

JumpStart[®] liquid

phosphate-solubilizing inoculant for

alfalfa, canola, chickpea, corn, dry bean, lentil, mustard, pea, peanut, sorghum, soybean, sugar beet, sunflower, sweetclover, and all wheat

Extended Label

GUARANTEED MINIMUM ANALYSIS

7.2 X 10⁸ cfu/g *Penicillium bilaiae*

NON-PLANT FOOD INGREDIENT
Not a fertilizer substitute

DENSITY: 1.12 g/ml (9.3469 lbs/gal)

How it Works

The active ingredient in JumpStart[®] liquid, the naturally occurring soil fungus *Penicillium bilaiae*, grows on plant roots and makes less available residual soil phosphate immediately available for crop use.

How to Apply

On-seed treatment (all crops except peanut):

Inoculate seed on-farm by adding the contents of one 60 ml (2.0 oz), or one 600 ml (20 oz) container to the appropriate amount of water (refer to table 1) prior to or during seeding.

JumpStart[®] liquid can be applied utilizing commercial on seed application equipment. Applicators used previously for pesticides should be triple rinsed before being used for JumpStart[®] application.

To divide the contents of a 60 ml (2.0 oz) bottle of JumpStart[®] liquid, first shake the bottle to ensure the contents are well mixed. Measure out the desired volume and mix thoroughly in the appropriate amount of water. JumpStart[®] liquid in solution must be applied to the seed within 24 hours.

JumpStart[®] liquid can be used with all nitrogen-fixing rhizobial inoculants. To mix JumpStart[®] with another liquid inoculant, first shake the JumpStart[®] liquid bottle until the contents are well mixed. Pour the entire bottle of JumpStart[®] liquid directly into the rhizobium liquid inoculant and mix thoroughly. No additional water is required.

JumpStart[®] liquid applied to bare seed should be planted according to the planting windows listed on table 1. JumpStart[®] liquid can be used with most seed-applied treatments but the planting window may be reduced. For up-to-date pesticide compatibility and bare seed stability information, please call Novozymes BioAg Limited at 1-888-744-5662.



WARNING

Causes Serious eye irritation.

Continuous flow application:

Wheat, pea, lentil, chickpea, or dry bean

- Apply the JumpStart[®] liquid 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 water (refer to table 1).
- Mix well and agitate continuously to avoid settling.
- While mixing continuously, slowly add the contents of the JumpStart[®] liquid container to the water in the applicator tank.

Batch application:

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

- Apply JumpStart[®] liquid suspension to seed using a batch treater or cement mixer.
- Fill the applicator tank with the required volume of cool, clean water (refer to table 1).
- Add the contents of one 60 ml (2.0 oz) bottle, or one 600 ml (20 oz) JumpStart[®] liquid 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[®] liquid 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 60 ml (2 oz) container, use 1/3 of the suspension.
- Re-bag the inoculated seed.
- Repeat with the remaining bags. Note: re-shake or continue agitating the JumpStart[®] liquid suspension in the applicator until fully suspended before inoculating the final bags of seed.

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

60 ml (2.0 oz) container			
Crop	Seed inoculated by one 60 ml (2.0 oz) container	Approx. water volume	Planting window (bare seed)
Wheat	1,100 kg (2,400 lb, 40 bu)	7.0 liters (1.54 imp gal)	30 days
Pea	1,900 kg (4,200 lb, 70 bu)	6.0 liters (1.32 imp gal)	30 days
Chickpea	1,500 kg (3,300 lb, 55 bu)	4.0 liters (0.88 imp gal)	30 days
Dry Bean ¹	1,100 kg (2,400 lb, 40 bu)	3.5 liters (0.77 imp gal)	30 days
Lentil	1,100 kg (2,400 lb, 40 bu)	3.5 liters (0.77 imp gal)	30 days
Soybean	40 units (2,000 lbs at 2,800 seeds/lb)	2.8 liters (0.62 imp gal)	120 days
Sunflower ²	100 kg (220 lb)	2.0 liters (0.44 imp gal)	30 days
Sorghum ³	136 kg (300 lb)	1.8 liters (0.40 imp gal)	60 days
Alfalfa/ Sweet Clover	68 kg (150 lb)	1.5 liters (0.33 imp gal)	7 days
Canola/Mustard	63 kg (140 lb)	1.5 liters (0.33 imp gal)	60 days
Sugar Beet ³	5 units	1.0 liters (0.22 imp gal)	7 days
Corn	10 units (1 unit ⁴ = 80K seeds)	2.8 liters (0.62 imp gal)	60 days

600 ml (20 oz) container			
Crop	Seed inoculated by one 600 ml (20 oz) container	Approx. water volume	Planting window (bare seed)
Wheat	11,000 kg, (24,000 lb, 400 bu)	70 liters (15.4 imp gal)	30 days
Pea	19,000 kg, (42,000 lb, 700 bu)	60 liters (13.2 imp gal)	30 days
Chickpea	15,000 kg, (33,000 lb, 550 bu)	40 liters (8.8 imp gal)	30 days
Dry Bean ¹	11,000 kg, (24,000 lb, 400 bu)	35 liters (7.7 imp gal)	30 days
Lentil	11,000 kg, (24,000 lb, 400 bu)	35 liters (7.7 imp gal)	30 days
Soybean	400 units (20,000 lbs at 2,800 seeds/lb)	2.8 liters (6.2 imp gal)	120 days
Sunflower ²	1000 kg (2,300 lbs)	20 liters (4.4 imp gal)	30 days
Sorghum ³	1360 kg (3,000 lbs)	18 liters (4.0 imp gal)	60 days
Alfalfa/ Sweet Clover	680 kg (1,500 lbs)	15 liters (3.3 imp gal)	7 days
Canola/Mustard	630 kg (1,400 lbs)	15 liters (3.3 imp gal)	60 days
Sugar Beet ³	50 units	10 liters (2.2 imp gal)	7 days
Corn	100 units (1 unit ⁴ = 80K seeds)	28 liters (6.2 imp gal)	60 days

¹ Use 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 (1 unit = 1 bag).

- Once JumpStart[®] liquid is mixed in water, apply to seed within 24 hours.
- The planting window is the maximum time allowed between JumpStart[®] liquid 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 Novozymes BioAg Limited at 1-888-744-5662.

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Table 2: Applicator flow rate calibration (based on one 60 ml (2.0 oz) container)

Auger flow rate				Applicator rate ¹									
				Wheat		Pea		Lentil and Dry Bean		Chickpea		Soybean	
bu/hr	bu/min	kg/hr	kg/min	minutes/ container ²	L/min	minutes/ container ²	L/min	minutes/ container ²	L/min	minutes/ container ²	L/min	minutes/ container ²	L/min
240	4	6,532	109	10.0	0.71	17.5	0.32	10.0	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	5.0	1.42	8.8	0.65	5.0	0.71	6.9	0.62	5.1	0.69
600	10	16,329	272	4.0	1.78	7.0	0.81	4.0	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	5.0	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	2.0	3.55	3.5	1.62	2.0	1.78	2.8	1.55	2.1	1.73

¹ Applicator rates are calculated assuming one 60 ml (2.0 oz) container JumpStart[®] liquid is suspended in 7.0 L (1.54 imp gal) of water to inoculate 40 bu of wheat, 6.0 L (1.32 imp gal) of water to inoculate 70 bu of pea, 4.0 L (0.88 imp gal) of water to inoculate 55 bu of chickpea, 0.9 L (2.0 imp gal) of water to inoculate 40 units of soybean, or 3.5 L (0.77 imp gal) of water to inoculate 40 bu of lentil or dry bean.

² Minutes to apply one 60 ml (2.0 oz) container of JumpStart[®] liquid. (See instructions for dividing container contents in How to Apply).

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In-furrow application peanut:

- Add the contents of one 60 ml (2.0 oz) bottle, or one 600 ml (20 oz) container to the appropriate amount of water and apply at planting.
 - Once JumpStart[®] liquid is mixed in water, apply to seed in-furrow.
- 1. Clean the liquid system with a cleaning solution.** JumpStart[®] liquid 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[®] liquid 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[®] liquid bottle from the carton, shake well, remove cap and empty into the spray tank. 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 38°C (100°F).

4. Application rate/unit coverage. JumpStart[®] liquid is applied in-furrow at rates on table 3 below. The quantity of JumpStart[®] liquid applied per acre varies depending upon the row width. The measurement chart provides the recommended rate of JumpStart[®] liquid per acre and 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 application rates for peanut

ROW WIDTH (inches)	RECOMMENDED JUMPSTART [®] LIQUID RATE	60 ml (2 oz) BOTTLE TREATS	600 ml (20 oz) BOTTLE TREATS
30" (76.2 cm)	16.5 ml/ha (0.22 fl oz/acre)	3.64 ha (9 acres)	36.4 ha (90 acres)
36" (91.4 cm)	14.8 ml/ha (0.20 fl oz/acre)	4.05 ha (10 acres)	40.5 ha (100 acres)
38" (96.5 cm)	13.5 ml/ha (0.18 fl oz/acre)	4.45 ha (11 acres)	44.5 ha (110 acres)
40" (101.6 cm)	12.3 ml/ha (0.17 fl oz/acre)	4.86 ha (12 acres)	48.6 ha (120 acres)

Where to use for Maximum Benefit

For soils low to medium in available phosphate:

Use JumpStart[®] liquid 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[®].

Benefits of using JumpStart[®] liquid 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[®] liquid phosphate-solubilizing inoculant is *Penicillium bilaiae* spores. Eye or skin contact, inhalation, or ingestion should be avoided. Wear standard protective clothing and equipment including gloves and 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 a 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[®] liquid is a living organism and requires specific storage conditions to ensure viability and product performance.

To maintain product viability:

- Store JumpStart[®] liquid containers and seed to which JumpStart[®] has been applied in a cool, unheated facility <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 Novozymes BioAg Limited at 1-888-744-5662.

Unused JumpStart[®] liquid and unplanted seed to which JumpStart[®] liquid has been applied should be disposed of in accordance with applicable Federal, state/provincial, and local requirements.

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 the Seller.

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