

# JumpStart<sup>®</sup> wettable powder

## phosphate-solubilizing inoculant for use on

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

### Extended Label

#### **MINIMUM GUARANTEE ANALYSIS**

ACTIVE:  $7.2 \times 10^8$  cfu/g *Penicillium bilaiae*

INERT: wettable powder

#### **NON-PLANT FOOD INGREDIENT**

**Not a fertilizer substitute**

#### **How it Works**

The active ingredient in JumpStart<sup>®</sup>, 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 57 g (2.0 oz), one 80 g (2.8 oz) or one 400 g (14 oz) container to the appropriate amount of water (refer to table 1) prior to or during seeding.

JumpStart 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 bottle of JumpStart, first dissolve the entire contents of the bottle in 500 ml (0.5 US quarts) water, mix thoroughly and divide the mixture into smaller quantities as desired. JumpStart in solution must be applied to the seed within 24 hours.

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

JumpStart applied to bare seed should be planted according to the planting windows listed on table 1. JumpStart 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.

#### **Continuous flow application:**

##### **Wheat, pea, lentil, chickpea, or dry bean**

- Apply the JumpStart 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 container to the water in the applicator tank.

#### **Batch application:**

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

- Apply JumpStart 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 57 g (2.0 oz) bottle, one 80 g (2.8 oz) bottle or one 400 g (14 oz) JumpStart 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 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 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 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**

57 g (2.0 oz) container			
Crop	Seed inoculated by one 57 g (2.0 oz) container	Approx. 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 <sup>1</sup>	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 <sup>2</sup>	100 kg (220 lb)	2.0 litres (2.1 US quarts)	30 days
Sorghum <sup>3</sup>	136 kg (300 lb)	1.8 litres (1.9 US quarts)	60 days
Alfalfa/ Sweet Clover	68 kg (150 lb)	1.5 litres (1.6 US quarts)	7 days
Canola/Mustard	63 kg (140 lb)	1.5 litres (1.6 US quarts)	60 days
Sugar Beet <sup>3</sup>	5 units	1.0 litres (1.0 US quarts)	7 days
Corn	800,000 kernels (10 bags <sup>4</sup> )	2.8 litres (3.0 US quarts)	60 days

400 g (14.0 oz) container			
Crop	Seed inoculated by one 400 g (14.0 oz) container	Approx. 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, 400 bu)	30.0 litres (32.0 US quarts)	30 days
Dry Bean <sup>1</sup>	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 <sup>2</sup>	700 kg (1,540 lb)	14.0 litres (15.0 US quarts)	30 days
Sorghum <sup>3</sup>	952 kg (2,100 lb)	12.6 litres (13.5 US quarts)	60 days
Alfalfa/ Sweet Clover	500 kg (1,100 lb)	10.0 litres (11.0 US quarts)	7 days
Canola/Mustard	455 kg (1,000 lb)	10.0 litres (11.0 US quarts)	60 days
Sugar Beet <sup>3</sup>	35 units	7.0 litres (7.5 US quarts)	7 days
Corn	5,600,000 kernels (70 bags <sup>4</sup> )	19.6 litres (20.71 US quarts)	60 days

80 g (2.8 oz) container			
Crop	Seed inoculated by one 80 g (2.8 oz) container	Approx. 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 (6.3 US quarts)	30 days
Dry Bean <sup>1</sup>	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 <sup>2</sup>	140 kg (310 lb)	2.8 litres (3.0 US quarts)	30 days
Sorghum <sup>3</sup>	190.4 kg (420 lb)	2.5 litres (2.7 US quarts)	60 days
Alfalfa/ Sweet Clover	100 kg (220 lb)	2.0 litres (2.2 US quarts)	7 days
Canola/Mustard	90 kg (198 lb)	2.0 litres (2.2 US quarts)	60 days
Sugar Beet <sup>3</sup>	7 units	1.4 litres (1.0 US quarts)	7 days
Corn	1,120,000 kernels (14 bags <sup>4</sup> )	3.92 litres (4.14 US quarts)	60 days

- Once Jumpstart is mixed in water, apply to seed within 24 hours.
- The planting window is the maximum time allowed between JumpStart 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.

<sup>1</sup> Use pinto, great northern, black, navy, kidney, red, and pink bean.

<sup>2</sup> When treating confectionary sunflowers, increase water rates to ensure proper coverage.

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

<sup>4</sup> 80,000 kernels per bag.

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

Auger flow rate				Applicator rate <sup>1</sup>									
				Wheat		Pea		Lentil and Dry Bean		Chickpea		Soybean	
bu/hr	bu/min	kg/hr	kg/min	minutes/ container <sup>2</sup>	L/min	minutes/ container <sup>2</sup>	L/min	minutes/ container <sup>2</sup>	L/min	minutes/ container <sup>2</sup>	L/min	minutes/ container <sup>2</sup>	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

Auger flow rate				Applicator rate <sup>1</sup>									
				Wheat		Pea		Lentil and Dry Bean		Chickpea		Soybean	
bu/hr	bu/min	lb/hr	lb/min	minutes/ container <sup>2</sup>	quarts/ min	minutes/ container <sup>2</sup>	quarts/ min	minutes/ container <sup>2</sup>	quarts/ min	minutes/ container <sup>2</sup>	quarts/ min	minutes/ container <sup>2</sup>	quarts/ min
240	4	14,400	240	10.0	0.75	17.5	0.34	10.0	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	5.0	1.5	8.8	0.69	5.0	0.75	6.9	0.65	5.1	0.73
600	10	36,000	600	4.0	1.88	7.0	0.86	4.0	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	5.0	1.2	2.9	1.31	3.9	1.15	2.9	1.28
960	16	57,600	960	2.5	3.0	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	2.0	3.75	3.5	1.71	2.0	1.88	2.8	1.64	2.1	1.83

<sup>1</sup> Applicator rates are calculated assuming one 57 g (2.0 oz) container JumpStart is suspended in 7L (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.

<sup>2</sup> Minutes to apply one 57 g (2.0 oz) container of JumpStart. (See instructions for dividing container contents in How to Apply).

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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 water and apply at planting.
- Once JumpStart is mixed in water, apply to seed in-furrow.

**1. Clean the liquid system with a cleaning solution.** JumpStart 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 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 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 is applied in-furrow at rates on table 3 below. The quantity of JumpStart applied per acre varies depending upon the row width. The measurement chart provides the recommended rate of JumpStart 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	Application rate	57 g (2 oz) bottle treats	80 g (2.8 oz) bottle treats	400 g (14 oz) bottle treats
<b>7.62 cm (30")</b>				
Single row	11.6 g/ha (0.166 oz/ac)	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/ac)	1.7 ha (4.2 acres)	2.36 ha (5.8 acres)	11.8 ha (29.1 acres)
<b>91.4 cm (36")</b>				
Single row	14.0 g/ha (0.2 oz/ac)	4.04 ha (10 acres)	5.67 ha (14 acres)	28.4 ha (70 acres)
Twin row	28.0 g/ha (0.4 oz/ac)	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 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 P<sub>2</sub>O<sub>5</sub>/ha (15-20 lb P<sub>2</sub>O<sub>5</sub>/acre)] with JumpStart.

## Benefits of using JumpStart 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 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 is a living organism and requires specific storage conditions to ensure viability and product performance.

To maintain product viability:

- Store JumpStart 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 and unplanted seed to which JumpStart has been applied should be disposed of in accordance with applicable Federal, state/provincial, and local requirements.

## 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.

**novozymes** 

Novozymes BioAg  
3935 Thatcher Avenue  
Saskatoon, SK S7R 1A3  
1-888-744-5662  
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