

Save Time and Money With Proper Tank Mixing

By Todd Burkdoll

Improper pesticide tank mixing can cause production problems ranging in severity from mere nuisances to major mishaps. It can also put further strain on growers' budgets and labor. Applicators should follow pesticide label directions precisely to ensure the right mix of pesticides to treat their ornamental plants — but that doesn't always happen. Human error can result in a gelatinous mess in the tank or

ineffective pest control from an improper mix.

Tank mixing sounds simple enough: Applicators put two or more ingredients in a tank with the aim of controlling a broader spectrum of weeds or diseases. Careful combinations of different products can create synergy, meaning sometimes a tank mix can be more effective than applying products separately. However, mixing incompatible chemicals can reduce efficacy;



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Because no two products are the same, every product label carries specific requirements that have passed EPA registration. Two manufacturers may have products with similar active ingredients, but each still has unique mixing directions.

create precipitation in the tank; clog screens and spray nozzles; cause excessive residue or runoff, plant phytotoxicity, stunting or reduced seed germination. The unique science behind each chemical formulation and activity means the mixing process must be approached with significant scientific consideration.

Manufacturers work with the Environmental Protection Agency to develop comprehensive product labels that help applicators understand how to handle, store, tank mix and apply a product. Because no two products are the same, every product label carries specific requirements that have passed EPA registration. Two manufacturers may have products with similar active ingredients, but each still has unique mixing directions influenced by its inert and active ingredient formulation variables.

Manufacturers have improved product formulations to make tank mixing easier, but applicators should still follow traditional standards and safeguards. This is especially true when experienced applicators delegate mixing tasks to crew members who are newer to the process.

Tank Mixing Steps

Read the label and follow these directions to improve the effectiveness of your tank mix.

Wear the proper safety protection. Pay special attention to any warnings on the product label. For instance, many chemicals can harm a person's skin and eyes, especially when products are undiluted during tank mixing. Always wear personal protective gear, including gloves, long sleeves and safety glasses, to avoid injury.

Ensure proper supervision. Regardless of the task's scale, tank mixing should always be completed or supervised by a

licensed pesticide applicator who is trained in the correct use of the chemicals.

Understand water quality. If needed, improve water quality by adding conditioners such as pH adjusters or ammonium sulfate.

Make test applications. This is especially important before large-scale treatments but also when tank mixing new products or formulations for first-time application. Wait a few days to expose any symptoms of phytotoxicity or antagonism.

Quick Mixing Tips

Fill your tank at least half-full with water.

Begin agitation before adding products.

Add soluble products.

Add product types in this order:

- WP, DG, LF or DF formulations
- S or L formulations
- EC formulations
- NIS, COC or MSO
- Liquid fertilizers

Fill the tank full with water.

Perform a jar test. An error as simple as reversing the sequence of two products can create a consistency that clogs nozzles and filters, and requires time-consuming cleanup or the expense of buying new equipment. Conduct a jar test prior to tank mixing to verify correct mixing order. Fill an empty container with water and products in the correct ratios and mixing order listed below. Shake the jar and check to make sure the solution's consistency can be applied.

Know the proper addition order. Fill your tank at least half-full of water, then begin agitation before adding products. Add granules and powders and mix well. Apply these additives to the top of tank so they disperse with plenty of water. Granules require time and agitation to separate; allow five to 10 minutes for them to disperse before adding other products. Add liquid concentrates and crop oils and mix well. Add water-solubles such as glyphosate or amines. With liquid fertilizers as carriers, applicators need to make sure the water is agitated well to prevent product separation.

Add recommended adjuvants or spreaders. Fill the tank to the desired water level and continue agitation or mix well.



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Make the spray application as soon as possible following mixing.

Once that tank mix has been applied, procedures must be followed to avoid contaminating the next batch. Thoroughly clean the tank when you are done to prevent residue from affecting your next mix and application.

Remind your team to follow these and other proper mixing directions. Always read and follow chemical label instructions. When

in doubt, contact your manufacturer or distributor. [GPN](http://www.gpn.com)

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