



Small Fruit Fertilization and Maintenance Schedule

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Oklahoma Cooperative Extension Fact Sheets
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Regular maintenance of fruit-producing shrubs and vines maximizes quality and yield of fruit. A holistic maintenance program involves proper irrigation, fertilization, insect and disease management and pruning. Plant health depends upon healthy soils and weed management. Regular disease and insect pest scouting are critical issues for many fruit crops. The schedule in Table 1 identifies the cultural practices involved with caring for small fruiting shrubs and vines and the appropriate timing of maintenance. In addition to practices listed in the table, weed management is necessary throughout the year. For pest management strategies and more specific information regarding care of individual fruits refer to the Fact Sheets listed at the end of this document.

Fertility management is important to maintaining the health of perennial fruit crops during their life span. Because fruit crops are long-lived, it is important to assess and improve soils prior to planting. Improving soil tilth, adjusting pH and addressing fertility needs prior to planting will result in stronger plant growth and production. Nutrients such as phosphorous and potassium do not move through the soil readily and are best managed prior to planting. Soil pH is particularly critical for blueberries, which require acidic soils. It is worthwhile to take time to adjust pH prior to planting.

Fruit crops growing in soil that was properly prepared prior to planting generally require only small additions of nitrogen throughout the life of the planting. It is important to treat each crop individually — not all fruit crops have the same nutritional requirements. Specific nitrogen requirements and appropriate fertilizer rates for each fruit crop are outlined in Table 2. These rates represent average annual nitrogen needs for mature plants. Refer to specific Fact Sheets for fertilizer rates of immature plants. Visual growth inspections will help tailor nitrogen needs. If plants are growing too vigorously, reduce nitrogen application rates. Slow growth may indicate a need for higher nitrogen rates.

Soil tests deliver more accurate nutrient requirement recommendations based on the specific growing location and are recommended every three years. Some crops require applications of macronutrients or micronutrients in addition to nitrogen. If a nutrient deficiency is suspected, conduct a soil test to determine if additional fertilizer is needed.

Consider soil characteristics and plant requirements when selecting fertilizer. For example, blueberry and kiwi crops require acidic soils (low pH) for optimum plant nutrition. Specifically, blueberries perform best in soils with pH between 4.0 and 5.5 and kiwi performs best in a pH of 5.0 to 6.5. Soil pH can be amended through applications of sulfur prior to planting (Extension Fact Sheet HLA-6248, Blueberry Production for the Home Garden). Clay soils are more difficult to amend than sandy soils. It is also beneficial to utilize a sulfur-based fertilizer for these crops if soil pH is high. The sulfur will help lower soil pH to more appropriate levels. Fertilizers useful for acid-loving plants include sulfur-coated urea, ammonium sulfate and cottonseed meal.

Apply fertilizers uniformly around the drip line of the plant and one foot outward, but never near the base of the plant. Be careful to ensure fertilizer does not come in contact with the trunk or branches as this will damage the plant. It is best to apply fertilizer when the foliage is dry. Avoid getting any on the leaves. If the fertilizer does come in contact with leaves brush it away immediately. Gently work fertilizer into the soil with a rake, taking care to avoid plant roots. Apply one inch of water if rain is not expected within one or two days. Failure to work fertilizer into soils will result in loss of nitrogen to the atmosphere when air temperature is high.

Some gardeners prefer organic sources of nitrogen. The fertilizer chart includes blood meal and cottonseed meal as organic fertilizers. It is important to note that cottonseed meal also contains small amounts of phosphorous and potassium. Manure is often used as an organic fertilizer, but care must be taken. Only use manure from a reliable source and be sure it has been composted at least six months. Growers must also be cautious of herbicide residues in composted manure. Manure is most effectively used in pre-planting soil preparation or in fall applications. Incorporate 0.5 pounds of manure per square foot into soil or apply as a side dressing for established fruits. For vines and shrubs, spread manure in a four-foot circle around each plant, keeping the manure at least one foot away from the base of the plant. If using poultry manure, apply only 2.5 ounces per square foot.

This guide includes care of common fruit crops that can be grown throughout the state including strawberries, blackberries, blueberries, grapes, elderberry and gooseberries. Other crops are best suited for only portions of the state. Raspberries are

Table 1. Calendar of maintenance and fertilization needs by fruit crop.

	February	March	April	May	June	July	August	September	October	Nov. - Jan.
Fruit Strawberry	Plant bare-root crowns Soil test Remove straw				Harvest	Renovate June-bearing varieties, weed and fertilize if needed	Fertilize	Everbearing varieties: narrow rows to 12" and thin plants Fall planting time		Straw mulch mid- to late December after first hard freeze
Blueberry	Planting time for dormant plants Row cover if frost threat Remove flowers year 1 & 2		Cover with bird netting Harvest		Prune for size Proper irrigation					Mulch after frost
Brambles	Pruning: remove all but 3 each of 1st, 2nd, and 3rd year canes Fertilize at bud break Planting time for dormant plants	Fertilize 6 wks later	Planting time for active plants	Fertilize at bloom Fertilize after harvest	Harvest summer-bearing varieties Fertilize	Tip primocanes to chest height Train primocanes to trellis		Harvest fall-bearing varieties Remove old floricanes		Mulch after frost
Grape	Planting time for dormant plants Soil test Pruning & training	Trim laterals to 12"-15"	Planting time for active plants Remove flowers 1st 2 springs Vine training and establishment on trellis					Protect fruits with bird net Irrigation		Prune fall-bearing raspberry Pull mulch away from trunks
Kiwi	Planting time for dormant plants Prune females & train	Fertilize after bud break	Planting time for active plants		Proper irrigation			Harvest		Replenish mulch Provide winter protection
Gooseberry	Planting time for dormant plants, cut shoots to 8-10" after planting Pruning: remove all but 3 each of 1st, 2nd, and 3rd year canes Fertilize when buds swell	Fertilize	Plant actively growing vines		Proper irrigation	Prune males after flowering Protect fruits with bird net		Harvest		
Passionfruit		Fertilize						Fertilize		Harvest when skin wrinkles or fruits fall to ground
Elderberry	Planting time for dormant plants Prune weak/diseased branches; leave 6-8 canes per plant of varying ages	Reduce number of new shoots Fertilize	Planting time for active plants		Irrigate	Bird net when fruits turn color		Harvest		Cut plants to ground after killing frost Mulch heavily Mulch well

Planting
 Pruning
 Fertility
 Protection
 Harvest
 Irrigation
 Soils

Table 2. Fertilizer application rates by fruit crop. Rates are given for each appropriate fertilizer; use only one fertilizer for each application. Rates are given for MATURE plants; refer to specific Fact Sheets for application rates for young plants.

Crop	Application	Actual Nitrogen Required	Nitrogen Source						Comments
			Ammonium Sulfate	Sulfur-coated urea	Urea	Blood Meal	Cottonseed Meal	Ammonium Nitrate ²	
Strawberry	Fall	0.50 lb/ 100-foot row	21% N 2.5 lb/ 100-foot row	36% N 1.5 lb/ 100-foot row	46% N 1 lb/ 100-foot row	12% N 4 lb/ 100-foot row	7% N ¹ 7 lb/ 100-foot row	34% N 1.5 lb/ 100-foot row	
Blueberry	1st Application	0.65 oz/plant	3 oz/plant	2 oz/plant	1.5 oz/plant	1.5 oz/plant	9 oz/plant		Blueberries prefer nitrogen in an ammonium form rather than a nitrate form; use only recommended fertilizers.
	2nd Application 3rd Application	0.65 oz/plant 0.65 oz/plant	3 oz/plant 3 oz/plant	2 oz/plant 2 oz/plant	1.5 oz/plant 1.5 oz/plant		9 oz/plant 9 oz/plant		
Brambles	1st Application 2nd Application	0.4 oz/plant 0.4 oz/plant	2 oz/plant 2 oz/plant	1 oz/plant 1 oz/plant	0.9 oz/plant 0.9 oz/plant	3.3 oz/plant 3.3 oz/plant	5.7 oz/plant 5.7 oz/plant	1.2 oz/plant 1.2 oz/plant	
Grape	Spring	2 oz/plant	9.5 oz/plant	5.5 oz/plant	4.3 oz/plant	1 lb/plant	1.75 lb/plant	6 oz/plant	Grapes feed heavily on potassium and phosphorous. Conduct regular soil tests to assess availability of these nutrients.
Kiwi	1st Application	1.8 oz/plant	8.5 oz/plant	5 oz/plant	4 oz/plant	15 oz/plant	1.6 lb/plant	5 oz/plant	Apply 8 oz potassium sulfate at each application; Conduct soil test to monitor soil pH (5-6.5 ideal) and ensure adequate phosphorous is available.
Gooseberry	2nd Application Spring	1.8 oz/plant 0.6 oz/plant	8.5 oz/plant 3 oz/plant	5 oz/plant 1.7 oz/plant	4 oz/plant 1.3 oz/plant	15 oz/plant 5 oz/plant	1.6 lb/plant 9 oz/plant	5 oz/plant 1.8 oz/plant	Avoid fertilizers containing muriate of potash (potassium chloride - KCl).
Passionfruit	1st Application	0.25 lb/plant	1.2 lb/plant	0.7 lb/plant		2 lb/plant		0.7 lb/plant	Adjust nitrogen according to growth; excess nitrogen reduces fruit set. Watch for deficiencies in potassium and calcium.
	2nd Application 3rd Application	0.25 lb/plant 0.25 lb/plant	1.2 lb/plant 1.2 lb/plant	0.7 lb/plant 0.7 lb/plant		2 lb/plant 2 lb/plant		0.7 lb/plant 0.7 lb/plant	
Elderberry	Spring	0.35 lb/plant	1.7 lb/plant	1 lb/plant	0.75 lb/plant	3 lb/plant	5 lb/plant	1 lb/plant	Adjust nitrogen according to growth.

1 Formulations of cottonseed meal vary, nitrogen content is typically around 7%.

2 Regulation of ammonium nitrate is making this fertilizer harder to find.

not heat tolerant and will perform best in northeastern areas of Oklahoma. Kiwi and passionflower are best suited to wetter areas of the state in the east and southeast.

OCES Fact Sheets on Small Fruit Production:

HLA-6214 – Growing Strawberries in the Home Garden

HLA-6215 – Blackberry & Raspberry Culture for the Home Garden

HLA-6221 – Commercial Blackberry, Strawberry and Blueberry Insect and Disease Control - 2010

HLA-6222 – Home Fruit Planting Guide

HLA-6229 – Pollination Requirements for Fruits and Nuts

HLA-7450 – Safe Use of Pesticides in the Home and Garden

HLA-6246 – Growing Grapes in the Home Garden

HLA-6248 – Blueberry Production for the Home Garden

HLA-6249 – Kiwifruit for Production in Oklahoma

HLA-6256 – Growing Elderberries in Oklahoma

HLA-6243 – Weed Management in Small Fruit Crops

PSS-2207 – How to Get a Good Soil Sample

PSS-2750 – Guide to Effective Weed Control

HLA-6005 – Mulching Garden Soils

E-1003 – Oklahoma Homeowner's Handbook for Soil and Nutrient Management

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