Brushmaster ™ Inoculant Applicator.

Operations manual.

Overview:

The ***Brushmaster*** ™ Inoculant Applicator is designed to provide thorough coverage of seeds with **Inoculeze ™ Plus** Rhizobia inoculant. Seed coverage is equal to, or better than that obtained using traditional higher liquid volume methods, provided that the applicator is operated according to these instructions.

Generation of large numbers of liquid droplets with a narrow size spectrum by the spinning disc in the applicator results in seed coverage with small quantities of liquids to a standard not obtainable with other types of spray nozzles. Consequently, the applicator can thoroughly inoculate seed as it falls in to the seeder box without wetting the seed excessively and therefore seed can be treated immediately before planting.

Inoculant liquid is fed to the disc from the inoculant bucket by a 12 volt electric pump at a flow rate that remains relatively constant. The applicator is mounted either on the end of the auger supplying grain in to the seeder bin, or at any other point where grain is falling from a storage bin or silo prior to loading in to the seeder. The applicator can treat seeds at flow rates up to one tonne per minute.

It is important to remember that inoculants are living organisms. While the applicator provides the advantage of applying inoculants as close to planting as possible, every effort should be made to protect the inoculants from extreme heat and strong sunlight prior to use. Water of drinking quality should be used in mixing the inoculants and contamination of any mixing or application equipment by fungicides and insecticides must be avoided.

Pesticide mixes.

Some fungicides and insecticides are tolerated by inoculants for short periods of exposure prior to planting, while others will kill the inoculants very quickly. Consult the inoculant label or the inoculant supplier for advice prior to applying pesticides to seed that will be inoculated before planting. *Never mix pesticides with inoculants.*

Treatment timing.

The applicator can treat seed in any situation where the seed is falling at a constant rate from a chute or auger. For maximum microbe survival, it is preferable to treat the seed as close to planting as possible and the low liquid rates used allow seed to be treated as it is loaded in to the planter box. However inoculation can take place at an earlier stage, with the proviso that microbe survival is always less certain if planting is delayed.

Operating instructions.

Efficient seed coverage is dependent on the applicator disc spinning at high revolutions.
Use good quality "D" batteries to power the applicator disc. Fresh batteries should operate the motor at full power for at least four hours.
Ensure that the 12 volt pump battery is fully charged before commencing inoculation.
The applicator was not designed for the application of fungicides or insecticides. However if these products are applied through the applicator, the rates of application should be according to the pesticide labels.
Avoid prolonged exposure of inoculant mixes to sunlight or high temperatures.
Use good quality water in inoculant mixes.

Operating the applicator:.

Apply a small amount of a light lubricant oil to the brush spindle where it enters the motor if the applicator has not been used for some time.
Mount the applicator in a position that allows the column of falling grain to strike the middle of the applicator spreader plate.
Attach the supplied delivery sleeve if the applicator is positioned high enough above the seed bin to cause grain to splash out of the bin opening.
Ensure that the pump electrical leads are connected to the correct battery terminal.
Switch on the motor to ensure that the disc is rotating at full speed, run the pump briefly to prime the delivery line and to check that the nozzle is not blocked, then commence the flow of grain.

After use:.

Flush out the container and applicator with clean water, run the motor for 30 seconds to dry the disc and then remove the batteries.

Application rates:.

Before use, measure the time taken to fill the seeder box or bin with grain flowing from the auger or chute.
Refer to the applicator charts to determine which nozzle will provide the recommended coverage for the grain type at the existing flow rate from the auger or chute.

Grain legume inoculation:.

Carefully read the directions for use on the Inoculeze ™ Plus pack.
Determine the rate of grain flow through the applicator as accurately as possible and select the appropriate nozzle according to the table below.

Grain flow per minute.	Nozzle to use.	Application rate per tonne.
Up to 290 Kg.	Small.	1 to 2 litres.
290 to 650 Kg.	Medium.	1 to 2 litres.
More than 650 Kg.	Large.	1.5 to 2.2 litres.

Application of other inoculants than Inoculeze ™ Plus:.

The inoculant material should be mixed according to the directions on the product pack and then placed in to the applicator bucket.
It is necessary to calibrate grain flow accurately to avoid wasting inoculant by applying too much, or applying too little to be effective.
Once the grain flow rate is known, the correct nozzle to be fitted can be determined from the cereal application chart. (See page 4).

The viscosity of the inoculant mix will affect flow rates.

Application of Inoculeze™ Plus Instant Rhizobia inoculants.

Ensure that the strain of Rhizobia is appropriate for the pulse crop to be planted.
Fit the supplied calico bag over the bucket pump inlet to ensure that a clump of peat or debris falling in to the bucket does not cause a blockage.
Push the pump down against the bottom of the bucket.
Open the bottle as close to the time of application as possible.
Place two litres of drinking quality water in the applicator bucket. Open the Inoculeze ™ Plus bottle and add clean water until the bottle is three quarters full. Replace the lid and shake the bottle vigorously for about twenty seconds. Pour the mixture in to the applicator bucket. Repeat the process until all the inoculant is flushed from the bottle; usually two flushes is sufficient.
Top up the bucket so that it contains at least two and a half litres if using a one tonne pack and five litres for a two tonne pack.
About 700 ml of liquid will remain in the bucket after use if the pump is against the bottom of the bucket. This can be spread evenly over the top of the treated seed, or if another load is to be treated on the same day the mixture can be added to the next batch.
Dispose of packaging in an appropriate manner.
Do not attempt to use standard milled peat inoculant through the applicator; it will block the nozzle, even if it is strained.

Grain flow per minute.	**Quantity of grain treated per hour of operation..**
150 kg.	9 tonnes.
200 kg.	12 tonnes.
250 kg.	15 tonnes.
325 kg.	19.5 tonnes.
450 kg.	27 tonnes.

Grain application rates:.

Apply the inoculant mixture to a falling column of grain using the appropriate nozzle for the grain flow rate. Application rates shown in this table are ml. of inoculant per tonne of grain.
Inoculant flow rates may vary depending on viscosity and battery charge.
These application rates should be regarded as a guide only.

Nozzle size	**Large**	**Medium**	**Time to**
Liquid rate	**1500 ml/minute**	**625 ml/minute**	**treat one tonne.**
Grain flow	175kg/minute.	3590 ml/tonne.	5 min. 43 sec**.**
	200	3120	5 minutes**.**
	225	2770	4 min. 26 sec.
	250	2500	4 minutes**.**
	275	2270	3 min. 38 sec.
	300	2060	3 min. 20 sec.
	325	1915	3 min. 5 sec.
	350	1800	2 min. 52 sec.
	375	3990 ml/tonne	2 min. 40 sec**.**
	400	3750	2 min. 30 sec**.**
	425	3510	2 min. 21 sec.
	450	3330	2 min. 13 sec.
	475	3150	2 min. 6 sec.
	500	3000	2 minutes.
	525	2850	1 min. 54 sec.
	550	2715	1 min. 49 sec.
	575	2595	1 min. 44 sec.
	600	2490	1 min. 40 sec.
	625	2400	1 min. 36 sec.
	650	2295	1 min. 32 sec.
	675	2225	1 min. 29 sec.
	700	2145	1 min. 26 sec.
	725	2070	1 min. 23 sec.
	750	1995	1 min. 20 sec.
	775	1920	1 min. 17 sec.
	800	1875	1 min. 15 sec**.**

Warranty: The ***Brushmaster*** **™** Inoculant Applicator is guaranteed against component or manufacturing defects for a period of twelve months from the date of purchase, provided that it is used according the instructions in this manual. In the event of a failure, please contact the retailer from whom the unit was purchased.

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