

# Contents

GENERAL INFORMATION .....	1
Table 1. General information for some small fruit crops. ....	1
SOIL FERTILITY MANAGEMENT .....	1
PLANT NUTRIENTS—MAJOR AND MINOR .....	4
Figure 1. The nitrogen cycle. ....	4
Table 2. Nitrogen credits for previous crops. ....	5
Table 3. Nitrogen credits from manure incorporated before planting. ....	5
SOIL ORGANIC MATTER .....	7
Table 4. Typical carbon-to-nitrogen ratios. ....	8
COVER CROPS AND GREEN MANURES .....	8
Table 5. Pre-plant cover-crop seeding dates and rates. ....	9
GUIDELINES FOR ORGANIC FERTILIZATION .....	10
Table 6. Nutrient recommendations for small fruit crops. ....	11
ORGANIC CERTIFICATION .....	12
ABOUT PEST MANAGEMENT .....	12
INTEGRATED PEST MANAGEMENT (IPM) .....	14
BIOLOGICALS .....	18
NATURAL ENEMIES AND PREDATORS .....	18
PESTICIDE SAFETY AND USE .....	19
Table 7. Toxicity information for some pesticides commonly used in small fruits. ....	21
Table 8. Approximate dilutions for small volumes of spray mixes ....	24
WATER .....	25
FUMIGATION: MATERIALS AND RISKS .....	26
Table 9. Fumigant rates and spectrums of activity. ....	26
WEED MANAGEMENT GENERAL NOTICE .....	27
WEED MANAGEMENT .....	27
STRAWBERRIES	
GENERAL INFORMATION .....	30
Table 10. Recommended optimal soil characteristics for growing strawberries. ....	30
Table 11. Number of strawberry plants per acre at different spacings. ....	31
Table 13. Critical nutrient values for strawberry tissue analysis. ....	31
Table 12. Critical freeze temperatures for strawberries based on stage of growth. ....	31
DISEASES .....	32
Table 14. Strawberry cultivar descriptions. ....	36
Table 15. Efficacy of fungicides for strawberry disease management. ....	37
INSECTS .....	37
Table 16. Monitoring for tarnished plant bug in strawberry. ....	38
Table 17. Revision to monitoring procedure for strawberry bud weevil (clipper). ....	38
Table 18. Tentative guidelines for thrips in strawberries. ....	39
Table 19. Efficacy of common insecticides and miticides used in strawberries. ....	43
Table 20. Strawberry pest management schedule. ....	45
WEED MANAGEMENT .....	51
Table 21. Weed management in strawberries during the transplant and establishment years. ....	52
Table 22. Transplant year strawberry herbicide calendar. ....	55
Table 23. Herbicide efficacy against common weeds in strawberries. ....	56
HIGHBUSH BLUEBERRIES	
GENERAL INFORMATION .....	57

Table 24. Recommended optimal soil characteristics for growing blueberries. ....	57
Table 25. Amount of sulfur (in lb/100 sq ft)a required to lower soil pH for blueberries. ....	57
Table 26. Number of blueberry plants per acre at different spacings. ....	58
Table 27. Critical nutrient values for blueberry tissue analysis. ....	58
<b>DISEASES</b> .....	58
Table 28. Highbush blueberry variety descriptions for New England. ....	59
Table 29. Fungicides registered for use on blueberries and their primary uses. ....	62
<b>INSECTS</b> .....	64
<b>VERTEBRATE PESTS</b> .....	66
Table 30. Highbush blueberry pest management schedule. ....	68
<b>WEED MANAGEMENT</b> .....	71
Table 31. Weed management for highbush blueberries . ....	72
<b>BRAMBLES</b>	
<b>GENERAL INFORMATION</b> .....	74
Table 32. Recommended optimal soil characteristics for growing brambles. ....	74
Table 33. Number of bramble plants per acre at different spacings. ....	74
Table 34. Postplant nitrogen recommendations for brambles. ....	75
Table 35. Critical nutrient values for bramble tissue analysis. ....	75
<b>DISEASES</b> .....	75
<b>VIRUSES</b> .....	77
Table 36. Relative hardiness and disease resistance for bramble varieties. ....	78
<b>INSECTS</b> .....	79
Table 37. Bramble pest management schedule. ....	81
Table 38. Fall bearing (primocane fruiting) bramble pest management schedule. ....	84
<b>WEED MANAGEMENT</b> .....	86
Table 39. Weed management in brambles. ....	87
<b>GRAPES</b>	
<b>GENERAL INFORMATION</b> .....	89
Table 41. Critical nutrient values for grape petiole analysis. ....	89
Table 40. Recommended optimal soil characteristics for growing grapes. ....	89
<b>DISEASES</b> .....	90
Table 42. Grape black rot infection table. ....	90
Table 43. Effectiveness of fungicides on grape diseases. ....	93
<b>INSECTS</b> .....	94
Table 44. Effectiveness of insecticides for management of grape insects. ....	95
Table 45. Grape pest management schedule. ....	97
<b>WEED MANAGEMENT</b> .....	101
Table 46. Weed management in grapes during the planting year and in established vineyards. ....	102
<b>APPENDICES</b>	
Table 47. Poisoning hazard to honey bees of common small fruit pesticides. ....	105
Table 48. Relative toxicity of pesticides to mite predators . ....	106
Table 49. Conversion factors to convert from one unit to another. ....	107
Resource Materials .....	107
Sample Plant Diagnostics Submission Form .....	110