

JumpStart[®] liquid

phosphate-solubilizing inoculant for

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

Extended Label

Improved Phosphate Availability

CONTAINS NONPLANT FOOD INGREDIENT(S)

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

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

INERT: flowable liquid



WARNING

Causes serious eye irritation.

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

How it Works

The active ingredient in JumpStart[®] liquid 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 60 ml (2.0 fl oz) bottle, or one 600 ml (20 fl oz) container to the appropriate amount of non-chlorinated 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 using for JumpStart[®] liquid application.

To divide the contents of a 60 ml (2.0 fl 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[®] liquid 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.

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, non-chlorinated water (refer to Table 1).
- While mixing continuously, slowly add the contents of the JumpStart[®] liquid 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[®] liquid suspension to seed using a batch treater.
- Fill the applicator tank with the required volume of cool, clean non-chlorinated water (refer to Table 1).
- Add the contents of one 60 ml (2.0 fl oz) bottle, or one 600 ml (20 fl 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. 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 (2.0 fl 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[®] liquid suspension in the applicator until fully suspended before inoculating the remaining bags of seed.

novozymes[®]

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

60 ml (2.0 fl oz) container			
Crop	Seed inoculated by one 60 ml (2.0 fl oz) container	Approximate water volume	Planting window (bare seed)
Wheat	2,400 lb, 40 bu (1,100 kg)	7.6 US quarts (7.0 liters)	30 days
Pea	4,200 lb, 70 bu (1,900 kg)	6.3 US quarts (6.0 liters)	30 days
Chickpea	3,300 lb, 55 bu (1,500 kg)	4.2 US quarts (4.0 liters)	30 days
Dry Bean ¹	2,400 lb, 40 bu (1,100 kg)	3.7 US quarts (3.5 liters)	30 days
Lentil	2,400 lb, 40 bu (1,100 kg)	3.7 US quarts (3.5 liters)	30 days
Soybean	40 units (2,000 lbs at 2,800 seeds/lb)	3.0 US quarts (2.8 liters)	120 days
Sunflower ²	230 lbs (100 kg)	2.1 US quarts (2.0 liters)	30 days
Sorghum ³	300 lbs (136 kg)	1.9 US quarts (1.8 liters)	60 days
Alfalfa/Sweet Clover	150 lbs (68 kg)	1.6 US quarts (1.5 liters)	7 days
Canola/Mustard	140 lbs (63 kg)	1.6 US quarts (1.5 liters)	60 days
Sugar beet ³	5 units	1.0 US quarts (1.0 liters)	7 days
Corn	10 units (1 unit = 80K seeds)	3.0 US quarts (2.8 liters)	60 days

600 ml (20 fl oz) container			
Crop	Seed inoculated by one 600 ml (20 fl oz) container	Approximate water volume	Planting window (bare seed)
Wheat	24,000 lb, 400 bu (11,000 kg)	76 US quarts (70 liters)	30 days
Pea	42,000 lb, 700 bu (19,000 kg)	63 US quarts (60 liters)	30 days
Chickpea	33,000 lb, 550 bu (15,000 kg)	42 US quarts (40 liters)	30 days
Dry Bean ¹	24,000 lb, 400 bu (11,000 kg)	37 US quarts (35 liters)	30 days
Lentil	24,000 lb, 400 bu (11,000 kg)	37 US quarts (35 liters)	30 days
Soybean	400 units (20,000 lbs at 2,800 seeds/lb)	30 US quarts (28 liters)	120 days
Sunflower ²	2,300 lbs (1,000 kg)	21 US quarts (20 liters)	30 days
Sorghum ³	3,000 lbs (1,360 kg)	19 US quarts (18 liters)	60 days
Alfalfa/Sweet Clover	1,500 lbs (680 kg)	16 US quarts (15 liters)	7 days
Canola/Mustard	1,400 lbs (630 kg)	16 US quarts (15 liters)	60 days
Sugar beet ³	50 units	10 US quarts (10 liters)	7 days
Corn	100 units (1 unit = 80K seeds)	30 US quarts (28 liters)	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.

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 at 1-888-744-5662.

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

Auger flow rate				Applicator rate ¹							
				Wheat		Pea		Lentil and Dry Bean		Chickpea	
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
240	4	14,400	240	10	0.75	17.5	0.34	10	0.38	13.8	0.33
360	6	21,600	360	6.7	1.13	11.7	0.51	6.7	0.56	9.2	0.49
480	8	28,800	480	5	1.5	8.8	0.69	5	0.75	6.9	0.65
600	10	36,000	600	4	1.88	7	0.86	4	0.94	5.5	0.82
720	12	43,200	720	3.3	2.25	5.8	1.03	3.3	1.13	4.6	0.98
840	14	50,400	840	2.9	2.63	5	1.2	2.9	1.31	3.9	1.15
960	16	57,600	960	2.5	3	4.4	1.37	2.5	1.5	3.4	1.31
1080	18	64,800	1080	2.2	3.38	3.9	1.54	2.2	1.69	3.1	1.47
1200	20	72,000	1200	2	3.75	3.5	1.71	2	1.88	2.8	1.64

Auger flow rate				Applicator rate ¹							
				Wheat		Pea		Lentil and Dry Bean		Chickpea	
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
240	4	6,532	109	10	0.71	17.5	0.32	10	0.36	13.8	0.31
360	6	9,798	163	6.7	1.07	11.7	0.48	6.7	0.53	9.2	0.46
480	8	13,063	218	5	1.42	8.8	0.65	5	0.71	6.9	0.62
600	10	16,329	272	4	1.78	7	0.81	4	0.89	5.5	0.78
720	12	19,595	327	3.3	2.13	5.8	0.97	3.3	1.07	4.6	0.93
840	14	22,861	381	2.9	2.49	5	1.14	2.9	1.24	3.9	1.09
960	16	26,127	435	2.5	2.84	4.4	1.30	2.5	1.42	3.4	1.24
1080	18	29,393	490	2.2	3.20	3.9	1.46	2.2	1.60	3.1	1.39
1200	20	32,659	544	2	3.55	3.5	1.62	2	1.78	2.8	1.55

¹ Applicator rates are calculated assuming one 60 ml (2.0 fl oz) container of JumpStart[®] liquid is suspended in 7.6 US quarts (7.0 liters) of water to inoculate 40 bu of wheat, 6.3 US quarts (6.0 liters) of water to inoculate 70 bu of pea, 4.2 US quarts (4.0 liters) of water to inoculate 55 bu of chickpea, 9.4 US quarts (9 liters) of water to inoculate 40 units of soybean, or 3.7 US quarts (3.5 liters) of water to inoculate 40 bu of lentil or dry bean.

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

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In-furrow application peanut:

- Add the contents of one 60 ml (2.0 fl oz) bottle, or one 600 ml (20 fl oz) container to the appropriate amount of non-chlorinated 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 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 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 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 (inches)	RECOMMENDED JUMPSTART [®] LIQUID RATE	60 ml (2 oz) BOTTLE TREATS	600 ml (20 oz) BOTTLE TREATS
30"	0.22 fl oz/acre	9 acres	90 acres
36"	0.20 fl oz/acre	10 acres	100 acres
38"	0.18 fl oz/acre	11 acres	110 acres
40"	0.17 fl oz/acre	12 acres	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 [15-20 lb P₂O₅/acre (16.8-22.4 kg P₂O₅/ha)] with JumpStart[®] liquid.

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 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[®] 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[®] liquid has been applied in 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 Novozymes BioAg 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. Seed treated with JumpStart[®] liquid 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 the Seller.

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