

JumpStart®

Wettable Powder Inoculant

For use on: alfalfa, canola, chickpea, corn, dry bean, lentil, mustard, pea, peanut, sorghum, soybean, sugar beet, sunflower, sweet clover, and all wheat

ATTENTION:

This Specimen label is provided for general information only.

- This biological product may not yet be available or approved for sale or use in your area.
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- You should not base any use of a similar product on the precautions, instructions for use or other information you find here.
- Always follow the precautions and instructions for use on the label of the biological you are using.

Improved Phosphate Availability

MINIMUM GUARANTEED ANALYSIS

ACTIVE: 7.2 x 10⁸ cfu/g *Penicillium bilaiae*

INERT: wettable powder

NON PLANT FOOD INGREDIENT

Not a fertilizer substitute

Read this entire label before using the product. Use only according to label directions.

How it Works

The active ingredient in JumpStart® Wettable Powder Inoculant is the soil fungus *Penicillium bilaiae*, which grows on plant roots and makes less-available residual soil phosphate available for crop use.

Directions for Use

On-seed treatment (all crops except peanut):

Inoculate seed on-farm by adding the contents of one 57 g (2.0 oz) bottle, one 80 g (2.8 oz) bottle, or one 400 g (14.0 oz) container to the appropriate amount of non-chlorinated water (refer to Table 1) prior to or during seeding.

JumpStart Wettable Powder Inoculant can be applied utilizing commercial on seed application equipment. Applicators used previously for pesticides should be triple rinsed before using for JumpStart Wettable Powder Inoculant application.

To divide the contents of a bottle of JumpStart Wettable Powder Inoculant, first suspend entire contents in 500 ml (0.5 US quarts) non-chlorinated water, mix thoroughly and divide the mixture into smaller quantities as desired. JumpStart Wettable Powder Inoculant in solution must be applied to the seed within 24 hours.

JumpStart Wettable Powder Inoculant can be used with all nitrogen-fixing rhizobial inoculants. To mix Jumpstart Wettable Powder Inoculant with a liquid inoculant, first suspend the entire contents of the JumpStart Wettable Powder Inoculant bottle in a small amount of the liquid inoculant for easier mixing. Pour the mixture into the remaining liquid Rhizobia inoculant and mix to suspend. No additional water is required.

Continuous flow application

Wheat, pea, lentil, chickpea, or dry bean

- Apply the JumpStart Wettable Powder Inoculant suspension to seed using a flow-regulated applicator when transferring seed from the bin to the truck, or from the truck to the tank or seed cart.
- Fill the applicator tank with the required volume of cool, clean, non-chlorinated water (refer to Table 1).
- While mixing continuously, slowly add the contents of the JumpStart Wettable Powder Inoculant container to the water in the applicator tank.
- Mix well and agitate continuously to avoid settling.
- Determine the conveyor or auger flow rate in bu/min, and set the applicator to achieve the required flow rate (refer to Table 2). For best mixing, run the auger or conveyor at full speed and less than full capacity.

Batch application

Corn, soybean, sunflower, sugar beet, sorghum, canola, mustard, alfalfa, or sweet clover

- Apply the JumpStart Wettable Powder Inoculant suspension to seed using a batch treater or cement mixer.
- Fill the applicator tank with the required volume of cool, clean non-chlorinated water (refer to Table 1).
- Add the contents of one 57 g (2.0 oz) bottle, one 80 g (2.8 oz) bottle, or one 400 g (14.0 oz) JumpStart Wettable Powder Inoculant container to the water in the applicator tank.
- Mix well and agitate continuously to avoid settling.
- Put seed in the batch treater or cement mixer. Do not overload treater with seed. There must be enough space for mixing.
- Slowly apply the proper volume of JumpStart Wettable Powder Inoculant suspension to the seed as it tumbles (approximately 2 minutes). Example: if you are treating 1 bag/25 kg (55 lb) of alfalfa seed from a 57 g (2.0 oz) container, use 1/3 of the suspension.
- Re-bag the inoculated seed.
- Repeat with the remaining bags of seed. Note: re-shake or continue agitating the JumpStart Wettable Powder Inoculant suspension in the applicator until fully suspended before inoculating the remaining bags of seed.



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Table 1: On-seed application rates and bare seed planting windows

| 57 g (2.0 oz) container | | | |
|-------------------------|--|----------------------------|-----------------------------|
| Crop | Seed inoculated by one 57 g (2.0 oz) container | Approximate water volume | Planting window (bare seed) |
| Wheat | 1,100 kg (2,400 lb, 40 bu) | 7.0 litres (7.6 US quarts) | 30 days |
| Pea | 1,900 kg (4,200 lb, 70 bu) | 6.0 litres (6.3 US quarts) | 30 days |
| Chickpea | 1,500 kg (3,300 lb, 55 bu) | 4.0 litres (4.2 US quarts) | 30 days |
| Dry Bean ¹ | 1,100 kg (2,400 lb, 40 bu) | 3.5 litres (3.7 US quarts) | 30 days |
| Lentil | 1,100 kg (2,400 lb, 40 bu) | 3.5 litres (3.7 US quarts) | 30 days |
| Soybean | 1,135 kg (2,500 lb, 42 bu) | 3.5 litres (3.7 US quarts) | 30 days |
| Sunflower ² | 100 kg (230 lbs) | 2.0 litres (2.1 US quarts) | 30 days |
| Sorghum ³ | 136 kg (300 lbs) | 1.8 litres (1.9 US quarts) | 60 days |
| Alfalfa/Sweet Clover | 68 kg (150 lbs) | 1.5 litres (1.6 US quarts) | 7 days |
| Canola/Mustard | 63 kg (140 lbs) | 1.5 litres (1.6 US quarts) | 60 days |
| Sugar beet ³ | 5 units | 1.0 litres (1.0 US quarts) | 7 days |
| Corn | 800,000 kernels (10 bags ⁴) | 2.8 litres (3.0 US quarts) | 60 days |

| 80 g (2.8 oz) container | | | |
|-------------------------|--|------------------------------|-----------------------------|
| Crop | Seed inoculated by one 80 g (2.8 oz) container | Approximate water volume | Planting window (bare seed) |
| Wheat | 1,630 kg (3,600 lb, 60 bu) | 10.0 litres (11.0 US quarts) | 30 days |
| Pea | 2,720 kg (6,000 lb, 100 bu) | 8.0 litres (8.5 US quarts) | 30 days |
| Chickpea | 2,180 kg (4,800 lb, 80 bu) | 6.0 litres (6.4 US quarts) | 30 days |
| Dry Bean ¹ | 1,630 kg (3,600 lb, 60 bu) | 5.0 litres (5.3 US quarts) | 30 days |
| Lentil | 1,630 kg (3,600 lb, 60 bu) | 5.0 litres (5.3 US quarts) | 30 days |
| Soybean | 1,630 kg (3,600 lb, 60 bu) | 5.0 litres (5.3 US quarts) | 30 days |
| Sunflower ² | 140 kg (320 lbs) | 2.8 litres (3.0 US quarts) | 30 days |
| Sorghum ³ | 190.4 kg (420 lbs) | 2.5 litres (2.7 US quarts) | 60 days |
| Alfalfa/Sweet Clover | 100 kg (220 lbs) | 2.0 litres (2.2 US quarts) | 7 days |
| Canola/Mustard | 90 kg (198 lbs) | 2.0 litres (2.2 US quarts) | 60 days |
| Sugar beet ³ | 7 units | 1.4 litres (1.5 US quarts) | 7 days |
| Corn | 1,120,000 kernels (14 bags ⁴) | 3.92 litres (4.14 US quarts) | 60 days |

| 400 g (14 oz) container | | | |
|-------------------------|--|-------------------------------|-----------------------------|
| Crop | Seed inoculated by one 400 g (14 oz) container | Approximate water volume | Planting window (bare seed) |
| Wheat | 8,150 kg (18,000 lb, 300 bu) | 50.0 litres (53.0 US quarts) | 30 days |
| Pea | 13,600 kg (30,000 lb, 500 bu) | 40.0 litres (42.0 US quarts) | 30 days |
| Chickpea | 10,900 kg (24,000 lb, 80 bu) | 30.0 litres (32.0 US quarts) | 30 days |
| Dry Bean ¹ | 8,150 kg (18,000 lb, 300 bu) | 25.0 litres (27.0 US quarts) | 30 days |
| Lentil | 8,150 kg (18,000 lb, 300 bu) | 25.0 litres (27.0 US quarts) | 30 days |
| Soybean | 8,150 kg (18,000 lb, 300 bu) | 25.0 litres (27.0 US quarts) | 30 days |
| Sunflower ² | 140 kg (320 lbs) | 14.0 litres (15.0 US quarts) | 30 days |
| Sorghum ³ | 190.4 kg (420 lbs) | 12.6 litres (13.5 US quarts) | 60 days |
| Alfalfa/Sweet Clover | 500 kg (1100 lbs) | 10.0 litres (11.0 US quarts) | 7 days |
| Canola/Mustard | 455 kg (1000 lbs) | 10.0 litres (11.0 US quarts) | 60 days |
| Sugar beet ³ | 25 units | 7 litres (7.5 US quarts) | 7 days |
| Corn | 5,600,000 kernels (70 bags ⁴) | 19.6 litres (20.71 US quarts) | 60 days |

¹ Use with pinto, great northern, black, navy, kidney, red, and pink bean.

² When treating confectionary sunflowers, increase water rates to ensure proper coverage.

³ The application rate is currently under review. The rate provided is based on our experience with other crops.

⁴ 80,000 kernels per bag.

- Once JumpStart Wettable Powder Inoculant is mixed in water, apply to seed within 24 hours.
- The planting window is the maximum time allowed between JumpStart Wettable Powder Inoculant application and seeding.
- Application with other seed treatments is possible but may reduce the planting window. For up-to-date pesticide compatibility information and bare seed planting windows, please contact Monsanto Company at 1-877-775-8787.

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Table 2. Applicator flow rate calibration (based on one 57 g (2.0 oz) container)

| Auger flow rate | | | | Applicator rate ¹ | | | | | | | | | |
|-----------------|--------|--------|--------|------------------------------------|----------------|------------------------------------|----------------|------------------------------------|----------------|------------------------------------|----------------|------------------------------------|----------------|
| | | | | Wheat | | Pea | | Lentil and Dry Bean | | Chickpea | | Soybean | |
| bu/hr | bu/min | lb/hr | lb/min | minutes/ container ² | quarts/ min | minutes/ container ² | quarts/ min | minutes/ container ² | quarts/ min | minutes/ container ² | quarts/ min | minutes/ container ² | quarts/ min |
| 240 | 4 | 14,400 | 240 | 10 | 0.75 | 17.5 | 0.34 | 10 | 0.38 | 13.8 | 0.33 | 10.3 | 0.37 |
| 360 | 6 | 21,600 | 360 | 6.7 | 1.13 | 11.7 | 0.51 | 6.7 | 0.56 | 9.2 | 0.49 | 6.8 | 0.55 |
| 480 | 8 | 28,800 | 480 | 5 | 1.5 | 8.8 | 0.69 | 5 | 0.75 | 6.9 | 0.65 | 5.1 | 0.73 |
| 600 | 10 | 36,000 | 600 | 4 | 1.88 | 7 | 0.86 | 4 | 0.94 | 5.5 | 0.82 | 4.1 | 0.92 |
| 720 | 12 | 43,200 | 720 | 3.3 | 2.25 | 5.8 | 1.03 | 3.3 | 1.13 | 4.6 | 0.98 | 3.4 | 1.1 |
| 840 | 14 | 50,400 | 840 | 2.9 | 2.63 | 5 | 1.2 | 2.9 | 1.31 | 3.9 | 1.15 | 2.9 | 1.28 |
| 960 | 16 | 57,600 | 960 | 2.5 | 3 | 4.4 | 1.37 | 2.5 | 1.5 | 3.4 | 1.31 | 2.6 | 1.46 |
| 1080 | 18 | 64,800 | 1080 | 2.2 | 3.38 | 3.9 | 1.54 | 2.2 | 1.69 | 3.1 | 1.47 | 2.3 | 1.65 |
| 1200 | 20 | 72,000 | 1200 | 2 | 3.75 | 3.5 | 1.71 | 2 | 1.88 | 2.8 | 1.64 | 2.1 | 1.83 |

| Auger flow rate | | | | Applicator rate ¹ | | | | | | | | | |
|-----------------|--------|--------|--------|------------------------------------|-------|------------------------------------|-------|------------------------------------|-------|------------------------------------|-------|------------------------------------|-------|
| | | | | Wheat | | Pea | | Lentil and Dry Bean | | Chickpea | | Soybean | |
| bu/hr | bu/min | kg/hr | lb/min | minutes/ container ² | L/min | minutes/ container ² | L/min | minutes/ container ² | L/min | minutes/ container ² | L/min | minutes/ container ¹ | L/min |
| 240 | 4 | 6,532 | 109 | 10 | 0.71 | 17.5 | 0.32 | 10 | 0.36 | 13.8 | 0.31 | 10.3 | 0.35 |
| 360 | 6 | 9,798 | 163 | 6.7 | 1.07 | 11.7 | 0.48 | 6.7 | 0.53 | 9.2 | 0.46 | 6.8 | 0.52 |
| 480 | 8 | 13,063 | 218 | 5 | 1.42 | 8.8 | 0.65 | 5 | 0.71 | 6.9 | 0.62 | 5.1 | 0.69 |
| 600 | 10 | 16,329 | 272 | 4 | 1.78 | 7 | 0.81 | 4 | 0.89 | 5.5 | 0.78 | 4.1 | 0.87 |
| 720 | 12 | 19,595 | 327 | 3.3 | 2.13 | 5.8 | 0.97 | 3.3 | 1.07 | 4.6 | 0.93 | 3.4 | 1.04 |
| 840 | 14 | 22,861 | 381 | 2.9 | 2.49 | 5 | 1.14 | 2.9 | 1.24 | 3.9 | 1.09 | 2.9 | 1.21 |
| 960 | 16 | 26,127 | 435 | 2.5 | 2.84 | 4.4 | 1.30 | 2.5 | 1.42 | 3.4 | 1.24 | 2.6 | 1.38 |
| 1080 | 18 | 29,393 | 490 | 2.2 | 3.20 | 3.9 | 1.46 | 2.2 | 1.60 | 3.1 | 1.39 | 2.3 | 1.56 |
| 1200 | 20 | 32,659 | 544 | 2 | 3.55 | 3.5 | 1.62 | 2 | 1.78 | 2.8 | 1.55 | 2.1 | 1.73 |

¹ Applicator rates are calculated assuming one 57 g (2.0 oz) container of JumpStart Wettable Powder Inoculant is suspended in 7 L (7.6 US quarts) of water to inoculate 40 bu of wheat, 6.0 L (6.3 US quarts) of water to inoculate 70 bu of pea, 4.0 L (4.2 US quarts) of water to inoculate 55 bu of chickpea, 3.5 L (3.7 US quarts) of water to inoculate 41 bu of soybean, or 3.5 L (3.7 US quarts) of water to inoculate 40 bu of lentil or dry bean.

² Minutes to apply one 57 g (2.0 oz) container of JumpStart Wettable Powder Inoculant. (See instructions for dividing container contents in Directions for Use).

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In-furrow application peanut:

- Add the contents of one 57 g (2.0 oz) bottle, one 80 g (2.8 oz) bottle, or one 400 g (14.0 oz) container to the appropriate amount of non-chlorinated water and apply at planting.
- One JumpStart Wettable Powder Inoculant is mixed in water, apply to seed in-furrow.
 1. **Clean the liquid system with a cleaning solution**, JumpStart Wettable Powder Inoculant is a biological product, which may be sensitive to chemical residues.
 2. **Convert the sprayer to in-furrow application**. Remove spray tips and replace with appropriate flow regulator "orifice discs". Proper orifice disc number may be determined from spraying manual. The objective is to obtain a solid stream of liquid into the furrow. Place spraying assembly behind the seed planting assembly so that the solid stream of product will flow into the furrow and on the seed. JumpStart Wettable Powder Inoculant should be on the seed and in the furrow before it closes, not to the side nor above or below the seed.
 3. **Fill clean spray tank half full with clean, non-chlorinated water**. Pull the JumpStart Wettable Powder Inoculant package from the carton, remove the cap and empty into the inoculant bag and shake well. Add remainder of clean, non-chlorinated water to spray tank to the appropriate solution level. Use the diluted product within 24 hours. Do not allow the diluted tank mix to exceed 100°F.
 4. **Application rate/unit coverage JumpStart Wettable Powder Inoculant is applied in-furrow at rates on table 3 below**. The quantity of JumpStart Wettable Powder Inoculant applied per acre varies depending upon the row width. The measurement chart provides the recommended rate of JumpStart Wettable Powder Inoculant per acre and also indicates the number of acres treated with each row width. The application of the diluted liquid should be approximately 3 to 20 gallons/acre based on equipment used and soil moisture. Calibrate sprayer to deliver correct amount.

Table 3: In-furrow applications rates for peanut

| ROW WIDTH | RECOMMENDED JUMPSTART WETTABLE POWDER INOCULANT RATE | 57 g (2 OZ) BOTTLE TREATS | 80 g (2.8 OZ) BOTTLE TREATS | 400 g (14 OZ) BOTTLE TREATS |
|---------------|--|---------------------------|-----------------------------|-----------------------------|
| 76.2 cm (30") | | | | |
| Single row | 11.6 g/ha (0.166 oz/acre) | 3.4 ha (8.3 acres) | 4.71 ha (11.6 acres) | 23.5 ha (58.1 acres) |
| Twin row | 23.3 g/ha (0.332 oz/acre) | 1.7 ha (4.2 acres) | 2.36 ha (5.8 acres) | 11.9 ha (29.4 acres) |
| 91.4 cm (36") | | | | |
| Single row | 14.0 g/ha (0.2 oz/acre) | 4.04 ha (10 acres) | 5.67 ha (14 acres) | 28.4 ha (70 acres) |
| Twin row | 28.0 g/ha (0.4 oz/acre) | 2.02 ha (5 acres) | 2.83 ha (7 acres) | 14.2 ha (35 acres) |

Where to use for maximum benefit

For soils low to medium in available phosphate:

Use JumpStart Wettable Powder Inoculant with the lower recommended P fertilizer rate from soil test results. If you do not soil test, use with your normal P fertilizer rate.

For soils high to very high in available phosphate:

Replace the starter in-row P fertilizer application [16.8-22.4 kg P₂O₅/ha (15-20 lb P₂O₅/acre)] with JumpStart Wettable Powder Inoculant.

Benefits of using JumpStart Wettable Powder Inoculant may be limited on:

- extremely sandy soils (greater than 85% sand).
- extremely high organic matter soils (greater than 14% organic matter).
- fields that have been heavily manured over the last several years.

Applicators and Other Handlers

The active ingredient in JumpStart Wettable Powder Inoculant is *Penicillium bilaiae* spores. Eye or skin contact, inhalation, or ingestion should be avoided. Wear standard protective clothing and equipment including gloves, safety glasses. Ensure adequate ventilation. Where exposure through inhalation may occur, use respiratory protective equipment. This product contains microorganisms that may have the potential to provoke sensitizing reactions; use appropriate personal protective equipment (PPE) to reduce exposure. Sensitized individuals should wear an NIOSH-approved respirator. In case of contact with skin or eyes, immediately flush exposed areas with plenty of water. Get medical attention if irritation occurs.

Storage and Disposal

The active ingredient in JumpStart Wettable Powder Inoculant is a living organism and requires specific storage conditions to ensure viability and product performance. To maintain product viability:

- Store JumpStart Wettable Powder Inoculant containers and seed to which JumpStart Wettable Powder Inoculant has been applied in a cool conditions <20°C (68°F) away from sunlight and direct heat sources.
- Minimize temperature fluctuations.
- Avoid freeze/thaw cycles.
- Use entire contents of container once opened.
- Use before the expiry date. The expiry date is valid only for unopened containers stored under the conditions listed above.
- Do not mix with unapproved products.
- For a list of compatible seed treatments, contact Monsanto Company at 1-877-775-8787.

Unused JumpStart Wettable Powder Inoculant and unplanted seed to which JumpStart Wettable Powder Inoculant has been applied should be disposed of in accordance with applicable federal, state/provincial, and local requirements. Seed treated with JumpStart Wettable Powder Inoculant is not recommended for food, feed or oil purposes.

Information regarding the contents and levels of metals in this product is available on the internet at: <http://www.aapfco.org/metals.html>

Limited Warranty

The Seller warrants that this product contains a minimum number of *Penicillium bilaiae* colony forming units as specified on this label. The Seller makes no other warranty expressed or implied as to product viability or performance since product storage, use and growing conditions are beyond the Seller's control. Seller's guarantee is limited to the terms set out on the label and subject thereto. Buyer assumes the risk to persons or property arising from the use or handling of this product and accepts the product on that condition. If this product does not perform as warranted above, and to the extent consistent with applicable law, customer's sole remedy for breach of warranty shall be replacement of the product or refund of the purchase price paid, at the option of Monsanto Company.

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