwater return	60 to 80	80	70	60
Surge or alternate furrow	55 to 75	75	65	55
Basin flood	60 to 75	75	68	60
Precision level basin flood	60 to 80	80	70	60

¹ Irrigation systems often less than ten years old, frequent maintenance of irrigation systems, and use of ET_c, soil, or plant water status monitoring to guide irrigation scheduling.

² Irrigation systems often older than ten years, less frequent maintenance of irrigation systems, and minimal use of ET_c, soil, and plant water status to guide irrigation scheduling.

³ Irrigation systems 20 years or older, very little or no maintenance of systems, and no use of ET_c, soil moisture, or plant water status monitoring to guide irrigation scheduling.

⁴ Linear move or center pivot systems that use drop tubes and low pressure bubblers to deliver water directly into furrows and minimize wind drip and canopy interference. Furrows are typically blocked with furrow dikes every two to four yards to control where water infiltrates.

How to Determine Level of Management

High Level

- Irrigation distribution evaluation completed every three to five years to identify maintenance needs.
- Assess water quality for changes in chemistry, biological materials (like bacteria, fungi, algae), and sediment load) at least every three to five years or when water supply is known to have changed.
- Select and inject acids, chloride, or polymers based upon known water quality.
- Clean filters, and flush hose lines at least every other month during irrigation season.
- Drive through check of irrigation system at each start up to scout for system breaks and needed plumbing repairs.
- Regular use of ET_c , soil, or plant water status monitoring to guide irrigation scheduling.

Mid-Level

- Irrigation distribution evaluation completed once when irrigation system nears ten years old.
- Assess water quality for changes at least every five years.
- Select and inject water treatment according to known water quality at least once each irrigation season.
- Clean filters and flush irrigation system at least once each season.
- Drive through check of irrigation system start up every two to four weeks to scout for system breaks and make plumbing repairs.
- Minimal use of ET_c , soil, and plant water status to guide irrigation scheduling.

Low Level

- Irrigation system uniformity not assessed over the life of the system.
- Unknown water quality.
- No filter maintenance or chemigation practiced other than fertilizer injection.
- Seldom check irrigation system at start up for breaks and necessary plumbing repairs.
- No use of ET_c , soil, and plant water status to guide irrigation scheduling.

Seasonal Crop ET Estimates (inches/year) These estimates should be adjusted as necessary for age, crop vigor, atypical density, etc. ND=No data																			
Crop	Butte	Colusa	El Dorado	Glenn	Lake	Lassen	Modoc	Napa	Nevada	Placer	Plumas	Sacramento	Shasta	Sierra	Siskiyou	Solano	Sutter	Tehama	Yolo
Alfalfa	53.3	54.7	54.7	54.7	49.5	53.3	43.4	49.5	53.3	54.7	53.3	56.1	51.2	53.3	46.3	52.8	54.7	54.7	56.1
Almond, mature	48.9	49.6	49.8	49.6	ND	49.1	ND	ND	49.1	49.8	49.1	50.5	49.1	49.1	ND	50.5	49.6	49.8	50.5
Almond, 4th leaf	44.0	44.7	44.8	44.7	ND	44.2	ND	ND	44.2	44.8	44.2	45.4	44.2	44.2	ND	45.4	44.7	44.8	45.4
Almond, 3rd leaf	36.7	37.2	37.4	37.2	ND	36.8	ND	ND	36.8	37.4	36.8	37.9	36.8	36.8	ND	37.9	37.2	37.4	37.9
Almond, 2nd leaf	26.9	27.3	27.4	27.3	ND	27.0	ND	ND	27.0	27.4	27.0	27.8	27.0	27.0	ND	27.8	27.3	27.4	27.8
Almond, 1st leaf	19.6	19.9	19.9	19.9	ND	19.6	ND	ND	19.6	19.9	19.6	20.2	19.6	19.6	ND	20.2	19.9	19.9	20.2
Apple	41.0	43.6	42.9	43.6	ND	40.4	ND	ND	40.4	42.9	40.4	45.5	40.2	40.4	40.0	45.5	43.6	42.9	45.5
Apricot/Aprium	41.0	43.6	42.9	43.6	ND	40.4	ND	ND	40.4	42.9	40.4	45.5	40.2	40.4	40.0	45.5	43.6	42.9	45.5
Asparagus	19.2	22.1	20.2	22.1	ND	17.3	ND	ND	17.3	20.2	17.3	23.1	20.6	17.3	23.9	23.1	22.1	20.2	23.1
Barley	28.4	28.7	29.4	28.7	ND	29.1	ND	ND	29.1	29.4	29.1	29.7	26.4	29.1	23.6	29.7	28.7	29.4	29.7
Bean - Green	19.2	22.1	20.2	22.1	ND	17.3	ND	ND	17.3	20.2	17.3	23.1	20.6	17.3	23.9	23.1	22.1	20.2	23.1
Bean Dry	28.4	28.7	29.4	28.7	ND	29.1	ND	ND	29.1	29.4	29.1	29.7	27.7	29.1	26.3	29.7	28.7	29.4	29.7
Beet	37.6	38.5	39.4	38.5	ND	ND	ND	ND	ND	39.4	ND	39.4	36.1	ND	36.1	39.4	38.5	39.4	39.4
Berry	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Blackberry	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Blueberry	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
Cabbage	19.2	22.1	20.2	22.1	ND	17.3	ND	ND	17.3	20.2	17.3	23.1	20.6	17.3	23.9	23.1	22.1	20.2	23.1
Canola	28.4	28.7	29.4	28.7	ND	29.1	ND	ND	29.1	29.4	29.1	29.7	27.7	29.1	26.3	29.7	28.7	29.4	29.7
Carrot	19.2	22.1	20.2	22.1	ND	17.3	ND	ND	17.3	20.2	17.3	23.1	20.6	17.3	23.9	23.1	22.1	20.2	23.1
Cherry	41.0	43.6	42.9	43.6	ND	40.4	ND	ND	40.4	42.9	40.4	45.5	40.2	40.4	40.0	45.5	43.6	42.9	45.5
Chestnut	38.7	42.0	40.4	42.0	ND	37.2	ND	ND	37.2	40.4	37.2	43.7	37.8	37.2	38.5	43.7	42.0	40.4	43.7
Christmas Trees	41.9	42.2	43.7	42.2	ND	43.3	ND	ND	43.3	43.7	43.3	44.1	41.1	43.3	38.9	44.1	42.2	43.7	44.1
Cilantro	19.2	22.1	20.2	22.1	ND	17.3	ND	ND	17.3	20.2	17.3	23.1	20.6	17.3	23.9	23.1	22.1	20.2	23.1
Citrus	39.0	42.9	41.1	42.9	ND	37.2	ND	ND	37.2	41.1	37.2	45.0	38.1	37.2	39.1	45.0	42.9	41.1	45.0
Citrus	35.3	36.1	36.1	36.1	ND	35.3	ND	ND	35.3	36.1	35.3	37.0	35.3	35.3	ND	37.0	36.1	36.1	37.0
Corn - Fodder/Silage	33.2	32.4	34.6	32.4	ND	35.5	ND	ND	35.5	34.6	35.5	33.7	32.3	35.5	29.2	33.7	32.4	34.6	33.7
Corn - Grain	33.2	32.4	34.6	32.4	ND	35.5	ND	ND	35.5	34.6	35.5	33.7	32.3	35.5	29.2	33.7	32.4	34.6	33.7
Corn - Popcorn	33.2	32.4	34.6	32.4	ND	35.5	ND	ND	35.5	34.6	35.5	33.7	32.3	35.5	29.2	33.7	32.4	34.6	33.7
Corn - Sweet	33.2	32.4	34.6	32.4	ND	35.5	ND	ND	35.5	34.6	35.5	33.7	32.3	35.5	29.2	33.7	32.4	34.6	33.7
Cotton	33.7	35.9	35.2	35.9	ND	33.1	ND	ND	33.1	35.2	33.1	37.4	32.7	33.1	32.4	37.4	35.9	35.2	37.4
Cover Crop	CHOOSE SPECIFIC CROP			CHOOSE SPECIFIC CROP			CHOOSE SPECIFIC CROP			CHOOSE SPECIFIC CROP			CHOOSE SPECIFIC CROP			CHOOSE SPECIFIC CROP			
Cucumber	19.9	20.7	21.5	20.7	ND	ND	ND	ND	ND	21.5	ND	21.5	19.4	ND	19.4	21.5	20.7	21.5	21.5
Dichondra	41.9	42.2	43.7	42.2	ND	43.3	ND	ND	43.3	43.7	43.3	44.1	41.1	43.3	38.9	44.1	42.2	43.7	44.1
Fallow	7.1	6.5	7.4	6.5	ND	8.0	ND	ND	8.0	7.4	8.0	6.9	8.1	8.0	8.2	6.9	6.5	7.4	6.9
Fig	38.7	42.0	40.4	42.0	ND	37.2	ND	ND	37.2	40.4	37.2	43.7	37.8	37.2	38.5	43.7	42.0	40.4	43.7
Filbert	38.7	42.0	40.4	42.0	ND	37.2	ND	ND	37.2	40.4	37.2	43.7	37.8	37.2	38.5	43.7	42.0	40.4	43.7
Flower/Ornamental	41.9	42.2	43.7	42.2	ND	43.3	ND	ND	43.3	43.7	43.3	44.1	41.1	43.3	38.9	44.1	42.2	43.7	44.1
Grain Hay	28.4	28.7	29.4	28.7	ND	29.1	ND	ND	29.1	29.4	29.1	29.7	27.7	29.1	26.3	39.8	28.7	29.4	29.7
Grape - Other	ND	32.3	32.3	32.3	ND	ND	ND	ND	ND	32.3	ND	32.3	ND	ND	ND	32.3	32.3	32.3	32.3
Grape - Rootstock	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Grape - Wine	41.2	41.5	41.9	41.5	37.6	41.6	ND	37.6	41.6	41.9	41.6	42.1	40.1	41.6	38.5	39.8	41.5	41.9	42.1
Greenhouse	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hay/Forage	CHOOSE SPECIFIC CROP			CHOOSE SPECIFIC CROP			CHOOSE SPECIFIC CROP			CHOOSE SPECIFIC CROP			CHOOSE SPECIFIC CROP			CHOOSE SPECIFIC CROP			
Herb/Spice	41.9	42.2	43.7	42.2	ND	43.3	ND	ND	43.3	43.7	43.3	44.1	41.1	43.3	38.9	44.1	42.2	43.7	44.1
Hops	42.5	42.5	42.5	42.5	ND	42.5	ND	ND	42.5	42.5	42.5	42.5	42.5	42.5	42.5	42.5	42.5	42.5	42.5
Kale	19.2	22.1	20.2	22.1	ND	17.3	ND	ND	17.3	20.2	17.3	23.1	20.6	17.3	23.9	23.1	22.1	20.2	23.1
Kiwi	48.0	48.0	48.0	48.0	ND	48.0	ND	ND	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0
Lavender	41.9	42.2	43.7	42.2	ND	43.3	ND	ND	43.3	43.7	43.3	44.1	41.1	43.3	38.9	44.1	42.2	43.7	44.1
Leeks	19.2	22.1	20.2	22.1	ND	17.3	ND	ND	17.3	20.2	17.3	23.1	20.6	17.3	23.9	23.1	22.1	20.2	23.1
Melon	19.9	20.7	21.5	20.7	ND	0.0	ND	ND	0.0	21.5	0.0	21.5	19.4	0.0	19.4	21.5	20.7	21.5	21.5
Millet	28.4	28.7	29.4	28.7	ND	29.1	ND	ND	29.1	29.4	29.1	29.7	27.7	29.1	26.3	29.7	28.7	29.4	29.7
Misc Fruit Tree	38.7	42.0	40.4	42.0	ND	37.2	ND	ND	37.2	40.4	37.2	43.7	37.8	37.2	38.5	43.7	42.0	40.4	43.7
Misc Nut Tree	43.7	43.7	43.7	43.7	ND	ND	ND	ND	43.7	43.7	43.7	ND	ND	ND	ND	43.7	43.7	43.7	ND

Seasonal Crop ET Estimates (inches/year) These estimates should be adjusted as necessary for age, crop vigor, atypical density, etc. ND=No data																			
Crop	Butte	Colusa	El Dorado	Glenn	Lake	Lassen	Modoc	Napa	Nevada	Placer	Plumas	Sacramento	Shasta	Sierra	Siskiyou	Solano	Sutter	Tehama	Yolo
Misc Row Crop	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Misc Truck Crop	19.2	22.1	20.2	22.1	ND	17.3	ND	ND	17.3	20.2	17.3	23.1	20.6	17.3	23.9	23.1	22.1	20.2	23.1
Misc Vegetable	19.2	22.1	20.2	22.1	ND	17.3	ND	ND	17.3	20.2	17.3	23.1	20.6	17.3	23.9	23.1	22.1	20.2	23.1
Nursery	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Oat	28.4	28.7	29.4	28.7	ND	29.1	44.3	ND	29.1	29.4	29.1	29.7	27.7	29.1	26.3	29.7	28.7	29.4	29.7
Okra	19.2	22.1	20.2	22.1	ND	17.3	ND	ND	17.3	20.2	17.3	23.1	20.6	17.3	23.9	23.1	22.1	20.2	23.1
Olive (table)	40.7	41.7	41.7	41.7	ND	40.7	ND	ND	40.7	41.7	40.7	42.7	40.7	40.7	40.7	42.7	41.7	41.7	42.7
Olive (oil)	32.6	33.4	33.4	33.4	ND	32.6	ND	ND	17.3	33.4	17.3	23.1	32.6	17.3	47.1	53.6	33.4	33.4	23.1
Onion	19.5	22.1	19.9	22.1	ND	17.3	ND	ND	17.3	19.9	17.3	22.5	20.6	17.3	23.9	22.5	22.1	19.9	22.5
Orange	35.3	36.1	36.1	36.1	ND	35.3	ND	ND	35.3	36.1	35.3	37.0	35.3	35.3	ND	37.0	36.1	36.1	37.0
Other	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pasture	54.3	55.6	55.6	55.6	50.3	54.3	44.3	50.3	54.3	55.6	54.3	57.0	52.1	54.3	50.0	57.0	55.6	55.6	57.0
Pea	28.4	28.7	29.4	28.7	ND	29.1	ND	ND	29.1	29.4	29.1	29.7	27.7	29.1	26.3	29.7	28.7	29.4	29.7
Peach/Nectarine, mature	40.5	40.8	41.1	40.8	ND	40.8	ND	ND	40.8	41.1	40.8	41.4	40.8	40.8	ND	41.4	40.8	41.1	41.4
Peach, 5th leaf	32.4	32.6	32.9	32.6	ND	32.6	ND	ND	32.6	32.9	32.6	33.1	32.6	32.6	ND	33.1	32.6	32.9	33.1
Peach, 4th leaf	28.3	28.6	28.8	28.6	ND	28.5	ND	ND	28.5	28.8	28.5	29.0	28.5	28.5	ND	29.0	28.6	28.8	29.0
Peach, 3rd leaf	26.3	26.5	26.7	26.5	ND	26.5	ND	ND	26.5	26.7	26.5	26.9	26.5	26.5	ND	26.9	26.5	26.7	26.9
Peach, 2nd leaf	18.2	18.4	18.5	18.4	ND	18.4	ND	ND	18.4	18.5	18.4	18.6	18.4	18.4	ND	18.6	18.4	18.5	18.6
Peach, 1st leaf	10.9	11.0	11.1	11.0	ND	11.0	ND	ND	11.0	11.1	11.0	11.2	11.0	11.0	ND	11.2	11.0	11.1	11.2
Pear	41.0	43.6	42.9	43.6	ND	40.4	ND	ND	40.4	42.9	40.4	45.5	40.2	40.4	40.0	45.5	43.6	42.9	45.5
Pecan, mature	38.7	42.9	41.3	42.9	ND	37.2	ND	ND	37.2	41.3	37.2	45.5	37.8	37.2	38.5	45.5	42.9	41.3	45.5
Pecan, 3rd leaf	32.9	36.4	35.1	36.4	ND	31.6	ND	ND	31.6	35.1	31.6	38.6	32.2	31.6	32.7	38.6	36.4	35.1	38.6
Pecan, 2nd leaf	19.4	21.4	20.7	21.4	ND	18.6	ND	ND	18.6	20.7	18.6	22.7	18.9	18.6	19.2	22.7	21.4	20.7	22.7
Pecan, 1st leaf	11.6	12.9	12.4	12.9	ND	11.2	ND	ND	11.2	12.4	11.2	13.6	11.3	11.2	11.5	13.6	12.9	12.4	13.6
Pepper	27.0	27.1	27.9	27.1	ND	27.8	ND	ND	27.8	27.9	27.8	28.0	27.0	27.8	26.2	28.0	27.1	27.9	28.0
Persimmon	38.7	42.0	40.4	42.0	ND	37.2	ND	ND	37.2	40.4	37.2	43.7	37.8	37.2	38.5	43.7	42.0	40.4	43.7
Pistachio, mature	42.5	42.6	43.0	42.6	ND	42.8	ND	ND	42.8	43.0	42.8	43.2	42.8	42.8	ND	43.2	42.6	43.0	43.2
Pistachio, 5th leaf	34.0	34.1	34.4	34.1	ND	34.3	ND	ND	34.3	34.4	34.3	34.5	34.3	34.3	ND	34.5	34.1	34.4	34.5
Pistachio, 4th leaf	29.7	29.8	30.1	29.8	ND	30.0	ND	ND	30.0	30.1	30.0	30.2	30.0	30.0	ND	30.2	29.8	30.1	30.2
Pistachio, 3rd leaf	27.6	27.7	28.0	27.7	ND	27.8	ND	ND	27.8	28.0	27.8	28.1	27.8	27.8	ND	28.1	27.7	28.0	28.1
Pistachio, 2nd leaf	19.1	19.2	19.4	19.2	ND	19.3	ND	ND	19.3	19.4	19.3	19.4	19.3	19.3	ND	19.4	19.2	19.4	19.4
Pistachio, 1st leaf	11.5	11.5	11.6	11.5	ND	11.6	ND	ND	11.6	11.6	11.6	11.7	11.6	11.6	ND	11.7	11.5	11.6	11.7
Plum/Pluot	41.0	43.6	42.9	43.6	ND	40.4	ND	ND	40.4	42.9	40.4	45.5	40.2	40.4	40.0	45.5	43.6	42.9	45.5
Pomegranate	38.7	42.0	40.4	42.0	ND	37.2	ND	ND	37.2	40.4	37.2	43.7	37.8	37.2	38.5	43.7	42.0	40.4	43.7
Potato	37.6	38.5	39.4	38.5	ND	ND	ND	ND	ND	39.4	ND	39.4	36.1	ND	36.1	39.4	38.5	39.4	39.4
Prune, mature	43.2	43.7	43.8	43.7	ND	43.3	ND	ND	43.3	43.8	43.3	44.2	43.3	43.3	ND	44.2	43.7	43.8	44.2
Prune, 5th leaf	34.6	34.9	35.0	34.9	ND	34.6	ND	ND	34.6	35.0	34.6	35.4	34.6	34.6	ND	35.4	34.9	35.0	35.4
Prune, 4th leaf	30.2	30.6	30.6	30.6	ND	30.3	ND	ND	30.3	30.6	30.3	31.0	30.3	30.3	ND	31.0	30.6	30.6	31.0
Prune, 3rd leaf	28.1	28.4	28.5	28.4	ND	28.1	ND	ND	28.1	28.5	28.1	28.8	28.1	28.1	ND	28.8	28.4	28.5	28.8
Prune, 2nd leaf	19.4	19.6	19.7	19.6	ND	19.5	ND	ND	19.5	19.7	19.5	19.9	19.5	19.5	ND	19.9	19.6	19.7	19.9
Prune, 1st leaf	11.7	11.8	11.8	11.8	ND	11.7	ND	ND	11.7	11.8	11.7	11.9	11.7	11.7	ND	11.9	11.8	11.8	11.9
Pumpkin	19.9	20.7	21.5	20.7	ND	ND	ND	ND	ND	21.5	ND	21.5	19.4	ND	19.4	21.5	20.7	21.5	21.5
Raspberry	12.0	12.0	12.0	12.0	ND	12.0	ND	ND	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Ryegrass	28.4	28.7	29.4	28.7	ND	29.1	ND	ND	29.1	29.4	29.1	29.7	27.7	29.1	26.3	29.7	28.7	29.4	29.7
Safflower	28.9	29.9	30.2	29.9	ND	29.1	ND	ND	29.1	30.2	29.1	31.2	27.7	29.1	26.3	31.2	29.9	30.2	31.2
Seed Crop	28.4	28.7	29.4	28.7	ND	29.1	ND	ND	29.1	29.4	29.1	29.7	27.7	29.1	26.3	29.7	28.7	29.4	29.7
Sorghum/Milo	33.2	32.4	34.6	32.4	ND	35.5	ND	ND	35.5	34.6	35.5	33.7	32.3	35.5	29.2	33.7	32.4	34.6	33.7
Squash	19.9	20.7	21.5	20.7	ND	ND	ND	ND	ND	21.5	ND	21.5	19.4	ND	19.4	21.5	20.7	21.5	21.5
Strawberry	28.7	28.7	29.4	28.7	ND	29.4	ND	ND	29.4	29.4	29.4	29.5	28.0	29.4	26.7	29.5	28.7	29.4	29.5
Sudan Grass	28.4	28.7	29.4	28.7	ND	29.1	ND	ND	29.1	29.4	29.1	29.7	27.7	29.1	26.3	29.7	28.7	29.4	29.7
Sunflower	28.9	29.9	30.2	29.9	ND	29.1	ND	ND	29.1	30.2	29.1	31.2	29.6	29.1	30.1	31.2	29.9	30.2	31.2
Tomato - Fresh Market	27.0	27.1	27.9	27.1	ND	27.8	ND	ND	27.8	27.9	27.8	28.0	27.0	27.8	26.2	28.0	27.1	27.9	28.0
Tomato - Processing	27.0	27.1	27.9	27.1	ND	27.8	ND	ND	27.8	27.9	27.8	28.0	27.0	27.8	26.2	28.0	27.1	27.9	28.0

