



## Cropping System Verification Checklist For Nursery Crop 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.

Risk Question	Low Risk – 3	Medium Risk – 2	High Risk – 1	Meets Criteria
<b>1) Nutrient Management Practices</b>				
1.1) How often are fields soil and tissue tested for nutrient levels (P, K, Ca, Mg) and pH?	<b>All fields</b> are <b>sampled and tested on a regular basis.</b>	Most fields are sampled and tested. Producer plans to test all fields.	Most fields have not been tested.	YES NO N/A
1.2) Do soil sampling procedures adequately represent field conditions?	One composite sample taken from uniform field areas.		One composite sample taken from areas greater than 40 acres.	YES NO N/A
1.4) Do you consider all sources of nutrients when making fertilization decisions?	<b>When organic matter, legumes, manure or other biological materials (biosolids) are used, fertilizer rates are reduced</b> accordingly.		When organic matter, legumes, manure or other biological materials (biosolids) are used, fertilizer rates are seldom reduced.	YES NO N/A
1.5) How are fertilizer application rates determined?	<b>Consistent with Michigan State University recommendations.</b>	Occasionally exceed MSU recommendations or crop removal rates.	Often or always exceed MSU recommendations or crop removal rates.	YES NO N/A
1.6) Do you develop and follow a nutrient management plan for each field, on an annual basis?	Annual nutrient plan developed for each field that meets crop nutrient needs and minimizes loss of nutrients to the environment.	A nutrient plan developed each year, for each crop species. Soil tests are up to date.	Nutrient plan not developed or the same plan used for more than three years.	YES NO N/A
1.7) Is fertilizer application equipment checked for proper adjustment?	<b>Application equipment checked for rate of application and placement.</b> Over and under applications monitored and corrected.		Application equipment not checked.	YES NO N/A
1.8) What nutrient management records do you keep?	<b>Maintain records of soil test reports and quantities of nutrients applied to individual fields.</b> Also evaluate crop performance.	Partial nutrient management records kept. Plan to maintain a complete set of nutrient management records.	No nutrient management records kept.	YES NO N/A

Risk Question	Low Risk – 3	Medium Risk – 2	High Risk – 1	Meets Criteria
1.9) When not in use, where do you park loaded planting and spray supply vehicles (trailers and trucks) to protect water resources from accidental fertilizer and pesticide spills and mischievous activities?	Supply vehicle returned to a secure location when not in use. Fertilizer and pesticides (including treated seed) properly stored more than 150 feet down gradient from any wall.		Fertilizer and pesticide (including treated seed) supply vehicle left in an unsecured location. Or, fertilizer and pesticides <b>stored less than 150 feet from any well.</b>	YES NO N/A
1.10) What is the texture of the soil where manure or compost is stored?	Stacked on impermeable surface or fine-textured soil	Stacked on medium-texture soil.	Stacked on coarse-textured soils.	YES NO N/A
1.11) Where do you temporarily stack or store manure or compost at the nursery?	Stacked down slope from surface water or more than 300 feet upslope. Runoff does not reach surface water. Runoff storage is watertight and meets or exceeds recommended capacity.	Stacked at least 50 feet away from surface water. Runoff water is diverted to vegetated filter strips or other means to prevent runoff into surface water.	Stacked within 50 feet of surface water. No means of runoff or leachate control. Slope is toward surface water.	YES NO N/A
1.12) How long do you allow manure or compost to remain in location?	Less than 90 days.	More than 90 days but less than 365 days.	More than 365 Days.	YES NO N/A
<b>Phosphorus Management Practices</b>				
1.15) How are phosphorus fertilization rates determined?	<i>Based on soil tests or plant tissue analysis using Michigan State University recommended rates.</i> If soil phosphorus test is over 75ppm Bray P1, applied P does not exceed crop removal and is discontinued if the soil test reaches 150ppm of Bray P1.	Phosphorus fertilization based on past practices, without regard to soil test P levels. Application discontinued if the soil test reaches 150ppm Bray P1.	Phosphorus fertilization based on applying as much as is affordable to ensure the best possible yields.	YES NO N/A
1.17) How often is commercial phosphorus applied on frozen or snow covered fields?	Phosphorus fertilizer is never broadcast on frozen or snow covered fields.	<i>Broadcast applications avoided on frozen or snow covered fields</i> and are not part of the nutrient management plan.	Phosphorus fertilizer is often broadcast on frozen or snow covered fields.	YES NO N/A

Risk Question	Low Risk – 3	Medium Risk – 2	High Risk – 1	Meets Criteria
<b>Manure Management Practices</b>				
1.18) What manure management records do you maintain?	<b>Complete manure application records are maintained.</b>	Some manure application records are kept. Plan to maintain complete manure application records.	Minimal or no records maintained.	YES NO N/A
1.19) How do you determine the nutrient content of manure?	<b>Laboratory analysis for percent dry matter (solids), ammonium N and total N, P and K.</b>	<b>Book values or standard nutrient content values used.</b>	Manure nutrient content is unknown or not considered.	YES NO N/A
1.20) How do you know the rate of manure application (tons or gallons per acre)?	<b>The amount of manure applied per acre is known.</b> All manure spreaders field calibrated.		Manure application rate is unknown.	YES NO N/A
1.21) How is manure applied to fields?	<b>Manure is uniformly applied to soils</b> and is <b>either incorporated or injected within 48 hours whenever feasible.</b>	<b>Manure is uniformly applied to soils</b> and is not either incorporated or injected within 48 hours.	Manure is not applied uniformly. Areas of field receive excess manure.	YES NO N/A
1.22) How do you prevent manure runoff to surface waters?	<b>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.</b>		Manure is applied within 150 feet of surface waters and not incorporated and/or without conservation practices.	YES NO N/A
1.23) How are manure Nitrogen application rates managed?	<b>Manure and N fertilizer applied at rates that do not exceed the N requirements of the crop.</b>		Manure application rates not based on crop need or soil test.	YES NO N/A
<b>Comments:</b>				

Risk Question	Low Risk – 3	Medium Risk – 2	High Risk – 1	Meets Criteria
<b>Manure Management Practices (cont.)</b>				
1.24) 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 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 discontinued.</i>	Manure application rates not based on crop need or soil test.	YES NO N/A
1.25) How do you prevent the excessive 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
1.26) 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 made to fields where erosion and runoff to water resources is likely to occur.	YES NO N/A
1.27) How do you control liquid manure loss through tile lines?	<i>Liquid manure managed to prevent manure flow in a field tile line.</i> Tile outlets monitored for manure discharges.		Not concerned with manure loss through tile. Tile outlets not monitored for manure discharge.	YES NO N/A
<b>Biosolids Management Practices</b>				
1.29) Have you received nutrient content information on the Biosolids applied to your nursery?	Received laboratory analysis for <i>percent dry matter (solids), ammonium N (NH<sub>4</sub>-N), and total N, P and K</i> and utilize nutrient credits when planning nutrient program.		Have not received any Biosolids analysis information.	YES NO N/A
1.30) How do you know the rate of biosolids (in gallons or dry tons per acre) and the rate of biosolids nutrients applied?	Received actual 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
<b>Comments:</b>				

Risk Question	Low Risk – 3	Medium Risk – 2	High Risk – 1	Meets Criteria
<b>2) Soil and Water Conservation Practices</b>				
<b>2.1)</b> Have you identified environmentally sensitive areas that require additional management when applying nutrients and pesticides?	Environmentally sensitive areas 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
<b>2.2)</b> Is soil erosion under control on your nursery 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.	Erosion rates are unknown.	Excessive soil erosion is occurring on the nursery.	YES NO N/A
<b>3) Pest Management Practices</b>				
<b>Pesticide Application</b>				
<b>3.7)</b> How do you protect surface and ground water in and near fields from pesticide contamination?	Pesticide labels with groundwater and surface water advisory statements are followed.		<b>Labeled directions are not followed.</b> Spray applied adjacent to or over top of surface water, tile drain inlet or well. Fields restrictions for shallow groundwater are ignored.	YES NO N/A
<b>3.9)</b> Are the purchasers and applicators of Restricted Use Pesticides (RUP) certified applicators?	<b><i>The purchaser and applicator of RUP comply with the certification requirements.</i></b>		<b>Non-certified and unsupervised applicators use RUP.</b>	YES NO N/A
<b>3.11)</b> If pesticides are mixed and loaded in the field, how are they handled?	Pesticide spill containment system is used. Mixing and loading is done more than 150 feet from any well and more than 50 feet from surface waters.	Mixing and loading is done in different locations in the field, more than 150 feet from any well and more than 50 feet from surface waters. A spill containment system 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

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

Risk Question	Low Risk – 3	Medium Risk – 2	High Risk – 1	Meets Criteria
3.21) Who would you contact if you have an agriculture pollution emergency?	911, or Sheriff, or fire or emergency services department, or <b>the MDA Agriculture Pollution Emergency Hotline: 1- 800-405-0101</b> , or the MDEQ Pollution Emergency Alerting System: 1-800-292-4706		<b>Would not contact state or local authorities.</b>	YES NO N/A

#### 4) Irrigation Management Practices

##### System Management

4.1) Have all irrigation systems been evaluated for application uniformity?	<b>All irrigation systems have been evaluated for uniformity</b> in the past 5 years. Corrections are regularly made to the system to improve its 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
4.2) Are all sprinkler systems operated to minimize drift and off-target application?	<b>All sprinkler systems operated to minimize drift and off-target application.</b> No off-target irrigation application present.	Most sprinkler systems operated to minimize drift and off target application. Few off target irrigation applications are present.	Sprinkler systems often operated under windy conditions. Water sprayed over roads, adjacent property or structures.	YES NO N/A

##### Record Keeping

4.4) Are proper irrigation system management records collected and retained for use in decision making and for reference in case of complaints?	Irrigation system management records are collected and retained.	Most of irrigation system management records are collected and retained. Plan to maintain a complete set of irrigation records.	Few or no irrigation system management records are collected and retained.	YES NO N/A
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##### Comments:


Risk Question	Low Risk – 3	Medium Risk – 2	High Risk – 1	Meets Criteria
<b>Irrigation Scheduling</b>				
<p><b>4.5)</b> 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:  <b>-Available soil water for each unit scheduled</b>  <b>-Depth of rooting for each crop irrigated</b>  <b>Container capacity for container-grown nursery crops</b>  <b>-Allowable soil moisture depletion at each stage of crop growth</b>  <b>-Measure, estimate, or use published evapotranspiration data to determine crop water use</b>  <b>-Measure rainfall in each field irrigated</b></p>	<p>Irrigation water is scheduled on the basis of observed soil moisture content and/or daily water crop usage.</p>	<p>Irrigation water applied at a set rate per week if no precipitation is received.</p>	<p>YES NO N/A</p>
<b>Application practices to avoid runoff and leaching</b>				
<p><b>4.6)</b> Are irrigation application amounts chosen to avoid surface runoff under sprinkler irrigation?</p>	<p><b>Irrigation application amounts chosen to avoid surface runoff under sprinkler irrigation.</b></p>		<p>Excessive runoff occurs on a regular basis.</p>	<p>YES NO N/A</p>
<p><b>4.9)</b> Are appropriate backflow prevention devices in place and properly maintained if fertigation or chemigation is used?</p>	<p><b>Backflow prevention safety devices are used</b> and properly maintained if fertigation or chemigation is used.</p>	<p>Backflow prevention devices are almost always used and/or properly maintained.</p>	<p>Backflow prevention devices are not used and/or properly maintained.</p>	<p>YES NO N/A</p>
<b>Wellhead Protection</b>				
<p><b>4.11)</b> Is the irrigation well adequately protected from contamination from pesticides and fertilizers?</p>	<p><b>Anti-backflow device installed,</b> and agricultural chemical/fertilizer storage and preparation areas are at least 150 feet from the well.</p>	<p><b>Anti backflow device installed,</b> agricultural chemical/fertilizer storage and preparation areas have secondary containment, but <b>storage and preparation area is less than 150 feet from the well.</b></p>	<p><b>No anti-backflow device,</b> no secondary containment and <b>less than 150 isolation distance from irrigation well.</b></p>	<p>YES NO N/A</p>

Risk Question	Low Risk – 3	Medium Risk – 2	High Risk – 1	Meets Criteria
<b>5) Water Use Reporting</b>				
<b>5.1)</b> If your groundwater and surface water pumps have a combined capacity to pump more than 70 gallons per minute for agricultural purposes, have you registered and reported water use to the State of Michigan?	Pump capacity is less than 70 gallons per minute; Or, Register and report annual water use to Michigan Department of Agriculture or the Michigan Department of Environmental Quality.		<b>Pump capacity is greater than 70 gallons per minute and do not report to the State of Michigan.</b>	YES NO N/A
<b>6) Nursery Container Management</b>				
<b>Irrigation</b>				
<b>6.1)</b> What happens to runoff in areas with containers?	Runoff is collected, filtered and reused.	Runoff does not pond and does not enter surface water.	Runoff is not collected and is allowed to enter surface water.	YES NO N/A
<b>Site</b>				
<b>6.11)</b> How do you dispose of containers?	Containers are recycled or reused appropriately.	Waste containers are disposed of at a licensed landfill.	<b>Empty and partially filled containers burned or disposed of on the farm.</b>	YES NO N/A
<b>Comments:</b>				