Measuring, Mixing and Loading

Keys to Improving Results with Plant Protection Products



Topics

- Measuring Differences between Dry vs Liquid PPP
- •WALES Method for Mixing
- Technologies to Improve Safety

You're in the right place...

lf you want to

Measure accurately

You're in the right place...

lf you worry about

Regulatory compliance

Cucumber Beetle Damage

Keys to Improving Results with Plant Protection Products



Apple Bitter Rot Damage

Keys to Improving Results with Plant Protection Products



Over Application



Pesticide Formulation Types

DRY PESTICIDES

- Dusts, dry application
- **GR, G**: Granules, dry application
- WG: mix with water for spray application
 - **DF** Dry Flowable
 - WDG Water Dispersible Granule
 - WP: Wettable Powders
- LIQUID PESTICIDES
- LIQUID FLOWABLES
 - SC: Suspension Concentrates
 - SE: Suspo-emulsions
- EC: Emulsifiable Concentrates.
- SN: Solutions
- SL: Soluable Liquids



Super KGRO Malathion 50 Insect Spray EPA Reg. No. 46515-19

Super K-GRO Malathion 50 Insect Spray

[Controls listed insects in and around garden . Makes up to 48 gallons of spray . Kills listed leaf eating insects . Protects listed ornamentals, Iflowers, shrubs,] fruits and vegetables from aphids, red spider mites, mealybugs, thrips, scales, whiteflies and other listed unwanted insects . Kills listed insects on roses, flowers, shrubs, vegetables and fruits]

For homeowner outdoor residential use only.



ctive Ingredients:	
1alathion:	
ther Ingredients*	50%
OTAL	
Contains Xylene range aromatic solvent	

Keep Out of Reach of Children

CAUTION See back for First Aid and Precautionary Statements

NET CONTENTS 1 pint/473 mL [1 guart/946 mL] 1 pint contains 0.53 lbs. of Malathion [1 quart contains 1.07 lbs. of Malathion]

[Bracketed Text] = Optional language

2/7/23

IOPTIONAL PRODUCT FACT BOX

What It Does:

Protects listed ornamentals, fruits and vegetables from aphids, red spider mites, mealybugs, thrips, scales, whiteflies and other listed unwanted insects Where to Use: Outdoors on Roses, Flowers, Shrubs, Vegetables and Fruits **Questions & Comments:**

Call 1-800-917-5438 or visit our website at www.spectracide.com

PESTS CONTROLLED

Aphids, Bagworms, Box elder bugs, Fourlined leaf bugs, Japanese beetle adults, Grape leafhoppers, Leafhoppers (Bean, Potato), Leafrollers (Fruittree, Red-banded, Strawberry), Moths (Bud, Codling), Oak kermes, Pear psyllids, Plum curculio, Rose leafhoppers, Scales (Black, Fletcher, Florida red, Juniper, Oyster shell, Purple, Soft brown, Yellow), Scale crawlers, Spittlebugs, Tamished plant bugs, Tent caterpillars, Thrips, Whiteflies, Wooly aphids.]

1	OPTION FOR BOOKLET LABEL
	PEEL HERE STOP. READ ALL INSTRUCTIONS INSIDE BEFORE USING.
	See directions inside booklet

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STOP, READ ENTIRE LABEL BEFORE USE

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Precautions and Restrictions

- DO NOT APPLY THIS PRODUCT IN A WAY THAT WILL CONTACT ANY PERSON OR PET. EITHER DIRECTLY OR THROUGH DRIFT. KEEP PEOPLE AND PETS OUT OF THE AREA DURING APPLICATION.
- Do not allow people or pets to enter the treated area until sprays have dried For outdoor use around the home only. Do not use on lawns.
- Do not use this product in or on electrical equipment due to the possibility of shock hazard.

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Page 1 of 5



Super KGRO Malathion 50 Insect Spray EPA Reg. No. 46515-19

Super K-GRO Malathion 50 Insect Spray

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OPTIONAL PRODUCT FACT BOX

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red spider mites, mealybugs, thrips, scales, whiteflies and other listed unwanted insects Where to Use: Outdoors on Roses, Flowers, Shrubs, Vegetables and Fruits Questions & Comments:

Call 1-800-917-5438 or visit our website at www.spectracide.com

PESTS CONTROLLED

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Page 1 of 5

Super KGRO Malathion 50 Insect Sprav EPA Reg, No. 46515-19

This product is non-staining to most home siding depending on age and cleanliness. However, before using in areas where the spray may contact home siding (vinyl siding in particular), test in an inconspicuous area and recheck in a few hours. Do not use if any staining is observed.

To avoid damage or poor results carefully read and follow all directions and precautionary statements

Use with adequate ventilation.

Do not apply by ground within 25 feet of aquatic habitats (such as, but not limited to, lakes, reservoirs, rivers, permanent streams, wetlands or natural ponds, estuaries and commercial fish farm ponds)

Do not apply within 25 feet of aquatic habitats (such as, but not limited to, lakes, reservoirs, rivers, permanent streams, wetlands or natural ponds, estuaries and commercial fish farm ponds).

Do not apply directly to sewers or storm drains, or any area like a drain or gutter where drainage to sewers, storm drains, water bodies, or aquatic habitat can occur

Do not allow the product to enter any drain during or after application. Do not apply directly to impervious horizontal surfaces such as sidewalks.

driveways, and patios except as a spot or crack-and-crevice treatment. Do not apply to vertical surfaces directly above pervious or impervious surfaces

that drain into ditches, storm drains, gutters, or surface waters,

Do not apply or irrigate to the point of runoff.

Do not apply this product when a storm event likely to produce runoff from the treated area is forecasted (by NOAA/National Weather Service, or other similar forecasting service) to occur within 24 hours following application.

Following best practices can help reduce risk to terrestrial pollinators. Examples of best management practices include applying pesticides in the evening and at night when pollinators are not foraging and avoiding applications to flowering plants. For additional resources on pollinator best management practices, visit https://www. epa.gov/pollinator-protection/find-est-management-practices-protect-pollinators.

HOW TO MIX AND APPLY

In a tank sprayer, mix the specified amounts of this product in water until the spray mixture is uniform. Spray thoroughly covering both upper and lower leaf surfaces or other infested plant parts. Begin treating when insects first appear.

FLOWERS AND BUSHES

For use on Azaleas, Camellias, Chrysanthemums, Evergreens, and Roses. Spot treatment only

Do not apply more than two applications per year. Minimum retreatment interval is 10 days.

[PESTS:]

To control Aphids, mix 1-1/2 to 2 teaspoons per gallon of water

2/7/23

To control Bagworms, Box elder bugs, Fourlined leaf bugs, Japanese beetle adults, Mealybugs, Mites (Red spider, Spruce), Rose leafhoppers, Tarnished plant bugs, Thrips, Whiteflies, Wooly aphids; mix 1 tablespoon per gallon of water.

To control Scales (Black, Oyster shell, Soft brown); mix 1-1/2 to 2 tablespoons per



NOTE: Do not use on Boston, Maidenhair, Petris ferns, as well as species of Crassula. Do not apply to Petunias. [NOTE: Do not use on Boston, Maidenhair or Petris Ferns, Crassula or Petunias.]

FRUITS AND VEGETABLES

Application equipment limited to hand-pump sprayers, hose-end sprayers, and sprinkler cans.

Do not apply more than two applications per year. Minimum retreatment interval is 10 days.

FRUITS

Observe pre-harvest intervals as noted below. Apricots: Do not apply within 6 days of harvest. Cherries: Do not apply within 3 days of harvest. Grapes: Do not apply within 3 days of harvest. Peaches: Do not apply within 7 days of harvest. Strawberries: Do not apply within 3 days of harvest.

IPESTS:1

To control Aphids, mix 1-1/2 to 2 teaspoons per gallon of water. To control Fourlined leaf bugs, Grape leafhoppers, Japanese beetle adults, Leafrollers (Fruit tree, Red-banded, Strawberry), Mealybugs, Moths (Bud, Codling), Pear psyllids, Plum curculio, Red spider mites, Tarnished plant bugs, Tent caterpillars. Thrips, Whiteflies and Woolv aphids: mix 1 tablespoon per gallon of water.

To control Scale crawlers, mix 1-1/2 - 2 tablespoons per gallon of water. Do not apply this product within 3 days prior to bloom, during bloom, or until petal fall is complete.

NOTE: Malathion may cause injury to Ribier grapes.

CITRUS

Observe pre-harvest intervale as noted below. Grapefruit, Lemons, Limes, Oranges and Tangerines: Do not apply within 7 days of harvest

[PESTS:]

To control Aphids and Scales (Black, Florida red, Purple, Yellow), Thrips and Whiteflies; mix 2 teaspoons per gallon of water. Thorough coverage of branches

[Bracketed Text] = Optional language

Super KGRO Malathion 50 Insect Spray EPA Reg. No. 46515-19

- This product is non-staining to most home siding depending on age and cleanliness. However, before using in areas where the spray may contact home siding (vinyl siding in particular), test in an inconspicuous area and recheck in a few hours. Do not use if any staining is observed.
- To avoid damage or poor results carefully read and follow all directions and precautionary statements
- Use with adequate ventilation.
- Do not apply by ground within 25 feet of aquatic habitats (such as, but not limited to, lakes, reservoirs, rivers, permanent streams, wetlands or natural ponds, estuaries and commercial fish farm ponds).
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- Do not allow the product to enter any drain during or after application.
- Do not apply directly to impervious horizontal surfaces such as sidewalks, driveways, and patios except as a spot or crack-and-crevice treatment.
- Do not apply to vertical surfaces directly above pervious or impervious surfaces that drain into ditches, storm drains, gutters, or surface waters.
- Do not apply or irrigate to the point of runoff.
- Do not apply this product when a storm event likely to produce runoff from the treated area is forecasted (by NOAA/National Weather Service, or other similar forecasting service) to occur within 24 hours following application.

Following best practices can help reduce risk to terrestrial pollinators. Examples of best management practices include applying pesticides in the evening and at mem when pollinators are not foraging and avoiding applications to flowering plantit For additional resources on pollinator best management practices, visit https://www. epa.gov/pollinator.protect.pollinators.

HOW TO MIX AND APPLY

If a tank sprayer, mix the specified amounts of this product in water until the spray mixture is uniform. Spray thoroughly covering both upper and lower leaf surfaces or other infested plant parts. Begin treating when insects first appear.

FLOWERS AND BUSHES

For use on Azaleas, Comellias, Chrysanthemums, Evergreens, and Roses. Spot treatment only

Do not apply more than two applications per year. Minimum retreatment interval is 10 days.

[PESTS:]

To control Aphids, mix 1-1/2 to 2 teaspoons per gallon of water.

[Bracketed Text] = Optional language

2/7/23

To control Bagworms, Box elder bugs, Fourlined leaf bugs, Japanese beetle adults, Mealybugs, Mites (Red spider, Spruce), Rose leafhoppers, Tamished plant bugs, Things, Whiteflies, Wooly aphids; mix 1 tablespoon per gallon of water.

To control Scales (Black, Oyster shell, Soft brown); mix 1-1/2 to 2 tablespoons per gallon of water.

For control of Oak kermes and Scales (Juniper, Fletcher); use 2 teaspoons per gallon of water.

NOTE: Do not use on Boston, Maidenhair, Petris ferns, as well as species of Crassula. Do not apply to Petunias. [NOTE: Do not use on Boston, Maidenhair or Petris Ferns, Crassula or Petunias.]

FRUITS AND VEGETABLES

Application equipment limited to hand-pump sprayers, hose-end sprayers, and sprinkler cans

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FRUITS

Observe pre-harvest intervals as noted below. Apricets: Do not apply within 6 days of harvest. Cherries: Do not apply within 3 days of harvest. Grapes: Do not apply within 3 days of harvest. Peaches: Do not apply within 3 days of harvest. Strawberries: Do not apply within 3 days of harvest.

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To control Scale crawlers, mix 1-1/2 – 2 tablespoons per gallon of water. Do not apply this product within 3 days prior to bloom, during bloom, or until petal fall is complete.

NOTE: Malathion may cause injury to Ribier grapes.

CITRUS

Observe pre-harvest intervale as noted below. Grapefruit, Lemons, Limes, Oranges and Tangerines: Do not apply within 7 days of harvest.

[PESTS:]

To control Aphids and Scales (Black, Florida red, Purple, Yellow), Thrips and Whiteflies; mix 2 teaspoons per gallon of water. Thorough coverage of branches

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HOW TO MIX AND APPLY

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FLOWERS AND BUSHES

For use on Azaleas, Camellias, Chrysanthemums, Evergreens, and Roses. Soot treatment only

Do not apply more than two applications per year. Minimum retreatment interval is 10 days.

[PESTS:]

To control Aphids, mix 1-1/2 to 2 teaspoons per gallon of water.

2/7/23

To control Bagworms, Box elder bugs, Fourlined leaf bugs, Japanese beetle adults, Mealybugs, Mites (Red spider, Spruce), Rose leafhoppers, Tarnished plant bugs, Thrips, Whitelfiles, Wooly aphids, mix 1 tablespoon per gallon of water.

To control Scales (Black, Oyster shell, Soft brown); mix 1-1/2 to 2 tablespoons per gallon of water.

For control of Oak kermes and Scales (Juniper, Fletcher); use 2 teaspoons per gallon of water.

NOTE: Do not use on Boston, Maidenhair, Petris ferns, as well as species of Crassula. Do not apply to Petrunias. [NOTE: Do not use on Boston, Maidenhair or Petris Ferns, Crassula or Petrunias]

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To control Scale crawlers, mix 1-1/2 – 2 tablespoons per gallon of water. Do not apply this product within 3 days prior to bloom, during bloom, or until petal fall is complete.

NOTE: Malathion may cause injury to Ribier grapes.

CITRUS

Observe pre-harvest intervale as noted below. Grapefruit, Lemons, Limes, Oranges and Tangerines: Do not apply within 7 days of harvest.

[PESTS:]

To control Aphids and Scales (Black, Florida red, Purple, Yellow), Thrips and Whiteflies; mix 2 teaspoons per gallon of water. Thorough coverage of branches

[Bracketed Text] = Optional language

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- driveways, and patios except as a spot or crack-and-crevice treatment. Do not apply to vertical surfaces directly above pervious or impervious surfaces
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HOW TO MIX AND APPLY

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FLOWERS AND BUSHES

For use on Azaleas, Camellias, Chrysanthemums, Evergreens, and Roses. Spot treatment only

Do not apply more than two applications per year. Minimum retreatment interval is 10 days.

[PESTS:]

To control Aphids, mix 1-1/2 to 2 teaspoons per gallon of water

2/7/23

To control Bagworms, Box elder bugs, Fourlined leaf bugs, Japanese beetle adults, Mealybugs, Mites (Red spider, Spruce), Rose leafhoppers, Tarnished plant bugs, Thrips, Whiteflies, Wooly aphids; mix 1 tablespoon per gallon of water.

To control Scales (Black, Oyster shell, Soft brown); mix 1-1/2 to 2 tablespoons per callon of water.

For control of Oak kermes and Scales (Juniper, Fletcher); use 2 teaspoons per gallon of water.

NOTE: Do not use on Boston, Maidenhair, Petris ferns, as well as species of Crassula. Do not apply to Petunias. [NOTE: Do not use on Boston, Maidenhair or Petris Ferns, Crassula or Petunias.]

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IPESTS:1

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To control Scale crawlers, mix 1-1/2 - 2 tablespoons per gallon of water. Do not apply this product within 3 days prior to bloom, during bloom, or until petal fall is complete.

NOTE: Malathion may cause injury to Ribier grapes.

CITRUS

Observe pre-harvest intervale as noted below. Grapefruit, Lemons, Limes, Oranges and Tangerines: Do not apply within 7 days of harvest

[PESTS:]

To control Aphids and Scales (Black, Florida red, Purple, Yellow), Thrips and Whiteflies; mix 2 teaspoons per gallon of water. Thorough coverage of branches

[Bracketed Text] = Optional language

Super KGRO Malathion 50 Insect Spray EPA Reg. No. 46515-19

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- Do not allow the product to enter any drain during or after application.
- Do not apply directly to impervious horizontal surfaces such as sidewalks, driveways, and patios except as a spot or crack-and-crevice treatment.
- Do not apply to vertical surfaces directly above pervious or impervious surfaces that drain into ditches, storm drains, gutters, or surface waters.
- Do not apply or irrigate to the point of runoff.
- Do not apply this product when a storm event likely to produce runoff from the treated area is forecasted (by NOAA/National Weather Service, or other similar forecasting service) to occur within 24 hours following application.

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additional resources on pollinator best management practices, visit https://www.

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FLOWERS AND BUSHES

For use on Azaleas, Camellias, Chrysanthemums, Evergreens, and Roses. Spot treatment only

Do not apply more than two applications per year. Minimum retreatment interval is 10 days.

[PESTS:]

To control Aphids, mix 1-1/2 to 2 teaspoons per gallon of water.

2/7/23

To control Bagworms, Box elder bugs, Fourlined leaf bugs, Japanese beetle adults, Mealybugs, Mites (Red spider, Spruce), Rose leafhoppers, Tarnished plant bugs, Thrips, Whitefiles, Wody aphids; mix I tablespoon per gallon of water.

To control Scales (Black, Oyster shell, Soft brown); mix 1-1/2 to 2 tablespoons per gallon of water.

For control of Oak kermes and Scales (Juniper, Fletcher); use 2 teaspoons per gallon of water.

NOTE: Do not use on Boston, Maidenhair, Petris ferns, as well as species of Crassula. Do not apply to Petunias. [NOTE: Do not use on Boston, Maidenhair or Petris Ferns, Crassula or Petunias.]

FRUITS AND VEGETABLES

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Do not apply more than two applications per year. Minimum retreatment interval is 10 days.

FRUITS

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Control Aphids, mix 1-1/2 to 2 teaspoons per gallon of water.

To control Fournierd teat tags, Organ teatroppers, Japanese beelle adults, Leafollers (Fruit tree, Red-banded, Strawberry), Mealybugs, Moths (Bud, Codling), Pear psyllids, Plum curculo, Red spider mites, Tarnished plant bugs, Tent caterpillars, Thrips, Whiteflies and Wooly aphids; mix 1 tablespoon per gallon of water.

To control Scale crawlers, mix 1-1/2 – 2 tablespoons per gallon of water. Do not apply this product within 3 days prior to bloom, during bloom, or Until petal fall is complete.

NOTE: Malathion may cause injury to Ribier grapes.

CITRUS

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[PEST8:]

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Super KGRO Malathion 50 Insect Spray EPA Reg. No. 46515-19

and upper and lower leaf surfaces is necessary to control insects. Do not apply this product within 3 days prior to bloom, during bloom, or until petal fall is complete.

VEGETABLES

Observe pre-harvest intervals as noted below. Beans: Do not apply within 1 days of harvest. Broccoli, Brussels Sprouts, Cauliflower. Do not apply within 2 days of harvest. Cabbage: Do not apply within 7 days of harvest. Kale: Do not apply within 7 days of harvest. Lettuce (Head): Do not apply within 14 days of harvest. Lettuce (Leaf): Do not apply within 14 days of harvest. Peas: Do not apply within 3 days of harvest. Potatoes: Do not apply within 0 days of harvest. Radishes: Do not apply within 7 days of harvest. Squash (summer and winter): Do not apply within 1 days of harvest. Tomatoes: Do not apply within 1 days of harvest.

To control Aphids, mix 1-1/2 to 2 teaspoons per gallon of water. To control Fourlined leaf bugs, Japanese beetle adults, Leafhoppers (Bean, Potato), Mealvbugs, Red spider mites, Tamished plant bugs, Thrips and Whiteflies; mix 1 tablespoon per gallon of water.



Precautions and Restrictions

- DO NOT APPLY THIS PRODUCT IN A WAY THAT WILL CONTACT ANY PERSON OR PET, EITHER DIRECTLY OR THROUGH DRIFT, KEEP PEOPLE AND PETS OUT OF THE AREA DURING APPLICATION. Do not allow people or pets to enter the treated area until sprays have dried.
- For outdoor use around the home only. Do not use on lawns.
- Do not use this product in or on electrical equipment due to the possibility of shock hazard
- This product is non-staining to most home siding depending on age and cleanliness. However, before using in areas where the spray may contact home siding (vinyl siding in particular), test in an inconspicuous area and recheck in a few hours. Do not use if any staining is observed.

2/7/23

- To avoid damage or poor results carefully read and follow all directions and precautionary statements
- Spray thoroughly covering both upper and lower leaf surfaces or other infested plant parts. Begin treating when insects first appear. Thorough coverage is important.
- Use with adequate ventilation.
- Do not apply by ground within 25 feet of aquatic habitats (such as, but not limited to, lakes, reservoirs, rivers, permanent streams, wetlands or natural ponds estuaries and commercial fish farm ponds).
- Do not apply within 25 feet of aquatic habitats (such as, but not limited to, lakes, reservoirs, rivers, permanent streams, wetlands or natural ponds, estuaries and commercial fish farm ponds).
- Do not apply directly to sewers or storm drains, or any area like a drain or gutter where drainage to sewers, storm drains, water bodies, or aquatic habitat can occur.
- Do not allow the product to enter any drain during or after application.
- Do not apply directly to impervious horizontal surfaces such as sidewalks. driveways, and patics except as a spot or crack-and-crevice treatment.
- Do not apply to vertical surfaces directly above pervious or impervious surfaces that drain into ditches, storm drains, gutters, or surface waters.
- Do not apply or irrigate to the point of runoff.

Following best practices can help reduce risk to terrestrial pollinators. Examples of best management practices include applying pesticides in the evening and at night when pollinators are not foraging and avoiding applications to flowering plants. For additional resources on pollinator best management practices, visit https://www. epa.gov/pollinator-protection/find-est-management-practices-protect-pollinators.

HOW TO USE USING THE READY SPRAY NOZZLE

Shake the container well before using.

- Connect a garden hose to the Ready Spray nozzle. Make sure the dial on the nozzle is in the "OFF" POSITION with the safety tab in the valve notch.
- Turn on water at faucet. Extend hose to the farthest area to be treated and work back toward the faucet so you don't come in contact with the treated area.
- To BEGIN spraying, point nozzle toward plants to be treated and 1.) bend the safety tab back with your thumb, 2.) using your other hand QUICKLY turn the dial clockwise until it stops. Water will automatically mix with the product.
- Spray until wet to control insects listed. Walk at a steady pace while spraying using even sweeping motion, slightly overlapping treated areas. One quart will treat 6.400 sq. ft. Calculate square feet by multiplying length by width. Refer to sight gauge to guide coverage (example: when bottle is half empty, you should have covered half the area)
- To STOP spraying, QUICKLY turn the dial in the opposite direction of "ON" until 6. it stops and the safety tab engages the notch on the valve. Turn water off at faucet. To relieve pressure before removing nozzle from hose, bend the safety tab back and turn dial "ON" until water stops spraying.

[Bracketed Text] = Optional language

Reading Labels Training ~Best Practices Discussion



Keys to Improving Results with Plant Protection Products



Liquids are always measured by volume
Calibrate your oz device with separate mililiter device for accuracy
Measure 237 mL



•Pour the 237 mL liquid into the 8 oz device to check for accuracy





Measuring device should have handles and pour spouts
Read the level in a well lighted place and with your eye level with the line.



•Rinse thoroughly



Rinse thoroughly
Dedicate one device each for
Herbicides
Fungicides
Insecticides



•Never use for household products



•Never use for household products



Do Not Decant into Unapproved Containers



Small ... But Mighty



Liquid and Dry Measures are Different



Even Dry Measures Are Different





Even Dry Measures Are Different



Even Dry Measures Are Different



Do Not Use Devices with both Dry and Liquid Measures



Devices Measure Different Forumulations



Pesticide Formulation Types

DRY PESTICIDES

- Dusts, dry application
- **GR, G**: Granules, dry application
- WG: mix with water for spray application
 - **DF** Dry Flowable
 - WDG Water Dispersible Granule
 - WP: Wettable Powders
- LIQUID PESTICIDES
- LIQUID FLOWABLES
 - SC: Suspension Concentrates
 - SE: Suspo-emulsions
- EC: Emulsifiable Concentrates.
- SN: Solutions
- SL: Soluable Liquids

Dry Formulations are Product Specific



Dry Formulations are BATCH Specific



Dry Formulations Devices are Different



Measuring Equipment Discussion



Tank Mixing



Tank Mixing – WALES Method

- <u>W</u> Water
- Water soluble bags
- Wettable powders
- Water dispersible granules
- <u>A</u> Agitation
- <u>L</u>Liquid flowables
- <u>E</u> Emulsifiable concentrates
- <u>S</u> Solutions or soluble liquids



W or D

Dry formulations (DF) should be added to the tank first. This includes wettable powders (WP/W), waterdispersible granules (WDG), and water soluble packets (WSP). Make sure these products have fully dissolved before moving to the next step.



Agitation should be continuous throughout the mixing process, starting when the tank is half full and continuing after adding each product until the end.



Emulsifiable Concentrates (EC) should be added next, and Microencapsulated (ME) formulations should follow after that.



Add liquid (L), flowable (F), and soluble concentrate (SC) formulations next.



Surfactants and other adjuvants can be added last. This includes drift control agents, crop oils, etc. The final step is to fill the tank with the remainder of the needed water and continue agitation.

S

re 4. WALES/DALES method for mixing pesticides. (Adapted from Whitford et. al 2018)

Courtesy of Virginia Cooperative Extension

Mix Order or Incompatibility Issues



Tank Mixing – WALES Method

- <u>W</u> Water
- Water soluble bags
- Wettable powders
- Water dispersible granules
- <u>A</u> Agitation
- <u>L</u>Liquid flowables
- <u>E</u> Emulsifiable concentrates
- <u>S</u> Solutions or soluble liquids



W or D

Dry formulations (DF) should be added to the tank first. This includes wettable powders (WP/W), waterdispersible granules (WDG), and water soluble packets (WSP). Make sure these products have fully dissolved before moving to the next step.



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Emulsifiable Concentrates (EC) should be added next, and Microencapsulated (ME) formulations should follow after that.



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Courtesy of Virginia Cooperative Extension



Severe Eye or Skin Irritant DANGER POISON Highly Toxic

WARNING Moderately Toxic

CAUTION Slightly Toxic

NEW TECHNOLOGY ~ Water Soluable Packaging



PPE Requirements

- You must wear eye protection at all times
- Read the label for other PPE requirements.
- You must have full PPE on hand and easily available if you do not have to use it.



Pour sideways to prevent glugging or splashing

(Closed Transfer System, CTS)



Imagine if dispensing chemicals was as easy as using a beer tap.





A perfect pour every time!

- → No wasted liquids
- \rightarrow No more spills to clean up.

If you minimize exposure, people will WANT to use it

Secret 3

Cost Reduction









Cost of Chemicals

Herbicide:

AgSaver: \$96.25 (2.5 gallon) Generic for glyphosate (aka Roundup) \$0.30 / oz.

Insecticide Imidacloprid 4F \$142 - \$180 (2.5 gal) Trade Name: Admire \$0.56 / oz. Carbaryl \$215 (2.5 gal) Trade Name: Sevin \$0.67 per oz

Fungicide:Incognito \$105 (2.5 gal)Generic for Topsin \$0.32/02Fungi-phile \$209 (2.5 gal)\$0.65 per ozCueva: \$166 (2.5 gal)Copper Octanoate (Copper Soap)\$0.33 per oz.

Both Fungicide and Insecticide

Neem Oil \$115 (2.5 gal) One trade name would be Trilogy) \$0.32/02

TIP and POUR METHOD Pest Control Products, Wetting Agents, Fertilizers @ \$1.00 per ounce



Cost of "Loss" per pour:

Using too much chemical (2 oz) \$ 2.00 per pour

OR Spills from over filling (2 oz)

\$2.00 per pour PLUS Materials for clean up and disposal from spills \$3.00 per pour

> Cost for "Loss" \$5.00 per pour

TIP and POUR METHOD Control Products, Wetting Agents, Fertilizers @ \$1.00 per ounce



Cost of "Loss" per pour:

\$5.00 per pour Potential Annual "Loss"

•50 pours per yea

\$250.00 per year

•3 year "Loss" costs \$750.00

•6 year "Loss" costs \$1,500.00

Sealed System Cost Savings Control Products, Wetting Agents, Fertilizers @ \$1.00 per ounce



Cost of "Loss" per pour:

Using just the right amount \$ 0.00 per pour

No spill or over filling

\$0.00 per pour PLUS Materials for clean up and disposal from spills \$0.00 per pour

> Cost for "Loss" \$0.00 per pour

Sealed System Cost Savings Control Products, Wetting Agents, Fertilizers @ \$1.00 per ounce



Cost of "Savings" per pour:

\$5.00 per pour

Potential Annual "Savings"

•50 pours per year \$250.00 per year

•3 year "Savings" \$750.00

•6 year "Savings" \$1,500.00

Today We Covered

- •What is on the the PPP Label
- Differences between Dry vs Liquid PPP
- WALES Method for Mixing
- Technologies to Improve Safety

Thank you !

Goat hroat Pumps

Safety by Design. Engineered for Life.

nwestcott@goatthroat.com Call +1.212.255.6964



Nancy Westcott

Equipment Designer