



Borregaard

GREENSPERSE CA-N IN FS FORMULATIONS

Greensperse® CA-N is a bio-based binder for FS formulations, It reduces dust-off and maintains the flowability of coated seeds.

PURPOSE

Showcase an example of how Greensperse CA-N can replace synthetic binders in FS-formulations for seed coating.

RESULTS

Greensperse CA-N is a good choice for a bio-based binder in FS formulations, giving reduced dust-off and maintaining flowability of the final coated seeds. Greensperse CA-N also exhibit dispersant functions as well as binding abilities and can improve the suspension stability of the formulation.

Greensperse CA-N provides

Reduced dust-off from the seed coating

Maintenance of flowability of the seeds after coating

Additional dispersant effect



PROCEDURE

The results are illustrated by the following experimental work:

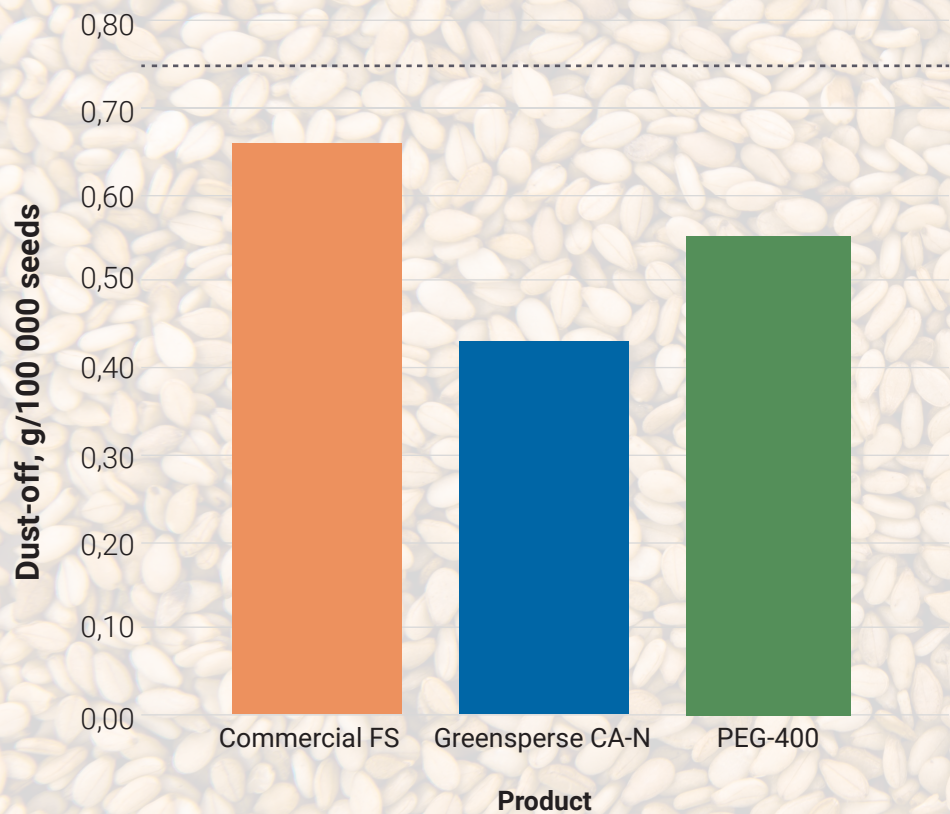
Greensperse CA-N as a binder in FS formulation for seed coating

An FS formulation based on the active ingredient Tebuconazole was prepared with Greensperse CA-N as a binder. The formulation contains 5,91% Tebuconazole and 18,7% Greensperse CA-N. The same formulation was prepared with a PEG 400 binder serving as a benchmark. For additional reference a commercial in-can FS formulation based on the same active ingredient was also included in the experimental set-up. These formulations were applied to corn seeds with a SATEC ML2000 at an application rate of 1.6 g/kg seeds.

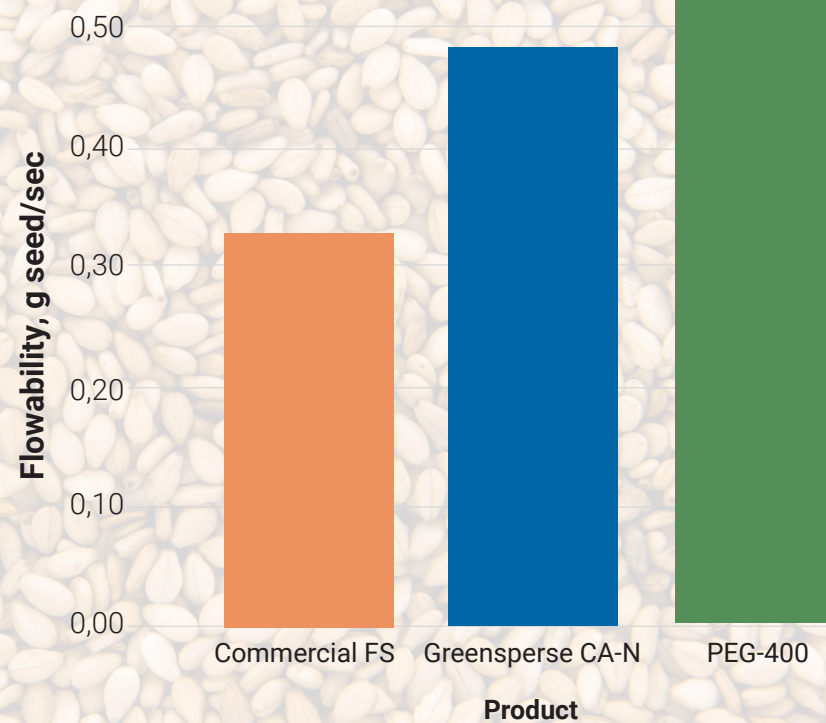
The dust-off from the various coatings was measured with the Heubach test and the results are reported as grams of dust-off per 100 000 seeds. The flowability of the coated seeds was tested by the funnel test, measuring the time it takes to pass 0,5 kg seeds through a funnel with an opening of 3 cm.



Dust-off



Flowability



DISCUSSION

The resultant physical properties of the treated seeds illustrate the performance of Greensperse CA-N as a binder in an FS formulation based on Tebuconazole.

When using equal amounts of Greensperse CA-N and PEG 400, the dust-off from the seeds is reduced from 0.55 to 0.43 g dust/100 000 seeds, respectively. When comparing to the commercial FS formulation, the reduction is even greater, from 0.66 to 0.43 g dust/100 000 seeds for Greensperse CA-N and PEG, respectively.

All three treatments in this set-up meet the industrial standard for dust-off at 0.75 g dust/100 000 seeds. The large reduction in dust-off provided by Greensperse CA-N gives the FS formulation additional value, because safety when handling the final treated seeds is improved. It also provides room for reducing the amount of binder to optimise cost-performance.

The flowability of the treated seeds is also an important factor influenced by the seed coating. The FS formulation based on Greensperse CA-N had flowability of 148 g seed/second. This is slightly lower than the formulation with PEG 400 as a binder, which had a flowability of 157 g seed /second. Yet, the flowability observed with Greensperse CA-N is above the flowability observed in the commercial reference of 132 g seeds/second.

Greensperse CA-N is shown to be an excellent replacement for synthetic binders in seed coating. It is bio-based, high performing and cost-effective.



CONCLUSIONS

Greensperse CA-N is an excellent choice for biobased binder in FS-formulations for seed coating.

When being compared to a PEG 400 binder at similar dosages, the dust-off from the seed coat is reduced and the flowability maintained.

Lignosulfonate-based binder also have a dispersing effect, that offers additional benefits when included in an FS-formulation.

This work was performed by an external research institute.

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Greensperse CA-N is designed to

Replace synthetic binders in FS-formulations

Reach target levels of flowability of the coated seed

Improve the dust-off from the seed when exposed to mechanical stress

Provide cost advantage versus other high-performance binders

Provide an additional dispersant effect in the FS-formulation