APPENDIX 9

BEST MANAGEMENT PLAN RESOURCES

ATTACHMENT C

MATRIX OF RESOURCES MANAGEMENT PRACTICES FOR CONTROLLING AGRICULTURAL NONPOINT SOURCE POLLUTION
April 2003

Pest Management Strategies

Management Measure Category	*Description of Management Measure*	*Commodity Grouping*	*Reference*	*Resource Access*
Water Quality Management Strategies for Diazinon • Alternate year dormant OP with yearly horticultural oil spray • Conventional dormant non-OP insecticides and horticultural oil spray • Horticultural oil alone dormant spray • Spinosad and horticultural oil as a dormant spray • Bloomtime sprays of *Bacillus thuringiensis* for Peach Twig Borer • Pheromone mating disruption for Peach Twig Borer	Identification and evaluation of organophosphate pesticide management practices for orchard sprays, including advantages and disadvantages of each management practice.	• Stone Fruit • Almonds	Sacramento River Watershed Program OP Pesticide Focus Group. Water Quality Management Strategies for Diazinon – Chapter 4. *Identification and Evaluation of OP Pesticide Management Practices for Orchard Dormant Sprays.* 25 September 2002	http://www.sacriver.org/subcommittees/op/documents/WQMSD_Draft/Ch4_AgPractices.html

16-5-121

ATTACHMENT C
MATRIX OF MANAGEMENT MEASURES

April 2003

Management Measure Category	Description of Management Measure	Commodity Grouping	Reference	Resource Access
Alternatives to Chlorpyrifos and Diazinon Dormant Sprays • No dormant spray • Alternate year dormant OP with yearly horticultural oil spray • Conventional dormant non-OP insecticides and horticultural oil spray • Horticultural oil alone dormant spray • Spinosad and horticultural oil as a dormant spray • Bloomtime sprays of *Bacillus thuringiensis* • Pheromone mating disruption	Compares and contrasts conventional dormant sprays with alternative options including comments on economics, efficacy, and environmental risk.	• Stone Fruit • Almonds	Statewide IPM Project, Water Resources Center and Ecotoxicology Program, University of California, Davis. *Alternatives to Chlorpyrifos and Diazinon Dormant Sprays. Final Report.* September 1999.	http://www.ipm.ucdavis.edu/PDF/PUBS/dormantsprayalternatives.pdf
National Management Measures to Control Nonpoint Source Pollution from Agriculture • Pesticide management	A final draft technical guidance and reference in the implementation of economically achievable means of reducing nonpoint source pollution from agriculture.	• All	US Environmental Protection Agency. 12 December 2002.	http://www.epa.gov/owow/nps/agmm/index.html
CORE4 Conservation Practices Training Guide • Pesticide management	A common sense approach to reducing nonpoint source agricultural runoff.	• All	USDA Natural Resources Conservation Service. August 1999.	http://www.nrcs.usda.gov/technical/ECS/agronomy/core4.pdf

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Management Measure Category	Description of Management Measure	Commodity Grouping	Reference	Resource Access
Draft Program of Implementation for the Control of Diazinon in the Sacramento and Feather Rivers • No dormant spray • Alternate year dormant OP with yearly horticultural oil spray • Conventional dormant non-OP insecticides and horticultural oil spray • Horticultural oil alone dormant spray • Spinosad and horticultural oil as a dormant spray • Bloomtime sprays of *Bacillus thuringiensis* for Peach Twig Borer • Pheromone mating disruption for Peach Twig Borer	A report describing alternative management strategies and frameworks for implementation of alternative pest management approaches that could be applied for controlling runoff of diazinon to the Sacramento and Feather Rivers.	• Stone Fruit • Almonds	Regional Water Quality Control Board, Central Valley Region. *Draft Program of Implementation for the Control of Diazinon in the Sacramento and Feather Rivers*. May 2002.	http://www.swrcb.ca.gov/rwqcb5/programs/tmdl/sac_feather_diaz/draft_implement.pdf

16-5-123

Management Measure Category	Description of Management Measure	Commodity Grouping	Reference	Resource Access
Dormant Spray Alternatives Calculator • No dormant spray • Alternate year dormant OP with yearly horticultural oil spray • Conventional dormant non-OP insecticides and horticultural oil spray • Horticultural oil alone dormant spray • Spinosad and horticultural oil as a dormant spray • Bloomtime sprays of *Bacillus thuringiensis* for Peach Twig Borer • Pheromone mating disruption for Peach Twig Borer	Compare and contrast costs of traditional and alternative reduced risk pest control practices in stone fruit and almonds.	• Stone Fruit • Almonds	University of California, California Almond Board, California Department of Pesticide Regulation – Pest Management Alliance Program.	http://www.lookercomm.com/almondpma/Newsletter/Spring2000/dormant.htm
Integrated Prune Farming	Website tracking progress of the Integrated Prune Farming project including annual progress reports on reduced risk pesticide and sustainable demonstration dried plum orchard projects.	• Dried plums	University of California, California Dried Plum Board, California Department of Pesticide Regulation – Pest Management Alliance Program.	http://www.agresearch.ru/ipfp.htm
Almond Industry Pest Management Alliance	Website tracking progress of the Almond Pest Management Alliance	• Almonds	University of California, California Almond Board, California Department of	http://www.lookercomm.com/AlmondPMA/almondPMA.htm

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Management Measure Category	Description of Management Measure	Commodity Grouping	Reference	Resource Access
	including reports on reduced risk pesticides and sustainable almond orchard practices.		Pesticide Regulation – Pest Management Alliance Program.	
Stone Fruit Pest Management Alliance	Website tracking progress of the Stone Fruit Pest Management Alliance including progress reports, pest monitoring, and information on reduced risk pesticide and sustainable orchard practices.	• Peaches • Plums • Nectarines	University of California, California Tree Fruit Agreement, California Cling Peach Advisory Board, California Department of Pesticide Regulation – Pest Management Alliance Program.	http://www.uckac.edu/treefruitipm/
Database of Stone Fruit Research • Pest Management • Disease Management • Nutrient Management	A searchable database of research reports for stone fruit.	• Stone fruit	California Tree Fruit Agreement.	http://www.caltreefruit.com/research/research.asp?action=report
Kern and Tulare Counties IPM Demonstration Projects	Website for accessing information on the Citrus Pest Management Alliance project including information on sustainable orchard practices.	• Citrus	University of California, California Citrus Research Board, California Department of Pesticide Regulation – Pest Management Alliance Program.	http://citrusent.uckac.edu/
California Walnut IPM Expansion Project	Website for accessing information on the Walnut Pest Management Alliance Project including information on sustainable orchard practices.	• Walnuts	California Walnut Marketing Board, Center for Agricultural Partnerships, University of California, California Department of Pesticide Regulation – Pest Management Alliance.	http://www.agcenter.org/calif1/calif1.htm

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Management Measure Category	Description of Management Measure	Commodity Grouping	Reference	Resource Access
Lodi-Woodbridge Sustainable Viticulture Program	Website for accessing sustainable viticulture practices and information on vineyard demonstration projects.	• Wine grapes	Lodi-Woodbridge Winegrape Commission, University of California, California Department of Pesticide Regulation.	http://www.lodiwine.com/sustainableviticulture1.shtml
Pest Management Alliance Program	Website for accessing information on current and past pest management alliance projects including the adoption of pest management practices that reduce the overall risk from the use of pesticides.	• Various	California Department of Pesticide Regulation.	http://www.cdpr.ca.gov/docs/empm/alliance/overview.htm
Pest Management Grants Program	Website for accessing information on current and past applied and demonstration pest management grant projects.	• Various	California Department of Pesticide Regulation.	http://www.cdpr.ca.gov/docs/empm/grants/grntfinl.htm
UCIPM – UC Pest Management Guidelines	Pest management guidelines from the University of California	• All	University of California - Division of Agriculture and Natural Resources.	http://www.ipm.ucdavis.edu
Ag Practices and Technologies Draft Report • Pest Management Practices	Agricultural management practices and technologies that have the potential to reduce offsite movement of OP pesticides from orchard and field crops.	• All	California Regional Water Quality Control Board Central Valley Region. *Ag Practices and Technologies Draft Report.* May 2002.	http://www.swrcb.ca.gov/rwqcb5/programs/tmdl/ag_practices_report.pdf

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Management Measure Category	Description of Management Measure	Commodity Grouping	Reference	Resource Access
California Agriculture	News and peer reviewed research from the University of California in agriculture and natural resources.	• All	University of California – Division of Agriculture and Natural Resources.	http://danr.ucop.edu/calag/
Almond Biologically Integrated Orchard Systems (BIOS)	Final report comparing and contrasting conventional almond pest management practices with integrated orchard system practices.	• Almonds	Bentley, Walt. University of California, Kearney Agricultural Center. *Almond Biologically Integrated Orchard Systems (BIOS) and Conventional Almond Pest Management: A Comparative Sturdy*. 31 March 1999.	http://www.cdpr.ca.gov/docs/empm/grants/97-98/finlrpts/97-0232.pdf
Almond Management Practices • BIOS • Peach twig borer • Naval orange worm • Ants	A comparison of pest damage between Biologically Integrated Orchard Systems (BIOS) and conventional pest management systems.	• Almonds	Bentley, Walt J., et. al. BIOS and Conventional Almond Orchard Management Compared.	University of California Division of Agriculture and Natural Resources. California Agriculture. Volume 55, Number 5. September – October 2001. pp.12-19.
Pheromone Mating Disruption • Oriental fruit moth • Peach twig borer • Organophosphates • Pyrethroids	A technical report discussing the efficacy of using pheromone mating disruption to successfully control damage from oriental fruit moth and peach twig borer.	• Stone Fruit • Pome Fruit • Walnuts • Almonds	Pickel, Carolyn, Janine Hasey, Walt Bentley, William H. Olson, and Joe Grant. *Pheromones Control Oriental Fruit Moth and Peach Twig Borer In Cling Peaches.*	University of California Division of Agriculture and Natural Resources. California Agriculture. Volume 56, Number 5. September – October 2002. pp 170-175.

Management Measure Category	Description of Management Measure	Commodity Grouping	Reference	Resource Address
Soil Solarization • Disease control • Pre-plant nematode control • Weed control	Discusses the use of plastic sheeting to solarize soil as a nonpesticidal method for controlling soilborn pests.	• All	Elmore, Clyde L., et al. *Soil Solarization – A Nonpesticidal Method for Controlling Diseases, Nematodes, and Weeds.*	University of California Division of Agriculture and Natural Resources. Publication 21377. 1977.
Weed Management • Mulches • Pre-emergence herbicides • Post-emergence herbicides	Compares and contrasts weed management systems in controlling weeds in vineyards.	• Vineyard systems	Elmore, Clyde L., John Roncoroni, Layne Wade, and Paul Verdegall. *Mulch Plus Herbicides Effectively Control Vineyard Weeds.*	University of California Division of Agriculture and Natural Resources. California Agriculture. Volume 51, Number 2. March-April 1997. pp 14-18.
Weed Management • Sheep grazing	Compares and contrasts the use of herbicides and sheep grazing for controlling weeds in seedling alfalfa.	• Alfalfa	Bell, Carl E. and Juan N. Guerrero. *Sheep Grazing Effectively Control Weeds in Seedling Alfalfa.*	University of California Division of Agriculture and Natural Resources. California Agriculture. Volume 51, Number 2. March-April 1997. pp 19-23.
Weed Management • Simazine • Pre-emergence herbicides • Mechanical incorporation	A technical paper comparing and contrasting the offsite movement of simazine from citrus orchard middles with and without mechanical incorporation.	• Citrus	Troiano, J. and C. Garretson. *Movement of Simazine in Runoff Water from Citrus Orchard Row Middles as Affected by Mechanical Incorporation.*	Journal of Environmental Quality. Volume 27. 1998. pp 4488-4494.

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Management Measure Category	Description of Management Measure	Commodity Grouping	Reference	Resource Access
Choosing an Insecticide • Egyptian alfalfa weevil • Organophosphate • Pyrethroids	A technical report comparing the impact of commonly used insecticides on water quality and toxicity to *Ceriodaphnia dubia* for controlling Egyptian alfalfa weevil.	• Alfalfa	Freeman Long, Rachel, et. Al. *Insecticide Choice for Alfalfa May Protect Water Quality.*	University of California Division of Agriculture and Natural Resources. California Agriculture. Volume 56, Number 5. September - October 2002. pp 163-169.
Nematode Management Options • Fumigants • Contact pesticides • Host plant resistance • Crop rotation	A technical discussion comparing and contrasting methods for controlling root-knot nematodes in San Joaquin Valley cotton.	• Cotton	Goodell, P.B., and J.W. Eckert. University of California Cooperative Extension, Kearney Agricultural Center. *Evaluation of Root-Knot Nematode Management Options in San Joaquin Valley Cotton.*	Proceedings of the Beltwide Cotton Conference. Volume 1:143-145. National Cotton Council, Memphis TN. 1998.
Nematode Management • Resistant varieties	A technical paper discussing the efficacy of the cotton cultivar, NemX, in suppressing populations of root-knot nematode.	• Cotton	Ogallo, Juma L., et. Al. *Management of Root-Knot Nematodes with Resistant Cotton cv. NemX.*	Crop Science. Vol. 39, No. 2. 1999. pp 418-421.
Organic Cotton Production	A technical report comparing and contrasting production, quality, and pest pressures between organic and conventional cotton production systems.	• Cotton	Swezey, Sean L., et al. *Preliminary Studies Show Yield and Quality Potential of Organic Cotton.*	University of California Division of Agriculture and Natural Resources. California Agriculture. Volume 53, Number 4. July – August 1999. pp 9-16.
Integrated Pest Management Field Handbook for Winegrowing and Sustainable Winegrowing Practices	A complete field handbook with integrated pest management strategies for controlling primary pests and diseases in wine grapes.	• Wine grapes • Table grapes • Raisin grapes	Integrated Pest Management Field Handbook for Napa County. Integrated Sustainable Winegrowing Group. 6 November 2002.	http://www.nswg.org/englishpublications2.htm

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Management Measure Category	Description of Management Measure	Commodity Grouping	Reference	Resource Access
Augmentative Release of Beneficial Insects • Codling moth • *Trichogramma* wasp	A technical report discussing the efficacy of augmentative release of the parasitoid wasp *Trichogramma* for reducing Codling moth damage in selected orchard settings.	• Walnuts • Almonds • Pome fruit	Mills, Nick, et.al. *Mass Releases of* Trichogramma *Wasps Can Reduce Damage from Codling Moth.*	University of California Division of Agriculture and Natural Resources, California Agriculture, Volume 54, Number 6. November-December 2000, pp 22-25.
Biologically Integrated Farming Systems	Website for accessing information on current and past Biologically Integrated Farming Systems projects including strategies for reducing the dependence on pesticides and the overuse of fertilizers.	• Various	University of California, Davis, Sustainable Research and Education Program.	http://www.sarep.ucdavis.edu/bifs/
Rice Project • Pest management • Disease control • Weed management	Website for accessing information on current and past Biologically Integrated Farming Systems projects for rice including strategies for controlling pest and disease pressure.	• Rice	University of California, Division of Agricultural and Natural Resources, Cooperative Extension.	http://agronomy.ucdavis.edu/uccerice/
Management Practices for Controlling Pollutants in Irrigated Agriculture • Pesticides • Nutrients • Salinity	A report that provides an overview review and guidance on the literature available to access best management practices that can be used to control the discharge of agriculturally derived pollutants.	• All	Lee, G. Fred and Anne Jones-Lee, *Review of Management Practices for Controlling the Water Quality Impacts of Potential Pollutants in Irrigated Agriculture Stormwater Runoff and Tailwater Discharges*. California Water Institute, California State University, Fresno.. December 2002.	http://www.gfredlee.com/BMP_Rpt.pdf

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On Site Practices for Runoff Control

Management Measure Category	Description of Management Measure	Commodity Grouping	Reference	Resource/Access
Water Quality Management Strategies for Diazinon • Cover crops • Conservation buffers • Hedgerows • Reducing and/or eliminating the bare herbicide zone under stone fruit • Managing water • Soil improvement and increasing infiltration/water retention	Identification and evaluation of onsite management practices to reduce off site movement of contaminants in runoff.	• Stone Fruit, Pome Fruit • Nuts • Citrus • Table, Raisin, and Wine grapes • Other Specialty Fruits (kiwi, figs, pomegranate, etc.) • Other Tree Crops (avocado, olive, etc.)	Sacramento River Watershed Program OP Pesticide Focus Group, Water Quality Management Strategies for Diazinon – Chapter 4, *Identification and Evaluation of OP Pesticide Management Practices for Orchard Dormant Sprays*, 25 September 2002.	http://www.sacriver.org/subcommittees/op/documents/WQMSD_Draft/Ch4_AgPractices.html
Conservation Buffers to Reduce Pesticide Losses • Grassed waterways • Contour buffer strips • Vegetative barriers • Field borders • Filter strips • Constructed wetlands	Discusses the planning, planting, and maintenance of land strips in permanent vegetation to prevent erosion, trap sediments and nutrients, and increase the soil water infiltration rate.	• All	USDA Natural Resources Conservation Service, March 2000.	http://www.wcc.nrcs.usda.gov/water/quality/common/pestmgt/files/newconbuf.pdf

Management Measure Category	Description of Management Measure	Commodity Grouping	Reference	Resource Access
Cover Crop • Grasses • Legumes • Forbes • Herbaceous plants	Provides information on establishing seasonal cover vegetation in middles to reduce erosion, increase soil organic matter, manage excess nutrients in the soil profile, reduce offsite movement of crop protection materials, and bolster weed suppression.	• All	USDA Natural Resources Conservation Service, February 2000.	ftp://ftp.ftw.nrcs.usda.gov/pub/nhcp/pdf/340.pdf
Irrigation Water Management	Identification of practices to control the volume, frequency, and application rate of irrigation water to optimize the use of available water supplies, minimize erosion, decrease nonpoint source pollution of surface and groundwater resources, and manage salts in the crop root zone.	• All	USDA Natural Resources Conservation Service. March 1999.	ftp://ftp.ftw.nrcs.usda.gov/pub/nhcp/pdf/449.pdf
Constructed Wetlands • Vegetation • Water budget • Topography • Inlet • Operation and maintenance	Provides information for planning and developing constructed wetlands to reduce the pollution potential of runoff and wastewater from agricultural lands to water resources.	• All	USDA Natural Resources Conservation Service, August 2000.	ftp://ftp.ftw.nrcs.usda.gov/pub/nhcp/pdf/656.pdf

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Management Measure Category	Description of Management Measure	Commodity Grouping	Reference	Resource Access
National Management Measures to Control Nonpoint Source Pollution from Agriculture • Erosion and sediment control • Grazing Management • Irrigation water management • Nutrient management	A final draft technical guidance and reference in the implementation of economically achievable means of reducing nonpoint source pollution from agriculture.	• All	US Environmental Protection Agency. 12 September 2002.	http://www.epa.gov/owow/nps/agmm/index.html
CORE4 Conservation Practices Training Guide • Conservation tillage • Buffer strips • Nutrient management	A common sense approach to reducing nonpoint source agricultural runoff.	• All	USDA Natural Resources Conservation Service. August 1999.	http://www.nrcs.usda.gov/technical/ECS/agronomy/core4.pdf
Conservation Tillage • Ridge till • Mulch till • Reduced till	Information on tillage and planting systems including a checklist for choosing the appropriate tillage method based on crop rotation, soil type, and other site specific factors.	• Row crops • Grains	Conservation Technology Information Center – CORE4. December 2002.	http://www.ctic.purdue.edu/Core4/CT/CT.html

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Management Measure Category	Description of Management Measure	Commodity Grouping	Reference	Resource Access
30 Conservation Choices • Filter strip • Crop residue management • Cover crop • Grassed waterway • Wetland	A guide to 30 conservation and environmental farming practices.	• All	Conservation Technology Information Center – CORE4.	http://www.otic.purdue.edu/Core4/CT/Choices/Choices.html
Residue Management, No Till, and Strip Till	Information on managing the amount, orientation, and distribution of crop and other plant residues on the soil surface to mitigate soil erosion, improve or maintain water infiltration rates, and reduce nonpoint source runoff.	• All	USDA Natural Resources Conservation Service. February 2000.	http://www.id.nrcs.usda.gov/Engdwnld/standards/329a.pdf
Residue Management, Mulch Till	Information on managing the amount, orientation, and distribution of crop and other plant residues where the entire field surface is tilled prior to planting to mitigate soil erosion, improve or maintain water infiltration rates, and reduce nonpoint source runoff.	• All	USDA Natural Resources Conservation Service. February 2002.	http://www.id.nrcs.usda.gov/Engdwnld/standards/329b.pdf

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Management Measure Category	Description of Management Measure	Commodity Grouping	Reference	Resource Access
Residue Management, Seasonal	Information on managing the amount, orientation, and distribution of crop and other plant residues on the soil surface during part of the year while growing crops in a clean tilled seedbed to mitigate soil erosion, improve or maintain water infiltration rates, and reduce nonpoint source runoff.	• All	USDA Natural Resources Conservation Service, February 1999.	http://www.id.nrcs.usda.gov/Engdwnld/standards/344.pdf
Nutrient Management	A comprehensive website with tips for developing a nutrient management plan to increase the efficiency of all crop nutrient sources while minimizing nonpoint source pollution of surface and groundwater.	• All	Conservation Technology Information Center – CORE4, September 2001.	http://www.ctic.purdue.edu/Core4/nutrient/nutrmgmt.html
Conservation Buffers • Contour buffer strips • Field border • Grassed waterways • Riparian buffers • Windbreaks	A comprehensive website with information on establishing and maintaining permanent vegetative strips designed to slow water runoff and stabilize riparian areas.	• All	Conservation Technology Information Center – CORE4.	http://www.ctic.purdue.edu/Core4/buffer/Definition.html

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Management Measure Category	Description of Management Measure	Commodity Grouping	Reference	Resource Access
Buffers, Common Sense Conservation • Contour grass strips • Riparian buffers • Grassed waterways • Field borders • Salt tolerant vegetation	A website with NRCS publications on establishing and maintaining vegetative strips.	• All	USDA Natural Resources Conservation Service.	http://www.nrcs.usda.gov/feature/buffers/BufrsPub.html
Drainage Water Management	Discusses controlling irrigation water surface elevations and discharge from surface and subsurface drainage systems to minimize erosion and decrease nonpoint source pollution of surface and groundwater resources.	• All	USDA Natural Resources Conservation Service. September 2001.	ftp://ftp.ftw.nrcs.usda.gov/pub/nhcp/pdf/554.pdf
Ag Practices and Technologies Draft Report. • Vegetation management • Water management • Soil management	Agricultural management practices and technologies that have the potential to reduce offsite movement of OP pesticides from orchard and field crops.	• All	California Regional Water Quality Control Board Central Valley Region. *Ag Practices and Technologies Draft Report.* May 2002.	http://www.swrcb.ca.gov/rwqcb5/programs/tmdl/ag_practices_report.pdf
California Agriculture	News and peer reviewed research from the University of California in agriculture and natural resources.	• All	University of California – Division of Agriculture and Natural Resources.	http://danr.ucop.edu/calag/

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Management Measure Category	Description of Management Measure	Commodity Grouping	Reference	Resource Access
Cover Cropping in Orchards and Vineyards	Slide show discussing the benefits and drawbacks of planning and maintaining an orchard or vineyard floor cover crop system.	• Stone fruit, Pome fruit • Nuts • Table raisin, and wine grapes • Other Specialty Fruits (kiwi, figs, pomegranate, etc.) • Other Tree Crops (avocado, olive, etc.)	University of California – Sustainable Agriculture Research and Education Program.	http://www.sarep.ucdavis.edu/ccrop/slideshows/tvshow01.htm
Cover Cropping in Row and Field Crop Systems	Slide show discussing the benefits and drawbacks of planning and maintaining a cover crop system in row and field crops.	• Row Crops • Field Crops	University of California – Sustainable Agriculture Research and Education Program.	http://www.sarep.ucdavis.edu/ccrop/slideshows/rfshow01.htm
Cover Cropping in Vineyard Ecosystems	Technical report discussing the economics of popular cover crop mixes and the effects of cover crops on soil microbial ecology and soil nutrient status.	• Vineyard Systems	Ingels, Chuck. Effects of *Cover Crops on a Vineyard Ecosystem in the Northern San Joaquin Valley*. University of California Sustainable Agriculture Research and Education Program. September 2001.	http://www.sarep.ucdavis.edu/Grants/Reports/Ingels/ingels99-17Prog2.htm
Cover Cropping in Vineyards	A handbook discussing how to plan and maintain a cover crop in vineyard systems to enhance vineyard performance and promote ecological stability.	• Vineyard Systems	*Cover Cropping in Vineyards: A Grower's Handbook*.	University of California Division of Agriculture and Natural Resources. Publication 3338. 1998.

Management Measure Category	Description of Management Measure	Commodity Grouping	Reference	Resource Address
Practices and Barriers for Water Quality Improvement in California Rice	Research project to demonstrate and assess effectiveness of recirculating, static, and conventional irrigation systems for water quality improvement.	• Rice	University of California, Davis. 23 April 1999.	http://agronomy.ucdavis.edu/uccerice/WATER/water.htm
Irrigation System, Tailwater Recovery	Discusses constructing an irrigation system so that facilities to collect, store, and transport irrigation tailwater for reuse have been installed in order to conserve irrigation water supplies and decrease nonpoint source pollution of surface and groundwater resources.	• All	USDA Natural Resources Conservation Service. April 2001.	http://www.fl.nrcs.usda.gov/flstandards/fl447.pdf
Tailwater Ponds	Website discussing the benefits of collecting irrigation tailwater into ponds to decrease the probability sediment, excess nutrients, and chemicals will move off field and into roadside ditches, canals, and natural sloughs.	• Row crops	Yolo County Resource Conservation District.	http://www.yolorcd.ca.gov/ponds/tailwater/tailwater.html
Water Use Efficiency • Tailwater retention ponds • Cover crops • Filter strips	Final report discussing a one-year pilot program assessing the efficacy of using such water conservation practices as tailwater retention ponds, cover crops, and filter strips.	• All	Final Report. CALFED Water Use Efficiency Program. Yolo County Resource Conservation District. May 2002.	http://www.yolorcd.ca.gov

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Management Measure Category	Description of Management Measure	Commodity Grouping	Reference	Resource Address
Anionic Polyacrylimide (PAM) Erosion Control	Discusses erosion control through the use of water soluble PAM to minimize or control irrigation induced erosion.	• Furrow irrigated crops	USDA Natural Resources Conservation Service. March 2001.	http://www.id.nrcs.usda.gov/Engdwnld/standards/450.pdf
Polyacrylimide for Surface Irrigation to Increase Nutrient Use Efficiency and Protect Water Quality	Technical information that discusses the efficacy of using polyacrylamide (PAM) polymer to nearly eliminate soil erosion and sediment loss produced during furrow irrigation that mitigates the loss of plant nutrients from the field and soil.	• Furrow irrigated crops	USDA Agricultural Research Service. 5 September 2001.	http://www.nps.ars.usda.gov/publications/publications.htm?SEQ_NO_115=125917
Contour Farming • Cross slope • Minimum row grade • Maximum row grade • Critical slope length	Discusses contour farming practices to reduce sheet and rill erosion and the offsite movement of water-born contaminants.	• All	USDA Natural Resources Conservation Service. February 2002.	http://www.id.nrcs.usda.gov/Engdwnld/standards/330.pdf
Contour Buffer Strips • Row grade • Arrangement of strips • Vegetation	Discusses the use of narrow, permanent herbaceous cover established across the slope with parallel, wider cropped strips to reduce sheet rill erosion and the offsite movement of water-born contaminants.	• All	USDA Natural Resources Conservation Service. February 2000.	http://www.id.nrcs.usda.gov/Engdwnld/standards/332.pdf

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Management Measure Category	Description of Management Measure	Commodity Grouping	Reference	Resource Access
60 Ways Farmers Can Protect Surface Water	Details the use of best management practices to manage crop residue throughout the year, control runoff water on steeply sloping land, use pesticides and fertilizers more effectively, and manage runoff from livestock buildings.	• All	University of Illinois, Natural Resources Management. August 1997.	http://www.thisland.uiuc.edu/60ways/60ways.html
Vegetative Filter Strips	Discusses the technical research and methodology used to evaluate the effectiveness of vegetative filter strips for the removal of sediment from agricultural runoff.	• All	Dillaha, T.A., R.B. Reneau, S. Mostaghimi, and D. Lee. *Vegetative Filter Strips for Agricultural Nonpoint Source Pollution Control.*	American Society of Agricultural Engineers. Vol. 32(2): March-April. 1989.
Vegetative Filter Strips	A technical paper evaluating the effectiveness of vegetative filter strips in controlling the offsite movement of sediment.	• All	Robinson, C.A., M. Ghaffarzadeh, and R.M. Cruse. *Vegetative Filter Strip Effects on Sedimnet Concentration in Cropland Runoff.*	Journal of Soil and Water Conservation. Vol. 50, No. 3. May - June 1996. pp. 227-230.
Practices for Irrigating and Fertilizing Cool Season Vegetables • Scheduling irrigation • Irrigation systems • Nutrient management • Crop rotation	A guide to evaluate irrigation and nutrient management practices to minimize the offsite movement of nitrogen from cool season row crops.	• Lettuce • Broccoli • Celery • Cauliflower	Pettygrove, G.S; et.al. Best *Management Practices for Irrigating and Fertilizing Cool-Season Vegetables.*	University of California Division of Agriculture and Natural Resources. Cooperative Extension. Monterey County. March 1993.

Management Measure Category	*Description of Management Measure*	*Commodity Grouping*	*Reference*	*Resource Access*
Management Practices for Controlling Pollutants in Irrigated Agriculture • Sediment • Biofilters • Erosion control	A report that provides an overview review and guidance on the literature available to access best management practices that can be used to control the discharge of agriculturally derived pollutants.	• All	Lee, G. Fred and Anne Jones-Lee. Review of *Management Practices for Controlling the Water Quality Impacts of Potential Pollutants in Irrigated Agriculture Stormwater Runoff and Tailwater Discharges.* California Water Institute, California State University, Fresno, December 2002.	http://www.gfredlee.com/BMP_Rpt.pdf
Conservation Buffers to Reduce Pesticide Losses	A comprehensive document with information on establishing and maintaining permanent vegetative strips designed to slow water runoff, stabilize riparian areas, and reduce pesticide losses.	• All	USDA Natural Resources Conservation Service. March 2000.	http://www.wcc.nrcs.usda.gov/water/quality/common/pestmgt/files/newconbuf.pdf

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Application Methods

Management Measure Category	Description of Management Measure	Commodity Grouping	Reference	Reference Address
Water Quality Management Strategies for Diazinon • Mixing and loading • Spill prevention • Disposal • Sprayer calibration • Equipment repair and maintenance • Drift mitigation practices • Adjuvants • Setback/buffer zones • Application rates and spray volume • New equipment technology	Identification of practices to reduce the potential for over application and off site movement when applying crop protection materials.	• Stone Fruit, Pome Fruit • Nuts • Citrus • Table, Raisin, and Wine grapes • Other Specialty Fruits (kiwi, figs, pomegranate, etc.) • Other Tree Crops (avocado, olive, etc.)	Sacramento River Watershed Program OP Pesticide Focus Group. Water Quality Management Strategies for Diazinon – Chapter 4. *Identification and Evaluation of OP Pesticide Management Practices for Orchard Dormant Sprays.* 25 September 2002.	http://www.sacriver.org/subcommittees/op/documents/WQMSD_Draft/Ch4_AgPractices.html
Mixing and Loading Crop Sprayers	Practices for mixing and loading agricultural spray rigs to prevent spill that may pose a threat to water quality.	• All	Coalition for Urban/Rural Environmental Stewardship (CURES)	http://www.curesworks.org/
Field and Row Crop Sprayers	Tips for applying crop protection products to prevent off target movement of crop protection materials.	• All	Coalition for Urban/Rural Environmental Stewardship (CURES)	http://www.curesworks.org/

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Management Measure Category	*Description of Management Measure*	*Commodity Grouping*	*Reference*	*Resource Contact*
Orchard Air Blast Sprayers	Tips and techniques to prevent off target movement of crop protection materials.	• Stone Fruit, Pome Fruit • Nuts • Citrus • Table, Raisin, and Wine grapes • Other Specialty Fruits (kiwi, figs, pomegranate, etc.) • Other Tree Crops (avocado, olive, etc.)	Coalition for Urban/Rural Environmental Stewardship (CURES)	http://www.curesworks.org/
Nutrient Management • Nutrient budget • Soil testing	Tips for managing the amount, source, placement, form, and timing of the application of nutrients and soil amendments to minimize nonpoint source pollution of surface and groundwater quality.	• All	USDA Natural Resources Conservation Service. April 1999.	ftp://ftp.ftw.nrcs.usda.gov/pub/nhcp/pdf/590.pdf
Ag Practices and Technologies Draft Report • Pesticide application practices	Agricultural management practices and technologies that have the potential to reduce offsite movement of OP pesticides from orchard and field crops.	• All	California Regional Water Quality Control Board Central Valley Region. *Ag Practices and Technologies Draft Report*. May 2002.	http://www.swrcb.ca.gov/rwqcb5/programs/tmdl/ag_practices_report.pdf
California Agriculture	News and peer reviewed research from the University of California in agriculture and natural resources.	• All	University of California – Division of Agriculture and Natural Resources	http://danr.ucop.edu/calag/

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