GENERAL COMMENTS FOR FRUITS

1 Apply dolomitic limestone at the recommended rate. (When lime is recommended and soil test calcium and/or magnesium is low, except for Blueberries)

4 Apply 100-150 lbs magnesium sulfate, or 20-30 lbs magnesium oxide, or 90-140 lbs sulfate-of-potash-magnesium per acre, or a mixed fertilizer to supply 10-15 lbs magnesium per acre (When the soil test magnesium is low, and for Soil Codes 1, 2, or 3 when the soil pH is greater than 6.5, or for Soil Code 4 when the soil pH is greater than 7.0, or for Soil Code 6 when the soil pH is greater than 6.0)

5 Apply 100-150 lbs magnesium sulfate, or 20-30 lbs magnesium oxide, or 90-140 lbs sulfate-of-potash-magnesium per acre, or a mixed fertilizer to supply 10-15 lbs magnesium per acre, or by applying 1,000 lbs dolomitic limestone per acre. (When the soil test magnesium is low, and for Soil Codes 1, 2, or 3 when the soil pH is between 5.9 and 6.6, or for Soil Code 4 when the soil pH is between 5.9 and 7.1, or for Soil Code 6 when the soil pH is 6.0)

6 Apply 435 lbs gypsum per acre or a calcium-containing fertilizer to supply 100 lbs calcium per acre. (When the soil test calcium is low, and for Soil Codes 1, 2, or 3 when the soil pH is greater than 6.5, or for Soil Code 4 when the soil pH is greater than 7.0 ,or for Soil Code 6 when the soil pH is greater than 6.0)

7 Apply 435 lbs gypsum per acre, or a calcium-containing fertilizer to supply 100 lbs calcium per acre, or 500 lbs dolomitic or calcitic limestone per acre. (When the soil test calcium is low, and for Soil Codes 1, 2, or 3 when the soil pH is between 5.9 and 6.6, or for Soil Code 4 when the soil pH is between 5.9 and 7.1, or for Soil Code 6 when the soil pH is 6.0)

105 To convert nitrogen, phosphate, and potash recommendations from pounds per acre to pounds per 1,000 square feet (or each 300 feet of row), divide by 43.5.

650 Level of soil test zinc is potentially toxic at the current soil test pH. Lime according to recommendations. If the pH is greater than 6.2, consult your local county Extension office or the Home and Garden Information Center at 1-888-656-9988. (If soil test zinc is greater than 40 lbs per acre)

652 The soil test manganese is low, however, this is not a manganese sensitive crop, therefore no manganese is recommended. (When soil test manganese is low)

Crop Code No. 080 or 081

Apples (080) or Pears (081)

Soil Groups 1, 2, 3, or 4					Desired pH 6.0 – 6.5
Phosphorus	Potassium				
	Low	Medium	Sufficient	High	Excessive
		Pounds of N-P_2O_5-K_2O per acre			
Low	#-60-90	#-60-45	#-60-0	#-60-0	#-60-0
Medium	#- 0-90	#- 0-45	#- 0-0	#- 0-0	#- 0-0

Sufficient	#- 0-90	#- 0-45	#- 0-0	#- 0-0	#- 0-0
High	#- 0-90	#- 0-45	#- 0-0	#- 0-0	#- 0-0
Excessive	#- 0-90	#- 0-45	#- 0-0	#- 0-0	#- 0-0

#see comments

COMMENTS (1, 4, 5, 6, 7, 105, 210, 211, 212, 213, 214, 226, 650, 652)
Apples

210 Before establishing a new orchard, apply lime and phosphate to establish a sufficient or high soil test level that will last the life of the orchard. For additional information contact your County Extension Agent.

211 Apply 30 to 80 lbs nitrogen per acre depending on size and age of trees. Adjust nitrogen rate to give desired fruit color and 12-18 inches of growth annually. Nitrogen supplied as ammonium is preferentially absorbed over nitrates and competes with calcium for root uptake. Calcium nitrate (15.5-0-0) can be used as a source of both calcium and nitrogen. Mix 3 lbs calcium nitrate in 100 gallons of water and foliar apply at petal-fall, first cover and third cover. Same rate should be used for two cover sprays that precede final harvest spray.

212 This is a boron sensitive crop. If borated fertilizer is not used to supply boron, dissolve 1 lb Solubor per 100 gallons of water foliar applied at petal fall and first cover. (When soil test boron is not excessive)

213 This is a zinc sensitive crop. To PREVENT zinc deficiency from occurring, foliar apply 0.15 lbs zinc per tree. To CORRECT zinc deficiency which has been verified by a leaf analysis, foliar apply 0.3 lbs zinc per tree. (When soil test zinc is not excessive)

214 To convert acre recommendation to per plant rate, divide by 100.

226 To insure adequate nutrient elements being applied, soil test and plant analyze to serve as guides in altering fertilizer recommendations in the following year.

COMMENTS (1, 4, 5, 6, 7, 105, 210, 211, 212, 214, 226, 650, 652, 653)
Pears

210 Before establishing a new orchard, apply lime and phosphate to establish a SUFFICIENT or HIGH soil test level that will last the life of the orchard. For additional information contact your County Extension Agent.

211 Apply 30 to 80 lbs nitrogen per acre depending on size and age of trees. Adjust nitrogen rate to give desired fruit color and 12-18 inches of growth annually. Nitrogen supplied as ammonium is preferentially absorbed over nitrates and competes with calcium for root uptake. Calcium nitrate (15.5-0-0) can be used as a source of both calcium and nitrogen. Mix 3 lbs calcium nitrate in 100 gallons of water and foliar apply at petal-fall, first cover and third cover. Same rate should be used for two cover sprays that precede final harvest spray.

212 This is a boron sensitive crop. If borated fertilizer is not used to supply boron, dissolve 1 lb Solubor per 100 gallons of water foliar applied at petal fall and first cover. (When boron is not excessive)

214 To convert acre recommendation to per plant rate, divide by 100.

226 To insure adequate nutrient elements being applied, soil test and plant analyze to serve as guides in altering fertilizer recommendations in the following year.

653 Soil test zinc is low, however, this is not a zinc sensitive crop, therefore no zinc is recommended. (When soil test zinc is low)

Crop Code No. 082

Blueberries (mature plants)

Soil Groups 1, 2, 3, or 4	Desired pH for Blueberries 4.8-5.3 Desired pH for Brambles 6.0-6.5				
Phosphorus	Potassium				
	Low	Medium	Sufficient	High	Excessive
	Pounds of N-P_2O_5-K_2O per acre				
Low	40-60-80	40-60-50	40-60-30	40-60-20	40-60-0
Medium	40-40-80	40-40-50	40-40-30	40-40-20	40-40-0
Sufficient	40-20-80	40-20-50	40-20-30	40-20-20	40-20-0
High	40- 0-80	40- 0-50	40- 0-30	40- 0-20	40- 0-0
Excessive	40- 0-80	40- 0-50	40- 0-30	40- 0-20	40- 0-0

COMMENTS (4, 5, 6, 7, 105, 269, 270, 275, 650, 651, 652, 653)

269 For mature plants, apply one-half the recommended fertilizer rate before bloom. Apply balance of fertilizer 6 to 8 weeks later. Topdress additional 20 lbs nitrogen per acre anytime after harvest up to mid July. Acid-forming fertilizers that do not contain chlorides are preferred. Ammonium sulfate (21-0-0) should be the nitrogen source for blueberries. ***Caution***: Too much fertilizer in one application without adequate water may damage blueberry plants. Iron and/or magnesium deficiency are two nutritional deficiencies that often occur with blueberries. Use a plant analysis to determine nutrient element status, following recommendations for correcting insufficiencies.
Each plant requires an area 12 feet long and 6 feet wide.
To convert acre recommendation to rate per plant, divide acre recommendation by 605.

270 Plant blueberries on recently cleared unlimed land for best results. Do not apply lime except in special cases and then only after consulting your County Extension Agent. Do not apply fertilizer when blueberries are transplanted. Use liberal quantities of peat moss or rotten sawdust when setting plants.

275 It may be necessary to lower the soil pH for best growth of acid-loving plants, such as blueberries. Wettable sulfur (90% S) may be used to decrease soil pH. The best soil pH for rabbiteye blueberries is between 4.5 and 5.5. To lower the soil pH, apply sulfur before planting if the soil pH is above 5.5, and thoroughly mix sulfur within the soil of the planting area. If applied around established blueberry plants, thoroughly water-in sulfur after application, taking care to wash off all above-ground plant parts. Acid-forming fertilizers, such as those containing ammonium sulfate, can assist in lowering soil pH. For more information regarding the amount of sulfur to apply, based on soil type

and soil pH, call the Clemson Home & Garden Information Center at 1-888-656-9988. (For blueberries when soil pH is greater than 5.5)

651 The soil test boron is low, however, this is not a boron sensitive crop, therefore no boron is recommended. (When soil test boron is low)

653 Soil test zinc is low, however, this is not a zinc sensitive crop, therefore no zinc is recommended. (When soil test zinc is low)

Crop Code No. 084

Grapes (Bunch and Muscadine)

Soil Groups 1, 2, 3, or 4					Desired pH 6.0 – 6.5
Phosphorus	Potassium				
	Low	Medium	Sufficient	High	Excessive
		Pounds of N-P_2O_5-K_2O per acre			
Low	60-80-120	60-80-100	60-80-80	60-80-40	60-80-0
Medium	60-30-120	60-30-100	60-30-80	60-30-40	60-30-0
Sufficient	60-30-120	60-30-100	60-30-80	60-30-40	60-30-0
High	60- 0-120	60- 0-100	60- 0-80	60- 0-40	60- 0-0
Excessive	60- 0-120	60- 0-100	60- 0-80	60- 0-40	60- 0-0

COMMENTS (1, 4, 5, 6, 7, 105, 260, 261, 650, 652, 653)

260 Apply fertilizer in February, except on sandy soils, apply in split applications, one-half in February and one-half when cane growth is about 6 inches long. The nitrogen rate should be 40 and 80 lbs nitrogen per acre. Use lower rate for older vines or when pruning weight is greater than 2 pounds per plant. Use higher rate for younger vines, when pruning weight is less than 2 lbs.
To convert acre recommendations to per plant rate, divide by 544 for bunch grapes and 270 for Muscadine grapes.

261 This is a boron sensitive crop. Apply 0.6 lbs boron per acre or apply Solubor in two cover sprays at the rate of 1 lb Solubor per 10 gallons of water. (When soil test boron is not excessive)

653 Soil test zinc is low, however, this is not a zinc sensitive crop, therefore no zinc is recommended. (When soil test zinc is low)

Crop Code No. 013

Kiwi Fruit

Soil Groups 1 or 2					Desired pH 6.0 – 6.5
Phosphorus	Potassium				
	Low	Medium	Sufficient	High	Excessive
		Pounds of N-P_2O_5-K_2O per acre			

Low	150- 70-175	150- 70-130	150- 70-80	150- 70-40	150- 70-0
Medium	150- 50-175	150- 50-130	150- 50-80	150- 50-40	150- 50-0
Sufficient	150- 25-175	150- 25-130	150- 25-80	150- 25-40	150- 25-0
High	150- 0-175	150- 0-130	150- 0-80	150- 0-40	150- 0-0
Excessive	150- 0-175	150- 0-130	150- 0-80	150- 0-40	150- 0-0

COMMENTS (1, 4, 5, 6, 7, 9, 105, 340, 650, 652, 653)

9 Apply 10 lbs sulfur per acre, or sufficient sulfur-containing fertilizer to supply this amount. (For Soil Codes 1 and 2)

340 Collect soil sample several months before planting in order to be able to follow the fertilizer and lime recommendation prior to planting. For spring planting, apply lime in the fall and broadcast before planting nitrogen, phosphate and potash fertilizer in the late winter based on the soil test recommendation. Incorporation 1 to 1.5 lbs organic fertilizer (bone meal, tankage, peat moss, or cotton seed meal) in each hole at planting, completely incorporated in order to prevent root damage. During first 3 years in lieu of the recommendations given for mature plants, for young vines apply a nitrogenous fertilizer in split applications as follows:

Year 1

Approximately two weeks after planting, apply 18 ounces urea or equivalent nitrogen for each 100 feet of row in a band 1.5 feet on both sides of the plant in March. Follow with 3 or 4 applications from April through July. DO NOT APPLY ANY FERTILIZER AFTER THE END OF JULY, which allows plant tissue to harden before the advent of freezing temperatures. Do not apply fertilizer in a ring around the plant as this may harm the root system. Apply fertilizer in bands on both sides of the plant in order to encourage extensive root growth. Do not place dry fertilizer within an 8 inch zone around the tree trunk.

Year 2

In the second year of growth, more fertilizer is spread over a broader area. Apply 45 ounces urea or the equivalent amount of nitrogen for each 100 feet of row in a band 2.5 feet on both sides of the plant in March. Follow with 3 additional applications of 23 ounces urea or equivalent amount of nitrogen for each 100 feet of row (2.5 feet on both sides of the plant) from April through July.

Year 3

Apply 90 ounces urea or equivalent amount of nitrogen for each 100 feet of row in a band 2.5 feet on both sides of the plant. Follow with 3 additional applications of 45 ounces urea or equivalent amount of nitrogen for each 100 feet of row (2.5 feet on both sides of the plant) from April through July.

Year 4

Soil test and follow the recommendation given for established mature plants (See the table). Split fertilizer applications starting in March with balance applied in June. In March, apply all the phosphate and potash fertilizer recommended along with two-thirds of the nitrogen. Apply balance of nitrogen in June. Fertilizer applied in the fourth and subsequent years should be broadcast evenly on the orchard floor. If lime is recommended, apply in the fall. In addition to soil fertilization of mature orchards, benefits have been demonstrated by the use of foliar application of liquid fertilizers. Four to 6 applications, as tank-mixed pesticide sprays, have been used successfully. Apply 2 lbs 3:1:1 ratio fertilizer with micronutrients per acre in the early season, and a 2:1:4 ratio fertilizer in the late season. Kiwifruit is sensitive to boron, especially young vines.

Boron rate should not exceed 0.5 lbs boron per acre per year. Care should be exercised in the use of other micronutrients as well.

653 Soil test zinc is low, however, this is not a zinc sensitive crop, therefore no zinc is recommended. (When soil test zinc is low)

Crop Code No. 085, 086, or 087

Nectarines (085), Peaches (086), or Plums (087)

Soil Groups 1, 2, 3, or 4					Desired pH 6.0 – 6.5
Phosphorus	Potassium				
	Low	Medium	Sufficient	High	Excessive
	Pounds of N-P_2O_5-K_2O per acre				
Low	#-100-100	#-100-60	#-100-40	#-100-30	#-100-0
Medium	#- 50-100	#- 50-60	#- 50-40	#- 50-30	#- 50-0
Sufficient	#- 25-100	#- 25-60	#- 25-40	#- 25-30	#- 25-0
High	#- 0-100	#- 0-60	#- 0-40	#- 0-30	#- 0-0
Excessive	#- 0-100	#- 0-60	#- 0-40	#- 0-30	#- 0-0

#see comments

COMMENTS (1, 4, 5, 6, 7, 105, 210, 220, 221, 226, 650, 651, 652)
Nectarines

210 Before establishing a new orchard, apply lime and phosphate to establish a sufficient or high soil test level that will last the life of the orchard. For additional information contact your County Extension Agent.

220 Apply fertilizer 6 weeks before anticipated bloom. Adjust nitrogen fertilizer to obtain annual terminal twig growth of 12 to 18 inches, normally obtained by applying 40 to 80 lbs nitrogen per acre depending on age and vigor of trees. Split nitrogen applications with second nitrogen application applied after fruit set. If trees indicate nutrient element supplies have been exhausted when harvest complete, sidedress 10 to 15 lbs nitrogen per acre using calcium nitrate (15.5-0-0).

221 This is a zinc sensitive crop. To correct or prevent zinc deficiency, foliar apply chelated zinc as label directs or dissolve 3 ounces zinc sulfate per 100 gallons of water as a foliar spray three times at 3-week intervals. If a fungicide containing zinc is used, additional zinc not required. (When soil test zinc is not excessive)

226 To insure adequate nutrient elements being applied, soil test and plant analyze to serve as guides in altering fertilizer recommendations in the following year.

651 The soil test boron is low, however, this is not a boron sensitive crop, therefore no boron is recommended. (When soil test boron is low)

COMMENTS (1, 4, 5, 6, 7, 105, 210, 220, 221, 224, 226, 650, 652)
Peaches

210 Before establishing a new orchard, apply lime and phosphate to establish a sufficient or high soil test level that will last the life of the orchard. For additional information contact your County Extension Agent.

220 Apply fertilizer 6 weeks before anticipated bloom. Adjust nitrogen fertilizer to obtain annual terminal twig growth of 12 to 18 inches, normally obtained by applying 40 to 80 lbs nitrogen per acre depending on age and vigor of trees. Split nitrogen applications with second nitrogen application applied after fruit set. If trees indicate nutrient element supplies have been exhausted when harvest complete, sidedress 10 to 15 lbs nitrogen per acre using calcium nitrate (15.5-0-0).

221 This is a zinc sensitive crop. To correct or prevent zinc deficiency, foliar apply chelated zinc as label directs or dissolve 3 ounces zinc sulfate per 100 gallons of water as a foliar spray three times at 3-week intervals. If a fungicide containing zinc is used, additional Zn not required. (When soil test zinc is not excessive)

224 This is a boron sensitive crop. For peach orchards, apply 0.5 lb boron per acre in the fertilizer every 2 to 4 years or as an annual foliar application of 0.2 lbs boron per acre. (When soil test boron is not excessive)

226 To insure adequate nutrient elements being applied, soil test and plant analyze to serve as guides in altering fertilizer recommendations in the following year.

COMMENTS (1, 4, 5, 6, 7, 105, 210, 220, 221, 226, 650, 651, 652)

Plums

210 Before establishing a new orchard, apply lime and phosphate to establish a sufficient or high soil test level that will last the life of the orchard. For additional information contact your County Extension Agent.

220 Apply fertilizer 6 weeks before anticipated bloom. Adjust nitrogen fertilizer to obtain annual terminal twig growth of 12 to 18 inches, normally obtained by applying 40 to 80 lbs nitrogen per acre depending on age and vigor of trees. Split nitrogen applications with second nitrogen application applied after fruit set. If trees indicate nutrient element supplies have been exhausted when harvest complete, sidedress 10 to 15 lbs nitrogen per acre using calcium nitrate (15.5-0-0).

221 This is a zinc sensitive crop. To correct or prevent zinc deficiency, foliar apply chelated zinc as label directs or dissolve 3 ounces zinc sulfate per 100 gallons of water as a foliar spray three times at 3-week intervals. If a fungicide containing zinc is used, additional Zn not required. (When soil test zinc is not excessive)

226 To insure adequate nutrient elements being applied, soil test and plant analyze to serve as guides in altering fertilizer recommendations in the following year.

651 The soil test boron is low, however, this is not a boron sensitive crop, therefore no boron is recommended. (When soil test boron is low)

Crop Code No. 088

Pecans

Soil Groups 1, 2, 3, or 4					Desired pH 6.0 – 6.5
Phosphorus	Potassium				
	Low	Medium	Sufficient	High	Excessive
		Pounds of N-P_2O_5-K_2O per acre			
Low	100-80-120	100-80-100	100-80-80	100-80-0	100-80-0
Medium	100-40-120	100-40-100	100-40-80	100-40-0	100-40-0
Sufficient	100-20-120	100-20-100	100-20-80	100-20-0	100-20-0
High	100- 0-120	100- 0-100	100- 0-80	100- 0-0	100- 0-0
Excessive	100- 0-120	100- 0-100	100- 0-80	100- 0-0	100- 0-0

COMMENTS (1, 4, 5, 6, 7, 63, 105, 200, 650, 651, 652)

63 This is a zinc sensitive crop. Fertilizer should contain sufficient zinc to supply 5 lbs zinc per acre. (When soil test zinc is not excessive)

200 Recommended fertilizer rate is for 1 acre. When smaller area is fertilized, reduce fertilizer amount applied accordingly, banded near the drip line for young trees and broadcast for older trees. For 20 year-old or older trees, apply 6 to 8 lbs nitrogen per tree or 100 lbs nitrogen per acre broadcast in February. For younger trees, apply 0.5 lbs nitrogen per year of tree age. Additional nitrogen (10 to 25 lbs nitrogen per acre) may be applied in late May, rate depending on nut set and leaching rain. Excessive growth and no crop usually indicate too much nitrogen has been applied. Reduce nitrogen amount if new terminal limb growth exceeds 12-18 inches per year.
To insure that adequate nutrient elements have been applied, soil test and collect leaf tissue in late July for analysis, using the results for formulating the fertilizer recommendation the following year.

651 The soil test boron is low, however, this is not a boron sensitive crop, therefore no boron is recommended. (When soil test boron is low)

Crop Code No. 074

Strawberries and Blackberries

Soil Groups 1, 2, 3, or 4					Desired pH 6.0 – 6.5
Phosphorus	Potassium				
	Low	Medium	Sufficient	High	Excessive
		Pounds of N-P_2O_5-K_2O per acre			
Low	#- 80-180	#-80-120	#-80-60	#-80-30	#-80-0
Medium	#- 60-180	#-60-120	#-60-60	#-60-30	#-60-0
Sufficient	#- 30-180	#-30-120	#-30-60	#-30-30	#-30-0
High	#- 0-180	#- 0-120	#- 0-60	#- 0-30	#- 0-0
Excessive	#- 0-180	#- 0-120	#- 0-60	#- 0-30	#- 0-0

#see comments

COMMENTS (1, 4, 5, 6, 7, 9, 28, 105, 251, 252, 650, 652, 653)

9 Apply 10 lbs sulfur per acre, or sufficient sulfur-containing fertilizer to supply this amount. (For Soil Codes 1 and 2)

28 This is a boron sensitive crop. Apply 0.5 lbs boron per acre in fertilizer. (Recommended when soil test boron is less than 3.0 lbs per acre)

251 **Plasticulture:**
Fall fertilization: broadcast and shallowly incorporated into the soil prior to bedding and laying plastic mulch. Apply 60 lbs nitrogen per acre in any form desired (however, do not use sulfur-coated urea or other slow release materials) and all of the phosphate and potash. Recent work has shown significant yield response to additions of 60 lbs phosphate per acre pre-plant in the fall even on soil testing excessive in phosphorus. No response has been noted to drip-applied phosphate in the spring. Also, no response has been noted to additions of potash greater than 120 lbs per acre with plasticulture even on sites testing in the low range.
Spring fertilization*:* apply 30 to 60 lbs nitrogen per acre through the drip system at no more than 1.0 lbs nitrogen per acre per day based on petiole nitrate analysis. The start and frequency of these applications is determined by twice monthly analysis of strawberry petioles. Begin petiole analysis shortly before major bloom occurs. Also, leaf tissue analysis can be used to gauge other nutrient element needs. Your local Extension agent can provide guidance and bags for these analyses. No benefit has been observed from application of phosphate or potash in the spring.

Dryland: apply 120 lbs nitrogen per acre in split applications. Broadcast one-third of the nitrogen, all the phosphate and potash, and any lime recommended, prior to setting plants and work into the soil. For spring planting, apply one-third of the nitrogen 30 days after planting. For fall planting, apply one-third of the nitrogen 90 days before ripening. Split the balance of the nitrogen between August and September. On sandy soils, sidedress with 15 to 30 lbs nitrogen per acre in January. The nitrogen rate should be increased to 180 lbs nitrogen per acre for Coastal Plain soils based on vegetative growth and soft berries. Keep nitrogen at least 4 inches from young plants to avoid injury. For established plantings, apply one-third of the fertilizer in September, one-third at about 90 days before ripening, and the remainder after harvest. When renovating, apply all of any lime recommended, phosphate and potash recommended, and one-half of the nitrogen in late August or September.

252 A 500 lbs-per-acre rate is equivalent to 1 pound per each 100 feet of row if row spacing is 36 inches.

653 Soil test zinc is low, however, this is not a zinc sensitive crop, therefore no zinc is recommended. (When soil test zinc is low)