



Cropping System Verification Checklist For Orchards and Fruit Producers

A boxed risk level indicates the level required for environmental assurance verification.

Bold print indicates a violation of state or federal regulation.

Bold Italic print indicates conformance with Right-to-Farm guidelines.

(Rev. 7-1-08)

Risk Question	Low Risk – 3	Medium Risk – 2	High Risk – 1	Meets Criteria
1) Nutrient Management Practices				
1.01) How often are fields soil and tissue tested for nutrient levels (P, K, Ca, Mg) and pH?	<i>All fields</i> are both <i>tissue and soil tested on a regular basis</i> , at least every 4 years.	<i>All fields are either tissue or soil tested</i> every 4 years, or producer plans to bring tests up to date.	Fields have not been soil or tissue tested within the past 4 years.	YES NO N/A
1.04) Do you consider all sources of nutrients when making fertilization decisions?	<i>When organic matter, legumes, manure or other biological materials (biosolids) are used, fertilizer rates are adjusted</i> accordingly.	When organic matter, legumes, manure or other biological materials (biosolids) are used, fertilizer rates are seldom adjusted.	When organic matter, legumes, manure or other biological materials (biosolids) are used, fertilizer rates are not adjusted accordingly.	YES NO N/A
1.05) How are fertilizer application rates determined?	<i>Consistent with Michigan State University recommendations.</i> (Based on site specific, block by block, soil and/or tissue analysis.)	Consistent with Michigan State University recommendations, based on limited composite analysis representing the whole farm.	Fertilizer rates are not based on tissue or soil analysis.	YES NO N/A
1.06) Do you develop and follow a nutrient management plan for each field/block annually?	Annual nutrient plan is developed on a block by block basis that meets crop nutrient needs and minimizes loss of nutrients to the environment.	A nutrient plan is developed each year for each crop species. Soil or tissue tests are up to date.	Nutrient plan is not developed, or the same plan is used for more than 3 years.	YES NO N/A
1.07) Is fertilizer application equipment checked for proper adjustment?	<i>Application equipment is checked for rate of application and placement.</i> Over, and under applications are monitored and corrected.		Application equipment is not checked.	YES NO N/A
Comments:				

Risk Question	Low Risk – 3	Medium Risk – 2	High Risk – 1	Meets Criteria
1.08) What nutrient management records do you keep?	Records of soil tests and tissue analyses reports and quantities of nutrients applied to individual fields or blocks are maintained.	Partial nutrient management records are kept. Plan to maintain a complete set of nutrient management records.	No nutrient management records kept.	YES NO N/A
1.09) When not in use, where do you park or store loaded fertilizer and pesticide applicators, to protect water resources from accidental spills and mischievous activities?	Supply vehicle is returned to a secure location when not in use. For private wells, fertilizer and pesticides are properly stored more than 150 feet from well.		Fertilizer and pesticide supply vehicles are left in an unsecured location. Or, Fertilizer and pesticides are stored less than 150 feet from a private well.	YES NO N/A
Phosphorus Management Practices				
1.11) How are phosphorus fertilization rates determined?	Based on soil tests or plant tissue analysis using Michigan State University recommended rates. If the soil test exceeds 150 ppm Bray P1 (300 lb/A), Phosphorus is discontinued.	Phosphorus fertilization is based on past practices, without regard to soil test P levels. Application is discontinued if the soil test reaches 150 ppm Bray P1.	Phosphorus fertilization is applied without regard to soil or tissue analyses.	YES NO N/A
Manure Management Practices				
1.12) What manure management records do you maintain?	Complete manure application records are maintained.	Some manure application records are kept. Plan to maintain complete manure application records.	Minimal or no records maintained.	YES NO N/A
1.13) How do you determine the nutrient content of manure?	Laboratory analysis for percent dry matter (solids), ammonium N, and total N, P and K.	Book values or standard nutrient content values used.	Manure nutrient content is unknown or not considered.	YES NO N/A
1.14) How do you know the rate of manure application (tons or gallons per acre)?	The amount of manure applied per acre is known. All manure spreaders field calibrated annually.		Manure application rate is unknown.	YES NO N/A
Comments:				

Risk Question	Low Risk – 3	Medium Risk – 2	High Risk – 1	Meets Criteria
1.15) How is manure applied to fields?	<i>Manure is uniformly applied to soils and is either incorporated or injected within 48 hours, whenever feasible.</i>	<i>Manure is uniformly applied to soils and is not incorporated or injected within 48 hours.</i>	Manure is not applied uniformly. Areas of field receive excess manure.	YES NO N/A
1.16) How do you prevent manure runoff to surface waters?	<i>Manure not applied within 150 feet of surface waters. Or, if within 150 feet, manure is injected or immediately incorporated and/or conservation practices are used to protect against runoff and erosion losses to surface waters.</i>		Manure is applied within 150 feet of surface waters and not incorporated and/or without conservation practices.	YES NO N/A
1.17) How are manure nitrogen application rates managed?	<i>Manure and N fertilizer are applied at rates that do not exceed the N requirements of the crop.</i>		Manure application rates are not based on crop need or soil test.	YES NO N/A
1.18) How are manure Phosphorus application rates managed?	<i>If Bray P1 reaches 75 ppm, manure P does not exceed P removed by the crop. If Bray P1 reaches 150 ppm, manure applications are discontinued.</i>	<i>If Bray P1 reaches 75 ppm, manure P does not exceed 2X P removed by the crop. If Bray P1 reaches 150 ppm, manure applications are discontinued.</i>	Manure application rates are not based on crop need or soil test.	YES NO N/A
1.19) How do you prevent the buildup of manure nutrients in a field?	Manure is rotated to different fields every year and applied at agronomic rates. Whole-farm nutrient planning is used to manage manure resources.	Manure applied at agronomic rates. Whole-farm nutrient planning is used to manage manure resources.	Excessive manure is applied to the same field(s) every year.	YES NO N/A
1.20) How do you determine which fields to use for winter spreading?	No winter applications.	Manure application risk index (MARI) is completed for each field receiving winter manure application.	Applications are made to fields where erosion and runoff to water resources are likely to occur.	YES NO N/A
Comments:				

Risk Question	Low Risk – 3	Medium Risk – 2	High Risk – 1	Meets Criteria
1.21) How do you control liquid manure loss through tile lines?	Liquid manure is managed to prevent manure flow in a field tile line. Tile outlets are monitored for manure discharges.		Not concerned with manure loss through tile. Tile outlets are not monitored for manure discharge.	YES NO N/A
Biosolids Management Practices				
1.24) How do you prevent biosolids with pathogens from contacting crops grown for human consumption?	Biosolids with pathogens present (Class B biosolids) are only applied to non-bearing trees and plant areas, or harvest intervals are followed. (Class A biosolids are essentially pathogens-free with no restrictions for land application. Class B biosolids have low levels of pathogens and have restrictions, harvest intervals, when land applied.)		Biosolids with pathogens present (Class B biosolids) are applied to active fruit production areas, without regard to harvest intervals.	YES NO N/A
1.25) Have you received nutrient content information on the biosolids applied to your farm?	Received laboratory analysis for percent dry matter (solids), ammonium N (NH₄-N), and total N, P and K , and utilize nutrient credits when planning nutrient program.		Have not received any biosolids analysis information.	YES NO N/A
1.26) How do you know the rate of biosolids (in gallons or dry tons per acre) and the rate of biosolids nutrients applied?	Received actual biosolids application rates from the biosolids generator or its land application contractor. Nutrient rates are consistent with MSU recommendations.		Have not received any biosolids rate or nutrient application information	YES NO N/A
Comments:				

2) Soil and Water Conservation Practices				
2.01) Have you identified environmentally sensitive areas (land near surface water, highly erodible land, soils with high leaching or runoff potentials, wells, surface inlets) that require additional management when applying nutrients and pesticides?	Environmentally sensitive areas are identified. Family members and employees are aware of and understand the management practices to protect these areas.	Some environmentally sensitive areas are identified.	Environmentally sensitive areas are not considered.	YES NO N/A
2.02) Is soil erosion under control on your farm fields?	Soil erosion losses are within tolerances as documented by the revised universal soil loss equation (RUSLE2) and the wind erosion equation (WEQ). Minimal evidence of erosion in areas of concentrated water flow.		Excessive soil erosion is occurring on the farm. Or, erosion rates are unknown.	YES NO N/A
3) Pest Management Practices				
3.06) How do you protect surface and groundwater in and near fields from pesticide contamination?	Pesticide labels with groundwater and surface water advisory statements are followed.		Labeled directions are not followed. Spray is applied adjacent to or over the top of surface water, tile drain inlet or well. Other field restrictions are ignored.	YES NO N/A
3.08) Are the purchasers and applicators of restricted-use pesticides (RUP) certified applicators?	<i>The purchaser and applicator of RUP comply with the certification requirements.</i>		Non-certified and unsupervised applicators use RUP.	YES NO N/A
3.10) If pesticides are mixed and loaded in the field, how are they handled?	A mixing and loading pad is used. Mixing and loading are done more than 150 feet from any well and more than 50 feet from surface water.	Mixing and loading are done in different locations in the field, more than 150 feet from a private well, more than 800 feet from a public well* and more than 50 feet from surface waters. A mixing and loading pad is not used.	Pesticides are mixed and loaded at the same spot in the field, year- after-year without spill containment.	YES NO N/A
Comments:				

Risk Question	Low Risk – 3	Medium Risk – 2	High Risk – 1	Meets Criteria
3.11) How do you rinse and dispose of empty pesticide containers?	Containers are triple-rinsed or power rinsed, punctured and returned to dealer, recycled, or taken to a licensed landfill. Bags are returned to dealer or taken to licensed landfill.	Disposal of empty containers and bags on the farm property.	Disposal of partially filled containers. Burning of containers on the farm property.	YES NO N/A
3.12) Do pesticide applicators read and follow the label instructions?	Everyone using pesticides follows label and labeling instructions.		Label and labeling instructions are not always followed.	YES NO N/A
3.14) Is a spill kit immediately available to pesticide applicators in the field?	A spill kit containing a shovel, absorbent material, PPE and a container is immediately available.		No spill kit is available or no plan is in place to contain spills.	YES NO N/A
3.15) How are excess mixtures and pesticide tank rinsate disposal handled.	Excess mixtures or rinsate are used at or below labeled rates.		No plan is in place to deal with excess mixture or rinsate.	YES NO N/A
3.16) How do you ensure the proper and safe operation of pesticide application equipment?	Equipment is correctly calibrated at least annually and leaks are minimized to apply intended rate and distribution pattern.		Pesticide application equipment is not properly calibrated.	YES NO N/A
3.17) How do you assure that pesticide applications remain on-target and minimize off-target pesticide spray drift?	A written drift management plan is utilized (when needed) that minimizes off-target drift. Reduced-risk application technology is used. Spraying in less than 5 MPH winds is avoided with airblast sprayers.	Pesticide applications follow labeled instructions for target pests, but no drift management plan is utilized.	Spraying operations are completed regardless of weather conditions or forecast.	YES NO N/A
3.19) What pesticide application records are kept?	Accurate records are maintained of all agricultural crop applications of pesticides for at least 3 years.	Partial pesticide records are kept. Plan to maintain a complete set of pesticide application records.	No record is kept. Chemicals used are known by memory or invoices only.	YES NO N/A

Comments:

Risk Question	Low Risk – 3	Medium Risk – 2	High Risk – 1	Meets Criteria
3.24) Whom would you contact if you had an agricultural pollution emergency?	Call 911, or sheriff, or fire or emergency services department, or <i>the MDA Agriculture Pollution Emergency Hotline: 1-800-405-0101,</i> or the MDEQ Pollution Emergency Alerting System: 1-800-292-4706.		Would not contact state or local authorities.	YES NO N/A
4) Water Use Reporting				
4.01) If your groundwater and surface water pumps have a combined capacity to pump more than 70 gallons per minute (100,000 gallons per day) for agricultural purposes, have you registered and reported water use to the state of Michigan?	Pump capacity is less than 70 gallons per minute (100,000 gallons per day), Or, Register and report annual water use to Michigan Department of Agriculture or the Michigan Department of Environmental Quality.		Pump capacity is greater than 70 gallons per minute (100,000 gallons per day) and producer does not report water use to the state of Michigan.	YES NO N/A
4.02) Is there an unused well located in the cropping area?	No unused well, or abandoned well properly sealed.		Unused, unsealed well in cropping area.	
5) Irrigation Management Practices				
System Management				
5.01) Have all irrigation systems been evaluated for application uniformity?	<i>All irrigation systems have been evaluated for uniformity</i> in the past 5 years. Corrections are made to the system to improve uniformity.	Some irrigation systems have been evaluated for uniformity. Remainder of systems scheduled to be evaluated within 5 years.	Irrigation system uniformity has not been evaluated.	YES NO N/A
5.02) Are all sprinkler systems operated to minimize drift and off-target application?	<i>All sprinkler systems are operated to minimize drift and off-target application.</i> No off-target irrigation application present.	Most sprinkler systems operated to minimize drift and off-target application. Few off-target irrigation applications occur.	Sprinkler systems are often operated under windy conditions. Water is sprayed over roads, adjacent property or structures.	YES NO N/A
Comments:				

Risk Question	Low Risk – 3	Medium Risk – 2	High Risk – 1	Meets Criteria
Record Keeping				
<p>5.04) Are proper irrigation system management records collected and retained for use in decision making and for reference in case of complaints?</p>	<p>Irrigation system management records are collected and retained, including:</p> <ul style="list-style-type: none"> <i>-Crop type and location.</i> <i>-Source of the water used.</i> <i>-Date and amount of each irrigation water application.</i> <i>-All system inspections and repairs that influence uniformity and leaks.</i> <i>-Calibration of fertigation and chemigation equipment, if used.</i> <i>-Records on system uniformity evaluation.</i> 	<p>Most of irrigation system management records are collected and retained. Plan to maintain a complete set of irrigation records.</p>	<p>Few or no irrigation system management records are collected and retained.</p>	<p>YES NO N/A</p>
Irrigation Scheduling				
<p>5.05) How do you determine when it is necessary to irrigate and how much water should be applied during each irrigation event (irrigation scheduling)?</p>	<p>Irrigation water is scheduled on the basis of:</p> <ul style="list-style-type: none"> <i>-Available soil water for each unit scheduled.</i> <i>-Depth of rooting for each crop irrigated.</i> <i>- Container capacity for container-grown nursery crops.</i> <i>-Allowable soil moisture depletion at each stage of crop growth.</i> <i>-Measured, estimated or published evapotranspiration data to determine crop water use.</i> <i>-Measure rainfall in each field or block irrigated.</i> 	<p>Irrigation water is scheduled on the basis of observed soil moisture content and/or daily water crop usage.</p>	<p>Irrigation water is applied at a set rate per week if no precipitation is received.</p>	<p>YES NO N/A</p>

Risk Question	Low Risk – 3	Medium Risk – 2	High Risk – 1	Meets Criteria
Application practices to avoid runoff and leaching (most applicable to strawberry and small fruit production)				
5.06) Are irrigation application amounts chosen to avoid surface runoff under sprinkler irrigation?	<i>Irrigation application amounts are chosen to avoid surface runoff under sprinkler irrigation.</i>		Excessive runoff occurs on a regular basis.	YES NO N/A
5.08) Are split applications of nitrogen fertilizer used when nitrogen is used in an irrigated field?	<i>Split applications of nitrogen fertilizer are used when nitrogen is used in an irrigated field.</i> N application does not exceed MSU recommendation.		Nitrogen fertilizers are applied through irrigation on the basis of visual crop symptoms. Total N applied exceeds MSU recommendation.	
5.09) Are appropriate backflow prevention devices in place and properly maintained if fertigation or chemigation is used?	<i>Backflow prevention safety devices are used</i> and properly maintained if fertigation or chemigation is used.	Backflow prevention devices are almost always used and/or properly maintained.	Backflow prevention devices are not used and/or properly maintained.	YES NO N/A
Wellhead Protection				
5.11) Is the irrigation well adequately protected from contamination from pesticides and fertilizers?	<i>Anti-backflow device is installed,</i> and agricultural chemical/fertilizer storage and preparation areas are at least 150 feet from the well.	<i>Anti-backflow device is installed,</i> agricultural chemical/fertilizer storage and preparation areas have secondary containment, but storage and preparation areas are less than 150 feet from the well.	No anti-backflow device, no secondary containment and less than 150 feet isolation distance from irrigation well.	
Other Environmental Risks in the Cropping System				
6.02) Are there other activities, products, processes/equipment, services, by-products and/or wastes in the cropping areas that pose contamination risks to groundwater or surface water?	No.	Yes, plan to mitigate the contamination risk.	Yes, but no plan to mitigate contamination risk.	
Comments:				