

# Marijuana Production – Chemigation and Fertigation Practices



Washington  
State Department of  
Agriculture

Technical Information Bulletin No. TIB 01.16 | Pesticide Management Division | Compliance Program | pesticide.compliance@agr.wa.gov

This document offers guidance for applying pesticides and fertilizers through an irrigation system when growing marijuana either indoors, outdoors, or in a greenhouse.

Two common irrigation systems that may be used:

## Drip irrigation

This is a method of “micro-irrigation,” meaning low pressure and low volume. Water is applied to the soil surface or below the soil surface as drops or small streams through emitters.

## Hydroponics

With this method plant roots are immersed in a mineral nutrient solution or in an inert medium, such as perlite, gravel, sand, growstones, biochar, mineral wool, expanded clay pebbles, or coconut husk, referred to as a medium culture.

System design can vary, ranging from periodic injection with a manually-controlled system to a continuous-flow solution monitored by sensors. Regardless of the method, applying pesticides or plant nutrients through an irrigation system is subject to rules and laws that govern chemigation and fertigation.

---

## WHAT TO CONSIDER USING CHEMIGATION OR FERTIGATION

---

The benefits of chemigation and fertigation can include:

- Increasing the efficiency of how plants absorb many chemicals.
- Decreasing chemical use.
- Increasing the uniformity of chemical application.
- Increasing fertilizer availability.
- Applying amount and at a time based on plant need.
- Reducing risk to pollinators and other beneficial organisms.
- Increasing safety to the operator, workers and bystanders.

**Chemigation** is the application of any substance or combination of substances intended as a pesticide, plant or crop protectant or a system maintenance compound applied with irrigation water.

**Fertigation** is the application of any commercial fertilizer, nutrient soil amendment, or reclaimed water with irrigation water.

However, there are also drawbacks. The most serious threat from these practices, especially chemigation, is contamination of the water supply.

Other considerations include:

- More safety equipment and required training.
- Corrosion of irrigation equipment by chemicals.
- Need for additional irrigation water to apply chemicals or to flush the injection/irrigation systems.
- Algae growth, iron-metabolizing bacteria, and other factors that can plug emitters.
- Risk of surface runoff or deep leaching without proper management resulting from water applied during chemigation and fertigation.

Operators of chemigation and fertigation should have a high competency level and skill set. Operator skill is needed to detect and avoid:

- Chemical incompatibility that can change solution solubility, increase plant phytotoxicity, or jeopardize chemical effectiveness;
- Change in nutrient availability; and
- Mineral precipitates from poor water quality or product solubility.

The operator must be able to calibrate and operate equipment, manage waste water discharge, salinization (electrical conductivity) of the solution requiring specialized treatment or disposal, and acidification of the (inert or soil) substrate. Operators may also be required to keep WSDA pesticide application records and comply with the federal Worker Protection Standard.

**An agricultural chemical cannot be distributed more evenly than the water that is applied by the irrigation equipment.**

The goal of a chemigation or fertigation system is to apply the proper amount of a chemical at the appropriate time to the target area in a safe, effective, and uniform manner. However, not all irrigation systems are suitable for applying chemicals.

An effective application system depends on uniformly applying the recommended amount of water throughout the application site. Furthermore, safety devices must be properly designed, installed, and maintained to prevent contaminating the source water and injection site. Take precautions to avoid surface runoff or deep infiltration, to minimize exposure from chemical residue, and to manage hazardous waste.

**Please read and comply with label instructions and state law.**

## Chemigation Overview

Under federal and state law, users of pesticides must follow label instructions. So before injecting any pesticide through an irrigation system, the operator must read and understand the entire pesticide label and follow all label instructions and precautions. This includes equipment requirements, use restrictions, worker protection, posting of treated areas when required, storage precautions, and disposal of pesticides and containers.

**Pesticide labels are legally enforceable. All display the statement: “It is a violation of federal law to use this product in a manner inconsistent with its labeling.”**

If a pesticide is allowed for chemigation use, the label will specify minimum device requirements to protect the pesticide user and bystanders from exposure and source water from contamination.

State rules have additional use requirements along with those on the pesticide label. Device requirements appear under the “Chemigation” section of a pesticide label. Make sure the irrigation system being used is listed in the approved-types of irrigation systems (e.g., drip, solid set, center pivot) on the label.

## Fertigation Overview

Fertigation is not regulated by federal law, but is governed by state rule. Unlike chemigation, the operator does not need to keep application records except those as specified by the Liquor and Cannabis Board. Posting of treated sites is not required. In addition, the federal Worker Protection Standard does not apply to fertigation.

Fertilizer labels do not specify use practices or list backflow safety devices for either the irrigation system or injection equipment. Commercial fertilizers sold in Washington State must be registered with WSDA.

Both the Washington State Chemigation Rule (WAC 16-202-1001) and the Fertigation Rule (WAC 16-202-2001) establish performance standards that protect the water source. Both rules are very similar. The main differences are application recordkeeping, posting of applications, and applicator licensing, which are not required with fertigation. WSDA administers and enforces both rules.

---

## QUESTIONS AND ANSWERS

---

The following questions and answers offer guidance and are not intended to cover every aspect of chemigation and fertigation. Further information is available on the WSDA Chemigation and Fertigation Technical Assistance Program webpage ([agr.wa.gov/PestFert/ChemFert/default.aspx](http://agr.wa.gov/PestFert/ChemFert/default.aspx)) or by calling WSDA staff at 509-766-2574.

## General Questions

**Q: Must I be licensed as a certified applicator to perform a chemigation application?**

**A:** Currently, no restricted-use pesticides are on the approved list, so there are no requirements to be licensed as a certified applicator by WSDA to chemigate.

**Q: Is an applicator's license required to perform a fertigation application?**

**A:** No.

**Q: Must a chemigation or fertigation system be registered with or permitted by WSDA or must an operator of these systems obtain a user permit from the WSDA?**

**A:** No. Registration of chemigation or fertigation systems with the department is not required. Also, the department does not issue a user permit for operating a chemigation or fertigation system.

**Q: Must application records be kept for chemigation or fertigation applications?**

**A:** Application records must be kept when making chemigation applications to more than one acre in total within a calendar year. For example, one-half acre treated three times would trigger the record keeping requirement.

Although application records do not need to be kept for fertigation, WSDA suggests that a record be kept documenting the application rate, product used, and treatment date. Please note that WSLCB has recordkeeping requirements for pesticides, fertilizers, soil amendments, and other crop production aids (WAC 314-55-087 - [apps.leg.wa.gov/wac/default.aspx?cite=314-55-087](https://apps.leg.wa.gov/wac/default.aspx?cite=314-55-087)).

**Q: Is chemigation restricted to certain types of irrigation systems?**

**A:** Yes. The pesticide label will list the types of irrigation systems through which the product can be applied. You may not apply the product through any other type of irrigation system.

**Q: How do I know if a federal pesticide label allows chemigation? (Federally registered pesticides have an EPA registration number on the label.)**

**A:** The pesticide label must specifically allow chemigation to be used for that purpose. The pesticide label will contain a "Chemigation" section with equipment requirements and use restrictions. If not allowed for chemigation, the label must include the phrase "Do not apply this product through any type of irrigation system." If the label is silent on chemigation, the pesticide cannot be applied by chemigation. In addition to the chemigation requirements on the label, the pesticide user must comply with the Washington State "Rules Relating to Chemigation" (WAC 16-202-1001 - [apps.leg.wa.gov/wac/default.aspx?cite=16-202](https://apps.leg.wa.gov/wac/default.aspx?cite=16-202)).

**Q: Do chemigation requirements also apply to Section 25(b) pesticide products? (Section 25b products do not have an EPA registration number on the label.)**

**A:** Certain minimum risk pesticides on the approved list are exempt from federal registration under Section 25(b) of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). Because these materials are exempt from EPA registration, the 25(b) product label usually does not include a "Chemigation" use section. However, the 25(b) product label must specifically allow chemigation and the pesticide user must comply with the Washington State "Rules Relating to Chemigation" (WAC 16-202-1001 - [apps.leg.wa.gov/wac/default.aspx?cite=16-202](https://apps.leg.wa.gov/wac/default.aspx?cite=16-202)).

**Q: Where can I find additional information on WSDA-registered pesticides and commercial fertilizers that are allowable for use in the production of marijuana?**

**A:** Information can be downloaded from the WSDA webpage "Pesticide and Fertilizer Use on Marijuana in Washington" ([agr.wa.gov/pestfert/pesticides/pesticideuseonmarijuana.aspx](https://agr.wa.gov/pestfert/pesticides/pesticideuseonmarijuana.aspx)).

### TYPES OF BACKFLOW

**Backpressure** may be created when a source of pressure, such as a pump or an elevated irrigation system, creates a pressure greater than that supplied by the water supply distribution system.

**Backsiphoning** may occur with a loss of pressure in the water distribution system during a high withdrawal of water for fire protection, water main or plumbing system break, or a shutdown of a water main or plumbing system for repair. A reduction of pressure below atmospheric pressure creates a partial vacuum in the piping system, creating a siphoning effect.

## Water Protection

### **Q: Must source water be protected during a chemigation or fertigation application?**

**A:** Yes. The greatest risk of chemigation or fertigation is the accidental backflow of chemical into the irrigation water source. No chemigation or fertigation system may draw water from any water supply unless that supply is protected from contamination. For chemigation and fertigation, the health hazard risk to the water supply is considered high.

### **Q: What backflow devices are required on irrigation systems to protect source water?**

**A:** It depends on the water source and its intended use:

#### **Municipal Water System (Group A or Group B public water system)**

Check with your water supplier. At a minimum, a reduced-pressure principal backflow assembly (RPBA) will be required. Another option is an unobstructed, vertical air gap between the potable water supply outlet and the reservoir tank. Your water supplier will advise you in conducting a hazard assessment.

#### **Domestic (Exempt) Wells used for both Potable Water and Irrigation**

Any irrigation system containing a pump or metering device that injects chemicals into irrigation water is considered to be a high contamination hazard. An approved RPBA, or an approved air gap separation, is required wherever pesticides or fertilizers are injected into an irrigation system, or where an auxiliary nonpotable water supply is a source of irrigation water. You must apply the same level of protection to a domestic well as would be required on a municipal water system. Individual private wells are regulated by local health agencies. County codes or municipal ordinances may require filing pre- and post-installation inspections and design plans with the local health agency.

**Backflow, or a reversal in the normal direction of flow in a piping system, occurs when a backsiphoning or backpressure condition is created in a pipeline.**

The use of potable (drinkable) water as source water requires a higher level of protection from possible contamination. For additional information, contact the Washington State Department of Health's Drinking Water Division at 360-236-3133 or the State Source Water Protection Program at 360-236-3114.

#### **Irrigation Wells Only**

Both chemigation and fertigation rules require the proper sizing, installation, and maintenance of the following devices on the irrigation mainline.

- At least one quick-closing check valve capable of forming a watertight seal.
- Inspection port or access point.
- Vacuum relief valve.
- Automatic low pressure drain.

Alternative systems as engineering controls that provide substantially equal protection must be approved by WSDA.

Many counties have adopted codes that require additional protective measures even when the water is not used as a potable water supply. Consult your County Code Enforcement Program (or its equivalent) for technical codes, ordinances, and regulations before installing a chemigation or fertigation system and especially before an application.

### **Q: What is the procedure for disposing of wastewater?**

**A:** Wastewater can come from greenhouse roofs, driveways, parking areas, indoor/outdoor growing areas, flood floors, flood benches, or bench systems. Pesticides and plant nutrients (nitrate, phosphate, sulfate, etc.) applied during the growing of plants pose a potential environmental hazard if they enter groundwater or surface water from runoff or leaching.

While most excess water evaporates within a greenhouse, chemical residues can remain. Furthermore, recirculating flood floor and bench systems collect and contain irrigation water as runoff in holding tanks or detention basins for reuse. Provide for disposing of rinsate water when cleaning holding tanks or of unusable solution because of an excessive salinity level.

Wastewater discharge or stormwater drainage may require a water quality permit, depending on the environmental conditions of the location, the content and amount of discharge water, and type of drainage system. Any system that drains to ground in any fashion – directly, drainage trenches, or infiltration trenches – may need a *State Wastewater Discharge Permit*. Land application of wastewater to cropland or other vegetation may also need a permit. Draining wastewater into surface water, including stormwater ditches, is not allowed. For information, contact Washington State Department of Ecology at [ecy.wa.gov/programs/wq/permits/permitinfo.html](http://ecy.wa.gov/programs/wq/permits/permitinfo.html).

## Safety, Exposure

**Q: Are the safety device requirements in rule similar for chemigation and fertigation?**

**A:** Yes. Aside from requirements specific to pesticide use, provisions in both rules are identical.

**Q: Where can the list of safety device requirements for chemigation and fertigation be found?**

**A:** For chemigation, the “Chemigation” section on the pesticide label will specify minimum components. These components, along with additional safety measures, are listed in the “Rules Relating to Chemigation” ([WAC 16-202-1001](http://WAC 16-202-1001)).

For fertigation, general requirements and safety device equipment are listed in the “Rules Relating to Fertigation” ([WAC 16-202-2001](http://WAC 16-202-2001)).

**Q: Must the injection system and irrigation system be flushed after an injection?**

**A:** The injection and distribution system should be purged after each application. This avoids precipitates from settling out of the solution and to lessen employee exposure from contact with residues on application equipment or other surfaces. In fact, many pesticide labels require that the injection and irrigation system be purged after the application.

**Q: Does the Worker Protection Standard apply to chemigation or fertigation activities?**

**A:** The federal Worker Protection Standard (WPS) applies to chemigation, but not to fertigation. WSDA has published a bulletin as a guidance to assist cannabis growers in achieving general compliance with the WPS rules. The bulletin is titled *Worker Protection Standard (WPS) - Requirements for Marijuana Growers* ([agr.wa.gov/FP/Pubs/docs/487-WPSGuideCannabis.pdf](http://agr.wa.gov/FP/Pubs/docs/487-WPSGuideCannabis.pdf)).

## Containers, Storage and Disposal

**Q: What should I do with empty pesticide containers?**

**A:** Pesticide containers must be properly cleaned before disposal. The best time to clean empty pesticide containers is during mixing and loading, because residue can be difficult to remove after it dries and is a source of human exposure. Refer to the pesticide label for rinsing instructions. If none are listed, triple rinse (or pressure rinse) the pesticide container, empty all pesticide rinse water into the spray tank, and apply to a labeled crop or site.

Recycling cleaned empty containers is the best method of container disposal. Container disposal guidelines are posted to the WSDA Container Disposal Guidance link “Recycling Empty Containers” found on the WSDA Waste Pesticide Program webpage at [agr.wa.gov/WastePesticide](http://agr.wa.gov/WastePesticide).

Cleaned containers may also be disposed of in a sanitary landfill, if permitted by the county. Burning is not a legal method of container disposal in Washington State.

**Q: What should be done with unusable pesticides?**

**A:** WSDA administers the Waste Pesticide Disposal Program. The program collects and disposes unusable agricultural pesticides free of charge. To participate in a collection event, submit a completed customer

inventory form to the Waste Pesticide Program. Information about the program is available at [agr.wa.gov/WastePesticide](http://agr.wa.gov/WastePesticide).

**Q: Are there storage requirements for pesticides?**

**A:** Yes. All pesticide storage areas must be placed in secured storage to prevent entry by children, unauthorized persons, or animals. Additional posting requirements of storage enclosures apply to Category I (“Danger-Poison”) products. Please refer to [WAC 16-228-1220](http://WAC 16-228-1220) for acceptable enclosures. Local codes or municipal ordinances may require additional precautions or reporting requirements.

**Q: Do containerized or packaged fertilizers have specific WSDA storage requirements?**

**A:** No. Check with your local county or municipality for any codes or ordinances that may exist.

## Contacts and Information

**Q: Who enforces the Washington State chemigation and fertigation rules?**

**A:** The Washington State Department of Agriculture (WSDA).

**Q: Who should I contact with claims of pesticide drift or pesticide misuse?**

**A:** The Washington State Liquor and Cannabis Board (WSLCB).

**Q: How can I obtain a copy of the Washington State chemigation and fertigation rules?**

**A:** The following chemigation and fertigation rules are available at these links: ([agr.wa.gov/PestFert/ChemFert/default.aspx](http://agr.wa.gov/PestFert/ChemFert/default.aspx)).

- Rules Relating to Chemigation ([WAC 16-202-1001](http://WAC 16-202-1001))
- Rules Relating to Fertigation ([WAC 16-202-2001](http://WAC 16-202-2001))

Otherwise, you can get copies by calling the WSDA Chemigation and Fertigation Technical Assistance Program at 509-766-2574.

During the planning phase, be certain the designer of the irrigation and injection systems is familiar with federal and state regulations, as well as local requirements.

**Q: Does WSDA provide assistance to help growers comply with federal regulations and state law?**

**A:** Yes. For more information, contact the WSDA Chemigation and Fertigation Technical Assistance Program. WSDA staff can help:

- Provide applicable information and publications.
- Conduct programs and demonstrations.
- Provide individual consultation.
- Perform on-site visits when requested.

### WSDA Pesticide Management Division

#### Registration Services

Registration status of a pesticide or a fertilizer.

Phone: (360) 902-2025  
Email: [pestreg@agr.wa.gov](mailto:pestreg@agr.wa.gov)

#### Certification & Training

Pesticide license certification requirements for dealers, buyers, and users of pesticides.

Email: [license@agr.wa.gov](mailto:license@agr.wa.gov)

#### Compliance Services

Federal and state regulations relating to storage, distribution, transportation, disposal, and use of pesticides.

Phone: (360) 902-2040  
Email: [compliance@agr.wa.gov](mailto:compliance@agr.wa.gov)

**Toll-Free: 877-301-4555**

Do you need this publication in an alternate format? Call WSDA at (360) 902-1976 or TTY Relay (800) 833-6388.