

SEEDS EMPOWERED:**Unleashing the Power of Plant-Based Seed Treatments for Enhanced Crop Performance and Sustainability****INTRODUCTION**

Seed treatment is a crucial process in modern agriculture that involves the precise application of various ingredients, such as fungicides, insecticides, inoculants, plant growth regulators, fertilizers, and biostimulants, to seeds before planting.

This process provides optimal conditions for germination, emergence, and early plant growth, ultimately supporting high crop yields. **Seed treatments protect crops during their most vulnerable stages while minimizing the environmental impact associated with large-scale farming practices.**

Driven by the consumer demand for more environmentally friendly produce, seed treatment solutions are evolving and are also impacted by global initiatives and tightening regulations.

In Europe and the United States alike, several regulations like the European Green Deal, the Farm-to-Fork strategy and USDA Agricultural Innovation Agenda have intensified the need for more sustainable seed treatment formulations.

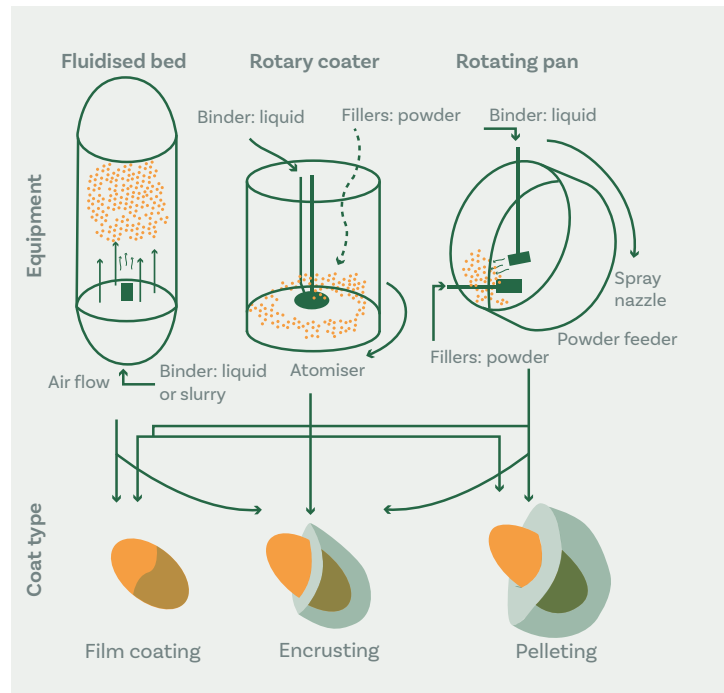


Figure 1 : Examples of processes used for seed treatment and the resulting products.

NOURISHING GROWTH FROM THE START WITH PLANT-BASED INGREDIENTS

Roquette, a leading provider of plant-based solutions, offers an **extensive range of innovative seed treatment co-formulants derived from natural sources.**

These formulations not only enhance seed performance by improving germination, seedling vigor, and protection against early-season insects and diseases, but also demonstrate Roquette's commitment to sustainable agriculture.

Roquette's seed treatment solutions include biodegradable binders, film-forming agents, coatings, bulking agents, and plasticizers, available in both liquid and powder forms.

A dedicated range of seed treatment solutions:

- ROQUETTE PC COAT FL 01 specialty syrup
- ROQUETTE PC COAT FL 02 specialty syrup
- TACKIDEX® modified starches
- TACKIDEX® dextrin
- STABILYS® thermally modified starches
- NEOSORB® sorbitol

By harnessing the power of plant-derived ingredients, Roquette is redefining seed treatment technology and contributing to a more sustainable future for agriculture..

ASSESSING THE PERFORMANCE OF ROQUETTE PRODUCTS FOR ALFALFA ENCRUSTATION

In this study, experiments were carried out to assess the performance of Roquette products for encrusting alfalfa seeds.

Firstly, tests were carried out using Roquette Product A which was added at different concentrations in the range 30 - 60% (w/w dry) with the aim of determining the level required to maximize coverage.

The balance of the encrusting mix was filler, and the encrusting process was carried out in a rotary coater, sequentially adding dry ingredients and water to produce a stable coating. Unsurprisingly, increasing Product A concentration increases coverage (see figure 6) but even at high loadings coverage is incomplete. A surfactant/dispersant was therefore added with the aim of decreasing the surface tension of the encrusting mixture and improving coverage.

Figure 2 shows the impact of the dispersant in terms of the number of covered particles (green line), partially covered particles (amber line) and agglomerated particles (red line). Just 1% dispersant gives optimal performance in combination with a Product A concentration of 40%; higher binder concentrations result in agglomeration.

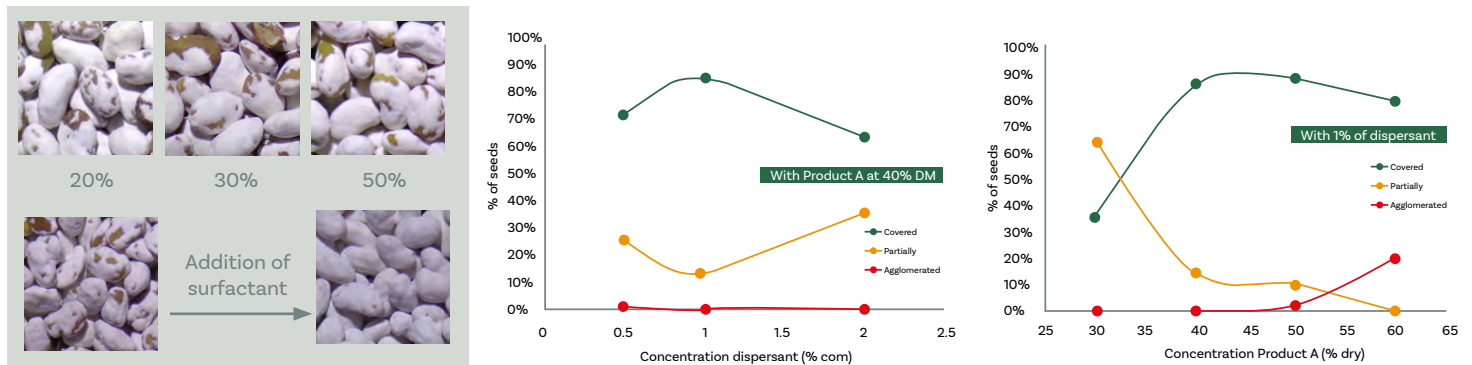
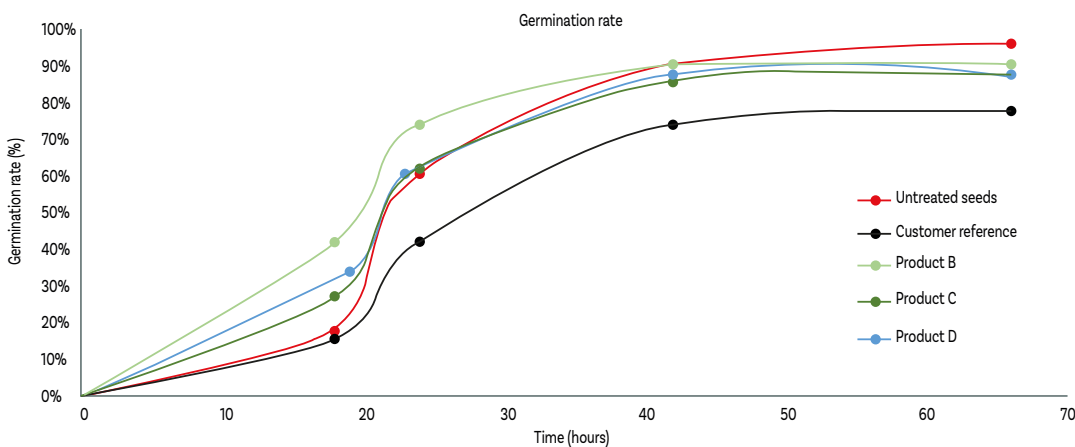


Figure 2: The addition of a dispersant improves coverage. Maximum coverage is achieved with a 1% dispersant level in combination with a 40% product A concentration.



Three other Roquette products, Products B, C, and D, were also assessed for this encrusting application. Product B gives good coverage at both 20 and 30% but the viscosity of the encrusting solution becomes too high for successful processing at 40%; Product D exhibits good coverage at 30%. (See Figure 3 and Table 1)

Binder	Non treated Alfalfa	Customer reference	Product B (15%)	Product C (70%)	Product D (30%)
Thousand Grain Weight	1.98	3.00	2.85	2.92	3.13
H ₂ O (%)	-	6.1	5.8	6.2	5.6
Abrasion (%)	-	0.46	0.27	0.00	0.09
Germination (%)	96	78	90	88	88

Observations	Product B (15%)	Product C (70%)	Product D (30%)
	Presence of dust Regular shape Full seed coverage	No dust Lower seed coverage	Low dust Good seed coverage

Figure 3 and Table 1 show summary data for seeds encrusted using the Roquette product formulations (B, C and D), customer reference formulation, and untreated seeds.

Germination data show that the Roquette solutions accelerate germination relative to the reference as well as ultimately delivering germination rates closer to those of the untreated seeds, far higher than those of the reference.

The tabulated data show that by switching to Roquette products it is feasible to make encrusted seeds of comparable weight and water content to the reference, but with lower abrasion (as measured with the Heubach dust meter), minimal dusting, and with significantly higher germination rates. These are beneficial gains to set alongside the better environmental credentials of the Roquette products.

To find out more about our plant-derived products for plant nutrition and protection products and how they can help you formulate an optimized plant care solution for your needs, check our [website](#) and [contact us](#)

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