



The time for sowing is often short, and the inoculation can be a nuisance

Seed inoculation with the spray gun - the solution for liquid inoculants

Even after repeated soybean cultivation, inoculation with rhizobia leads to higher yields and protein content. With about 30 €/ha the costs are low - but some farmers are deterred from the effort of inoculation. Especially during the tense sowing period. With the conventional inoculation procedure using a concrete mixer, the seed quality suffers and in many cases the rhizobia are not optimally distributed.

After the topic had been discussed once again at the annual Taifun Soy Conference, one of our seed propagators from Austria contacted me:

"I believe you are thinking too complicated. Take a spray gun, one of those 20 € ones from the hardware store. Run the beans into an empty big bag and spray the inoculant directly on the falling beans."

A practical test has convinced us: A quarter of an hour is sufficient to inoculate 500 kg of seeds thoroughly and gently with a few simple steps. Additionally no further purchases are necessary. Just in time for this realization, three liquid inoculants have been launched on the market: Rhizoliq, LiquiFix and Turbosoy, which compete with the best peat inoculations in terms of yield and protein.



-1- Inoculation with the spray gun is simple, efficient and very gentle on the seed

Pros and Cons

- ⊕ Gentle on the seed: In contrast to concrete mixers or augers, the sensitive soybean seeds are practically not stressed
- ⊕ Quality of work: When carefully carried out, the inoculant can be distributed very evenly in 3-4 rounds. It is not necessary to dye the colourless liquid inoculants to check the accuracy of the distribution.
- ⊕ Time requirements: Both the preparation and follow-up as well as the inoculation itself are significantly faster than with conventional methods
- ⊕ Equipment: The necessary equipment and materials are available on most farms at all times.
- ⊖ Bacteria density: Rhizobia can react sensitively to the negative pressure created by the spray gun. We have had the rhizobia density checked before and after spraying: With the nozzle wide open, there's no problem.



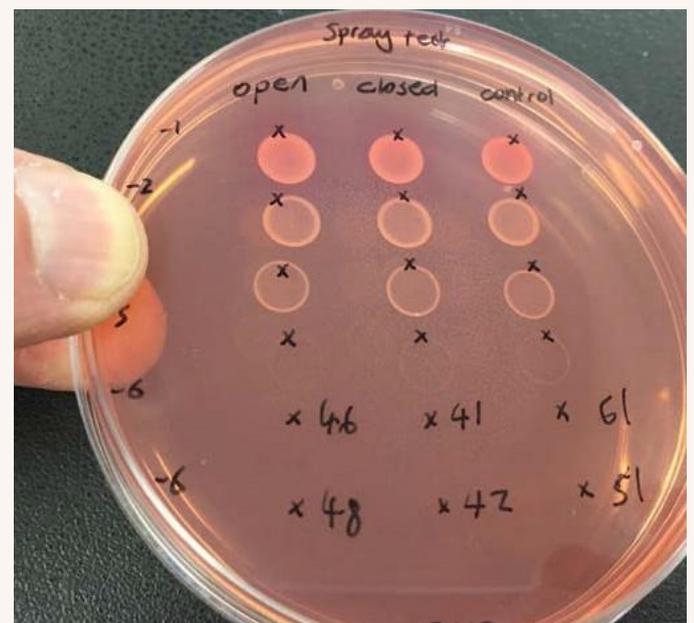
Cumbersome and bad for the seeds: Inoculation in a concrete mixer



Low set-up time and low material requirements - only two forklifts or front loaders are required.



The inoculation can hardly be evenly distributed in the mixer



The test in the laboratory of our inoculation manufacturer has shown that with the nozzle wide open, the rhizobia remain largely unharmed.

Equipment and materials

The equipment for the procedure is very simple:

- Seeds in big bags. The outlets of the big bags should be as narrow as possible. For seeds in sacks simply decant those into big bags.
- An empty big bag
- Liquid inoculation
- 2 forklifts. Alternatively, it is also possible to work with only one stacker and large crates instead of big bags.
- CLEAN spray gun
- Compressor or compressed air from a tractor
- When using 2-component inoculation (Rhizoliq, Turbosoy): Measuring cup and stirring rod
- Disposable respiratory protection and rubber gloves



The design of the spray gun is not decisive. The 20 Euro version from the DIY store is sufficient.



The system works also with a wide outlet on the big bag if it is narrowed directly by hand. Once it is fully open, it is difficult to reduce the flow rate.

How it's done

1. Measure the amount of inoculant for one big bag of seeds.
2. Turn the nozzle on the spray gun all the way open to increase the flow rate and to reduce the negative pressure on the rhizobia
3. Fill the cartridge. Usually not everything fits at once.
4. Align the full big bag over the empty big bag and open it carefully
5. Spray the inoculant continuously into the seed flow in the lower big bag
6. Repeat the procedure 3-4 times until the inoculant is used up and evenly distributed.
7. As always, inoculate in the shade! Rhizobia do not tolerate heat and above all no UV radiation.
8. The seeds can be filled into the seed tank soon after inoculation. With the new liquid inoculants, the seeds tend to clump less than it was the case with Force 48 - especially with an optimal distribution!



It is best to work on the big bags when the forklifts face each other at 90°.



Narrow the outlet on the big bag slightly by hand to reduce the seed flow. Otherwise, an unnecessary number of repetitions may be required to apply the entire inoculant.



The inoculant is sprayed as a dense mist into the seed flow in the lower big bag



Most of the work consists of exchanging the big bags by forklifts

Conclusion

With the method presented, the discussion about the best inoculation procedure should come to an end. Also the pre-inoculation, which often brings bad results in practice, loses its importance if even large quantities of seeds can be inoculated efficiently and with best quality immediately before sowing.

With the introduction of colourless liquid inoculants, the discussion arose about the extent to which colouring was necessary to control the accuracy of the rhizobia distribution. In my opinion, the use of a spray gun with several rotations from big bag to big bag guarantees a good distribution; no further control of the distribution is necessary.

With many thanks to our Oberweidner soy farmers for their valuable tips and advice.

For comprehensive information on all aspects of soy cultivation visit:

www.sojafoerderring.de

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