Tank Mixing Chemicals Applied to Peanut Crops: *Are the Chemicals Compatible?*

Managing pests is critical in optimizing peanut yield and quality. Applying combinations of agrichemicals is an efficient practice with known benefits. Producers may reduce the cost of pest management by limiting trips across the field. Fewer passes across a field is not only more convenient, it also reduces vine damage and has the potential to increase control of particular pests and broaden the spectrum of pests controlled.

But tank mixing of agrichemicals has difficulties and disadvantages. Chemicals may be physically and/or biologically incompatible. Adjuvant and spray volume recommendations may differ. Certain combinations may actually reduce pest control or increase plant damage due to phytotoxicity.

To choose an effective tank mixture, begin with the product label. The label is the law. Product labels provide federal regulations concerning tank mixing; always follow the more restrictive label.

While farmers may legally tank mix any chemicals as long as no product label restricts tank mixing, certain tank mixtures can cause the peanut crop to suffer. Product labels do warn about some potential problems, but they do not clearly address other issues. And manufacturers do not guarantee product performance when their chemicals are used in ways other than described on the label.

Peanut producers are most likely to apply combinations of herbicides, fungicides, insecticides, plant growth regulators, and/or foliar fertilizers. To make these combinations work, a producer needs to be able to predict unfavorable interactions. This publication identifies effective tank mixes based on product labels (Tables 1-4) and problems that have occurred with tank mixes applied in research trials conducted by universities in the peanut belt of the United States (Tables 5-7).

Growers also need to be able to take environmental conditions into consideration and adjust the spray program according to weather conditions and changing pest populations. For more in-depth information on these topics, see ***Peanut Information,*** **AG-331,** or the ***North Carolina Agricultural Chemicals Manual,*** **AG-1.**

Using Tables 1 Through 7 to Determine Compatibilty

1. Read about the chemicals you are considering mixing. Postemergence herbicides are in **Table 1,** fungicides are in **Table 2,** postemergence insecticides are in **Table 3,** and postemergence foliar fertilizers or plant growth regulators are in **Table 4.** *Always follow recommendations on the product label. The label is the law.*

2. If the combination is permitted, see if the field studies reveal any potential problems:
- To see if weed control will be compromised if herbicides are mixed with fungicides, see **Table 5.**
- To see if weed control will be compromised if herbicides, insecticides, foliar fertilizers, and/or plant growth regulators are mixed, see **Table 6.**
- To see if weed control will be compromised in two-, three-, or four-way combinations of selected agrichemicals, see **Table 7.**

3. If a combination looks promising, check for ways to overcome any incompatibility:
- Application rates may need to be adjusted.
- An adjuvant may need to be added or changed.
- The spray volume may need to be changed. For assistance, contact the product manufacturer and your local Cooperative Extension agent.

4. Always follow the basic rules for agrichemical application:
- Apply under optimum weather conditions.
- Apply at the appropriate stage of growth.

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Table 1. Postemergence peanut herbicides for target weeds with recommended spray volume, adjuvants, preharvest interval (PHI) information, and label comments about tank mixes*

Trade name and active ingredient	Weeds	Adjuvant	Volume (GPA)	PHI (days)	Comments (derived from product labels)
Arrow (clethodim)	Grasses	Ammonium sulfate, crop oil concentrate, urea ammonium nitrate	5 to 40	40	Follow most restrictive label in mixture. Apply only to actively growing weeds at the proper stage of development. Apply under favorable soil moisture and humidity and with appropriate adjuvants. Do not apply when broadleaf weeds cover grasses. Mixtures may result in reduced weed control or increased crop injury. May be mixed with Orthene and Danitol.
Basagran (bentazon)	Broadleaf weeds, sedges	Ammonium sulfate, crop oil concentrate, urea ammonium nitrate	≥ 5	50 (grazing)	May be mixed with 2,4-DB, Blazer, Outlook, Poast, Poast Plus, Pursuit, Starfire, Storm, dimethoate. Do not mix with malathion or Sevin.
Ultra Blazer (acifluorfen)	Broadleaf weeds	Crop oil concentrate, nonionic surfactant	5 to 10	75	May be mixed with Basagran, Cadre, Dual, Outlook, Poast, Poast Plus, Pursuit, 2,4-DB.
Butyrac 200 (2,4-DB)	Broadleaf weeds	None	≥ 10	45	Can be applied with other herbicides registered for use on peanuts.
Cadre (imazapic)	Broadleaf weeds, grasses, sedges	Crop oil concentrate, nonionic surfactant	≥ 10	90	May be tank mixed with other herbicides if allowed by labels. Starfire may increase peanut injury. Basagran may reduce broadleaf control. May reduce efficacy of graminicides. Use with Strongarm may lead to ALS resistance.
Classic (chorimuron)	Broadleaf weeds, yellow nutsedge	Nonionic surfactant	?	45	For Florida beggarweed and suppression of Bristly starbur in Alabama, Florida, Georgia, North Carolina, South Carolina, and Virginia only. Do not apply to peanuts until 60 days after crop emergence. Varietal tolerance to Classic may vary. Do not apply tank mixes of Classic + 2,4-DB to Southern Runner. May be tank mixed with 1.5 pt of Bravo 720 or any equivalent chlorothalonil-based product. Can also be tank mixed with 2,4-DB.
Cobra (lactofen)	Broadleaf weeds	Nonionic surfactant, petroleum- or vegetable oil-based concentrate	10 to 20	90	The following herbicide products can be tank mixed with Cobra herbicide for postemergence use in peanuts: Basagran, Cadre, Pursuit, Select, and 2,4-DB.
Dual Magnum (*S*-metolachlor)	Broadleaf weeds, grasses, sedges	None	≥ 10	90	May be mixed with Basagran, Butyrac, Gramoxone Extra, Prowl, Pursuit, Sonalan.
Gramoxone INTEON (paraquat)	Broadleaf weeds, grasses, sedges	Crop oil concentrate, nonionic surfactant	≥ 10	28 (after planting)	May be mixed with 2,4-DB. Mixing with photosynthetic inhibitors may improve control of difficult weeds.
Outlook (dimethenamid-*P*)	Broadleaf weeds, grasses, sedges	Ammonium sulfate, crop oil concentrate, nonionic surfactant, urea ammonium nitrate	≥ 2	80	May be mixed with 2,4-DB, Blazer, Cadre, Dual Magnum, Gramoxone Extra, Poast, Poast Plus, Pursuit, Select, Storm, Tough.
Poast, Poast Plus (sethoxydim)	Grasses	Ammonium sulfate, crop oil concentrate, Dash, methylated seed oil, urea ammonium nitrate	5 to 20	40	May be mixed with 2,4-DB, Basagran, Blazer, Dual II, Pursuit, Storm. Physical incompatibility, reduced weed control, or crop injury may result from mixing with other pesticides.
Pursuit (imazethapyr)	Broadleaf weeds, sedges	Crop oil concentrate, methylated seed oil, nonionic surfactant	10 to 20	85	May be applied with 2,4-DB, Basagran, Dual, paraquat, Poast Plus, and Ultra Blazer. May reduce efficacy of graminicides. May be mixed with Bravo, Orthene, and Solubor.

Table 1. Postemergence peanut herbicides for target weeds with recommended spray volume, adjuvants, preharvest interval (PHI) information, and label comments about tank mixes* (continued)

Trade name and active ingredient	Weeds	Adjuvant	Volume (GPA)	PHI (days)	Label comments
Storm (acifluorfen plus bentazon)	Broadleaf weeds, sedges	Ammonium sulfate, crop oil concentrate, nonionic surfactant	10 to 20	75	May be mixed with 2,4-DB, Basagran, Poast, Pursuit, and paraquat.
Strongarm (diclosulam)	Broadleaf weeds, sedges	None	> 10	30	May be applied with other herbicides according to label instructions. Do not mix with products containing boron or in tanks that recently contained boron unless they have been thoroughly cleaned.
Volunteer (???)	Grasses	Ammonium sulfate, crop oil concentrate, UAN solution	5 to 40	40	Volunteer tank mixes with broadleaf herbicides for peanut: Volunteer + Basagran; Volunteer + Blazer; Volunteer + Storm. Broadleaf weed control may be reduced if grass populations are tall and dense enough to intercept the spray pattern and prevent them from receiving complete coverage. Tank mixing is not recommended in these situations.

*Be sure to obtain current information about usage regulations and examine a current product label before mixing and applying any chemical. Always read and follow label instructions.

Table 2. Postemergence peanut fungicides for target pathogens with recommended spray volumes, adjuvants, preharvest interval (PHI) information, and label comments about tank mixes*

Trade name and active ingredient	Pathogen	Adjuvant	Volume** (GPA)	PHI (days)	Comments (derived from product labels)
Abound (azoxystrobin)	Early leaf spot, Pythium pod rot, Rhizoctonia limb rot, southern stem rot, web blotch	Any adjuvant	12 to 15	14	Do not alternate or tank mix with other strobilurins. Do not use adjuvants when spraying for control of southern stem rot or Rhizoctonia limb rot.
Artisan (flutolanil + propiconazole)	Early leaf spot, late leaf spot, Rhizoctonia limb rot, southern stem rot	None	≥ 10	40	Compatible with most insecticides, fungicides, and foliar nutrient products. Test for compatibility and crop safety prior to use.
Bravo Ultrex (chlorothalonil)	Early leaf spot, late leaf spot, web blotch	None	12 to 15	14	Do not combine with Dipel 4L, Foil, Triton AG-98, Triton B-1956, or Latron B-1956, as phytotoxicity may result.
Bravo Weather Stik (chlorothalonil)	Early leaf spot, late leaf spot, web blotch	None	12 to 15	14	Do not combine with Dipel 4L, Foil, Triton AG-98, Triton B-1956, or Latron B-1956, as phytotoxicity may result.
Echo (chlorothalonil)	Early leaf spot, late leaf spot, web blotch	None	12 to 15	14	Do not combine with Dipel 4L, Foil, Triton AG-98, Triton B-1956, or Latron B-1956, as phytotoxicity may result.
Endura (boscalid)	Early leaf spot, late leaf spot, Sclerotinia blight, web blotch	None	12 to 15	14	Can be tank mixed with most recommended pesticides. Test compatibility and crop tolerance before use.
Equus (chlorothalonil)	Early leaf spot, late leaf spot, web blotch	None	12 to 15	14	Do not combine with Dipel 4L, Foil, Triton AG98, Triton B-1956, or Latron B-1956, as phytotoxicity may result.
Folicur (tebuconazole)	Early leaf spot, late leaf spot, Rhizoctonia limb rot, southern stem rot, web blotch	Nonionic surfactant	12 to 15	14	Surfactant not required when mixed with chlorothalonil. Do not use adjuvants when spraying for control of southern stem rot or Rhizoctonia limb rot.
Headline (pyraclostrobin)	Early leaf spot, late leaf spot, Rhizoctonia limb rot, southern stem rot, web blotch	None	12 to 15	14	Should not be alternated or tank mixed with other strobilurins. Do not mix with silicone-based adjuvants.
Kocide (cupric hydroxide)	Early leaf spot	None	12 to 15	14	Do not apply in a spray solution having a pH less than 6.5 as phototoxicity may occur. Do not tank mix with products containing chelated or liquid fertilizers.
ManKocide (mancozeb + cupric hydroxide)	Early leaf spot	None	12 to 15	14	Do not apply in a spray solution having a pH less than 6.5 as phototoxicity may occur. Do not tank mix with products containing diazinon, thiophanate-methyl, or chelated or liquid fertilizers.
Moncut (flutolanil)	Southern stem rot, Rhizoctonia limb rot	None	12 to 40	40	Not addressed.
Omega 500 (fluazinam)	Sclerotinia blight, southern stem rot, Rhizoctonia limb rot	None	12 to 40	30	Not addressed.
Propimax (propiconazole)	Early leaf spot	None	12 to 15	14	Do not mix with Cyprex fungicide, as crop injury may result.

Table 2. Postemergence peanut fungicides for target pathogens with recommended spray volumes, adjuvants, preharvest interval (PHI) information, and label comments about tank mixes* (continued)

Trade name and active ingredient	Pathogen	Adjuvant	Volume** (GPA)	PHI (days)	Comments (derived from product labels)
Stratego (propiconazole + trifloxystrobin)	Early leaf spot, southern stem rot, Rhizoctonia limb rot, web blotch	Nonionic surfactant	12 to 15	14	Do not mix with Cyprex fungicide, as crop injury may result.
Tilt (propiconazole)	Early leaf spot	None	12 to 15	14	Do not mix with Cyprex fungicide, as crop injury may result.

*Be sure to obtain current information about usage regulations and examine a current product label before mixing and applying any chemical. Always read and follow label instructions.
**Check label for minimum volume for aerial applications.

Table 3. Postemergence peanut insecticides for target insects with recommended spray volumes, adjuvants, preharvest interval (PHI) information, and label comments about tank mixes*

Trade name and active ingredient	Insects	Adjuvant	Volume (GPA)	PHI (days)	Comments (derived from product labels)
Asana XL (esfenvalerate)	Corn earworm, potato leaf hopper	None	≥ 2	21	Do not tank mix with fungicides containing fentin hydroxide. May be applied with Bladex, Classic, or Velpar. Use continuous agitation.
Comite (propargite)	Two-spotted spidermite	Nonionic surfactant	≥ 20	14	Not compatible with alkaline materials. May be mixed with other pesticides according to label instructions.
Danitol (fenpropathrin)	Corn earworm, fall armyworm, potato leaf hopper, two-spotted spidermite	Nonionic surfactant	10 to 50	14	May be mixed with other insecticides. Mix Orthene before Danitol. Do not tank mix with products containing copper. Higher water volumes provide improved insect control.
Karate Z (lambda-cyhalothrin)	Corn earworm, fall armyworm, two-spotted spidermite	None	≥ 10	14	Always add Karate Z to tank mix last. If adjuvants are required, use only nonionic surfactant, crop oil concentrate, or methylated seed oil.
Lannate LV (methomyl)	Corn earworm, fall armyworm, potato leaf hopper	None	≥ 2	21	Avoid mixtures of several materials and high concentrations. Do not use with Bordeaux mixture, triphenyltin hydroxide, lime sulfur, “Rayplex” iron, or highly alkaline solutions.
Orthene 97 (acephate)	Fall armyworm, potato leafhopper, tobacco thrips	None	10 to 50	14	Can be tank-mixed with registered at-cracking and early postemergence herbicides, if herbicide label allows.
Sevin XLR Plus (carbaryl)	Corn earworm, potato leaf hopper	None	Sufficient to obtain thorough coverage	14	Add Sevin to tank mix last. Unstable in highly alkaline or strongly basic mixtures.
Steward (indoxacarb)	Beet armyworm, corn earworm, fall armyworm	None	≥ 5	14	Not addressed.
Tracer (spinosad)	Corn earworm, fall armyworm	None	At least 3	3	Tracer is compatible with a number of insecticides, fungicides, spreaders, adhesives, and wetting agents but not with mineral spray oils. As formulations of other manufacturers’ products are beyond control of Dow AgroSciences, all mixtures should be tested prior to mixing commercial quantities.

*Be sure to obtain current information about usage regulations and examine a current product label before mixing and applying any chemical. Always read and follow label instructions.

Table 4. Agronomic purpose, recommended spray volume, adjuvant selection, preharvest interval (PHI), and label comments about tank mixes for foliar fertilizers and plant growth regulators applied postemergence to peanuts*

Trade name and active ingredient	Purpose	Adjuvant	Volume (GPA)	PHI (days)	Comments (derived from product labels)
Apogee (prohexadione calcium)	Manage vine growth	Crop oil concentrate plus ammonium sulfate or urea ammonium nitrate	≥20	14	Do not mix with calcium. Test compatibility of tank mixes with fungicides and insecticides.
Boric acid	Boron deficiency	None	Not addressed	10	
Boron Xtra (boron)	Boron deficiency	None	Not addressed	14	Compatible with most pesticides. Test compatibility before tank mixing.
Early Harvest (cytokinins, gibberellic acid, indole butyric acid)	Plant growth regulator	None	5 to 25	14	Not addressed.
Manganese Xtra (manganese sulfate)	Manganese deficiency	None	Not addressed	14	Compatible with most pesticides. Test compatibility before tank mixing.
N-Boron (urea nitrogen, boron)	Boron deficiency	None	Not addressed	21	Not addressed.
Solubor (boron)	Boron deficiency	None	Not addressed	21	Not addressed.
TechMangum (manganese sulfate)	Manganese deficiency	None	Not addressed	14	Not addressed.

*Be sure to obtain current information about usage regulations and examine a current product label before mixing and applying any chemical. Always read and follow label instructions.

Table 5. Compatibility of postemergence herbicides with fungicides applied to peanut*

Note: Some products named are no longer used in peanut or have different trade names. They are included in this table because they were actually used in the experiment.

Herbicide	Weed species	Fungicides that DID reduce weed control	Fungicides that DID NOT reduce weed control
Arrow with crop oil concentrate	Broadleaf signalgrass	Bravo Weather Stik, Headline	Folicur
	Large crabgrass	Bravo Weather Stik, Headline	Folicur
	Texas panicum	Bravo Weather Stik	Folicur, Headline
Basagran with nonionic surfactant (80/20 blend)	Yellow nutsedge	Bravo Weather Stik plus Tilt, Kocide, ManKocide	Abound, Folicur, Dithane F-45, Omega 500, Tilt, Stratego
Blazer with nonionic surfactant (80/20 blend)	Smooth pigweed	Folicur, Kocide	Abound, Bravo Ultrex, Bravo Weather Stik, Bravo Weather Stik plus Tilt, ManKocide, Omega 500, Tilt
Butyrac 200 without adjuvant**	Entireleaf morningglory		Abound, Bravo Weather Stik, Endura, Headline, Omega 500, Stratego
	Sicklepod	Abound, Bravo Ultrex, Folicur, Kocide, ManKocide	Bravo Weather Stik, Echo, Headline
	Smooth pigweed	Abound, Bravo Ultrex, Bravo Weather Stik, Folicur, Kocide, ManKocide, Omega 500, Rovral, Tilt/Bravo	Echo, Rovral
	Tall morningglory		Abound, Bravo Weather Stik, Folicur, Headline
Cadre with nonionic surfactant (80/20 blend)	Broadleaf signalgrass		Abound, Bravo Weather Stik, Folicur, Headline
	Large crabgrass		Abound, Bravo Weather Stik, Folicur, Headline
	Texas panicum	Folicur	Abound, Bravo Weather Stik, Headline, Moncut, Tilt/Bravo
	Sicklepod		Abound, Bravo Weather Stik, Folicur, Headline, Moncut, Tilt/Bravo
	Yellow nutsedge		Abound, Artisan, Bravo Weather Stik, Folicur, Headline, Moncut, Tilt/Bravo, Stratego
Cobra with non-ionic surfactant (80-20 blend)	Redroot pigweed		Bravo WeatherStik, Headline
			Asana XL, Karate Z
	Entireleaf morningglory		Bravo WeatherStik, Headline
			Asana XL, Karate Z
	Spurred anoda	Headline	Bravo WeatherStik,
		Asana XL	Karate Z
	Eclipta		Bravo WeatherStik,
			Asana XL, Karate Z
Poast with crop oil concentrate	Broadleaf signalgrass		Abound, Bravo Weather Stik, Folicur, Headline
	Large crabgrass	Abound, Artisan, Bravo Weather Stik, Folicur, Headline	Endura, Omega 500, Stratego
	Texas panicum		Abound, Bravo Weather Stik, Folicur, Headline
Pursuit with nonionic surfactant (80/20 blend)	Smooth pigweed	Kocide, ManKocide, Omega 500	Abound, Bravo Ultrex, Bravo Weather Stik, Bravo Weather Stik plus Tilt, Dithane F-45, Folicur, Tilt, Tilt plus Montero, Tilt plus Stratego

Table 5. Compatibility of postemergence herbicides with fungicides applied to peanut*

Herbicide	Weed species	Fungicides that DID reduce weed control	Fungicides that DID NOT reduce weed control
Select with crop oil concentrate	Broadleaf signalgrass		Bravo Ultrex, Bravo Weather Stik, Bravo Weather Stik plus Tilt, Folicur, Omega 500, Tilt
	Goosegrass	Bravo Weather Stik, Bravo Ultrex, Bravo Weather Stik plus	Folicur, Omega 500, Tilt
	Large crabgrass	Abound, Artisan, Endura, Bravo Weather Stik, Folicur, Headline, Kocide, ManKocide	Omega 500, Stratego
	Texas panicum	Abound, Bravo Weather Stik, Bravo Ultrex, Bravo Weather Stik plus Tilt, Echo, Kocide, ManKocide, Tilt plus Montero	Dithane F-45, Folicur, Omega 500, Tilt plus Stratego
Strongarm with nonionic surfactant (80/20 blend)	Common ragweed	Abound, Bravo Weather Stik, Folicur, Headline	
	Morningglory		Abound, Bravo WeatherStik, Folicur, Headline
	Florida beggarweed	Headline	Abound, Bravo WeatherStik, Folicur

*Results are from replicated university trials conducted in Georgia, Florida, North Carolina, and Texas. Compatibility of Butyrac 200, Poast, and Select with fungicides has been evaluated more extensively than compatibility of fungicides with Basagran, Blazer, Cadre, and Pursuit. Agrichemicals were applied with small-plot spray equipment with ample agitation (shaking) to keep solutions thoroughly mixed. Product labels that prohibit mixing agrichemicals supersede this table.

**Physical compatibility of some mixtures may be an issue.

Table 6. Compatibility of postemergence herbicides with other herbicides, insecticides, foliar fertilizers, and plant growth regulators applied to peanuts*

Herbicides**	Products that DID reduce weed control	Products that DID NOT reduce weed control
Arrow with crop oil concentrate	Cadre, Storm	
Butyrac 200 without adjuvant ***		Boron Xtra, Karate Z, Manganese Xtra, Solubor, Techmangum
Poast with crop oil concentrate	2,4-DB, Basagran, Blazer, Butyrac 200, Dual, Pursuit, Storm	Apogee, Karate Z, Outlook, Solubor
Pursuit with nonionic surfactant (80/20 blend)	Basagran	Boron Xtra, Manganese Xtra, Solubor, Techmangum
Select with crop oil concentrate	2,4-DB, Basagran, Blazer, Cadre, Pursuit, Storm	Apogee, Boron Xtra, Karate Z, Manganese Xtra, Solubor, Techmangum

*Results are from replicated University trials and scientific literature. Compatibility of some combinations has been evaluated more extensively than compatibility of others. Product labels that prohibit mixing agrichemicals supersede this table.

**Combinations of broadleaf/sedge herbicides often control a wider spectrum of weeds than either herbicide applied alone. See *Peanut Information*, AG-331, for effectiveness of such tank mixtures.

***Farmers and commercial applicators have observed physical incompatibility (settling in spray tank) when 2,4-DB (several formulations) is mixed with manganese-containing products. In the university trials reported here, the herbicide solution was constantly agitated to prevent settling.

Table 7. Weed control efficacy by selected herbicides in two-, three-, and four-way combinations of selected agrichemicals*

Agrichemical(s)	Plus Poast**	Plus Select**	Plus 2,4-DB**
Bravo Weather Stik	No Reduction	No Reduction	Reduction
Folicur	No Reduction	No Reduction	No Reduction
Abound	No Reduction	No Reduction	No Reduction
Headline	No Reduction	No Reduction	Reduction
Solubor	Reduction	Reduction	Reduction
Apogee***	Reduction	Reduction	Reduction
Karate Z	Reduction	Reduction	Reduction
Bravo Weather Stik plus Solubor	No Reduction	No Reduction	Reduction
Bravo Weather Stik plus Apogee***	No Reduction	No Reduction	Reduction
Bravo Weather Stik plus Karate Z	No Reduction	No Reduction	Reduction
Folicur plus Solubor	No Reduction	No Reduction	Reduction
Folicur plus Apogee***	No Reduction	Reduction	No Reduction
Folicur plus Karate Z	No Reduction	No Reduction	Reduction
Abound plus Solubor	No Reduction	No Reduction	Reduction
Abound plus Apogee***	No Reduction	Reduction	Reduction
Abound plus Karate Z	No Reduction	No Reduction	Reduction
Headline plus Solubor	No Reduction	No Reduction	Reduction
Headline plus Apogee***	No Reduction	No Reduction	Reduction
Headline plus Karate Z	No Reduction	No Reduction	Reduction
Solubor plus Karate Z	Reduction	Reduction	Reduction
Apogee plus Karate Z	Reduction	Reduction	Reduction
Bravo Weather Stik plus Solubor plus Karate Z	No Reduction	No Reduction	Reduction
Bravo Weather Stik plus Apogee plus Karate Z***	No Reduction	No Reduction	Reduction
Folicur plus Solubor plus Karate Z	No Reduction	No Reduction	Reduction
Folicur plus Apogee plus Karate Z***	No Reduction	Reduction	No Reduction
Abound plus Solubor plus Karate Z	No Reduction	No Reduction	Reduction
Abound plus Apogee plus Karate Z***	No Reduction	Reduction	Reduction
Headline plus Solubor plus Karate Z	Reduction	No Reduction	Reduction
Headline plus Apogee plus Karate Z***	Reduction	No Reduction	Reduction

*"No Reduction" indicates weed control with pesticide combination is similar to herbicide alone. "Reduction" indicates a reduction in weed control was noted compared to herbicide alone.
**Poast and Select applied with crop oil concentrate at 1 quart per acre to large crabgrass; 2,4-DB applied to tall morningglory.
***Apogee applied with urea ammonium nitrate at 1 quart per acre.

CONCLUSION

Determining which agrichemicals are compatible will continue to be a key issue for peanut growers and their advisors. This publication will be updated periodically to reflect new product registrations and research findings. For more information, contact your local Cooperative Extension agent. See product labels and Extension recommendations for specific product rates and application timings.

Tank mix applications have possible advantages and disadvantages. It may be possible to:
- Increase the spectrum of pest control,
- Decrease time and cost of labor,
- Lessen vine damage, and
- Lessen damage to the soil due to compaction.

But a producer has to avoid the possible disadvantages:
- Reduced control,
- Increased crop injury due to phytotoxicity,
- Physical incompatibility of chemicals to be applied, and
- Different spray volumes or adjuvant recommendations for components.

The producer also needs to be aware of the legal issues when tank mixing agrichemicals:
- The label is the law. If the mix is not permitted, do not use it.
- Always follow the more restrictive label.

Remember that manufacturers will not guarantee product performance if the chemical is used in a way other than described on the label.

To overcome incompatibility, the producer may have to:
- Increase the rate of application for a chemical,
- Use or change an adjuvant, and/or
- Change a spray volume.

When tank mixing chemicals, add products in the following order unless otherwise directed on the product label:
1. Small amount of water, and begin agitation
2. Water-soluble packets
3. Wettable powders as a slurry
4. Dry flowables or water-dispersible granules
5. Liquid flowables
6. Emulsifiable concentrates (oil concentrates)
7. Remaining water

Recommendations for the use of chemicals are included as a convenience to the reader. The use of brand names and any mention or listing of commercial products or services in this publication does not imply endorsement by North Carolina State University, North Carolina A&T University or the North Carolina Cooperative Extension nor discrimination against similar products or services not mentioned. Individuals who use chemicals are responsible for ensuring that the intended use complies with current regulations and conforms to the product label. Be sure to obtain current information about usage regulation and examine a current product label before applying any chemical. For assistance, contact an agent of North Carolina Cooperative Extension or the Cooperative Extension Service in your state.

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