

Seed Priming & Conditioning Effects in Hemp

Presented with Incotec



Arcadia presents GoodHemp



GoodHemp Innovation

- 18+ years of experience
- Highly skilled team
 - Genomics, breeding, plant science, seed production, field agronomy
- Other experts needed
 - Harvesting and equipment
 - Extraction
 - Food science and integration of CBD and other cannabinoids into products



Valuable Partners and Expertise

Arcadia values quality, innovative partner relationships and brings that value and commitment to innovation to GoodHemp

- Utilize long-standing networks to benefit GoodHemp customers
- Committed to bring meaningful improvements to the profitability and efficiency of hemp production



Improving Germination and Early Vigor Improves Yields

- How is this accomplished?
 - Impact of seed priming or seed treatment
 - Seed enhancement and seedling production
 - Seed coatings and pelletizing





incotec

the seed enhancement company

Part of Croda International Plc



Hello 😊

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Located in Salinas, California.

Graduate of UC Davis and Santa Clara University, 24 years experience in the seed industry developing value added seed enhancement treatments.

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Incotec in short

Incotec is *the* seed enhancement company, independently providing solutions through innovative technologies and services, focusing on customer needs.



CONTRIBUTING TO FEEDING
THE WORLD, BY GETTING
THE UTMOST OUT OF SEED

Seed enhancement is

Any seed treatment between seed harvest and planting, aimed at improved physical purity, germination speed and vigor, plant health, and/or to most effectively and safely apply PPPs, additives and biologicals, in order to maximize efficiency or yield.



Incotec Seed Technologies

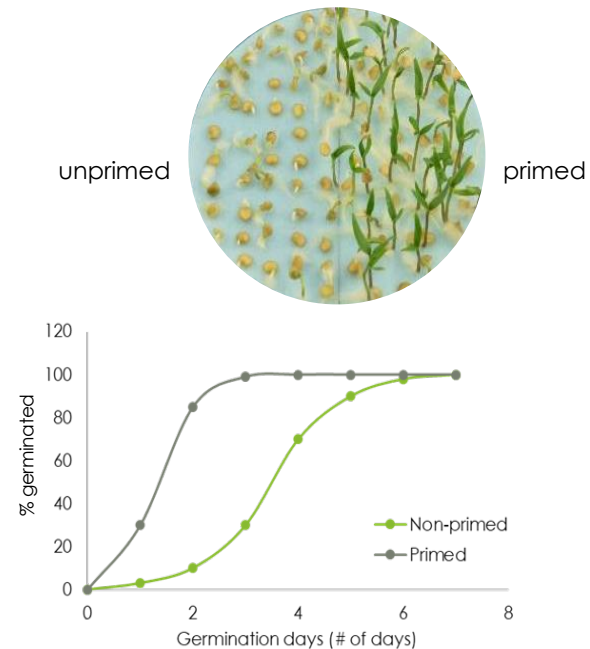


Priming (pre-germination)

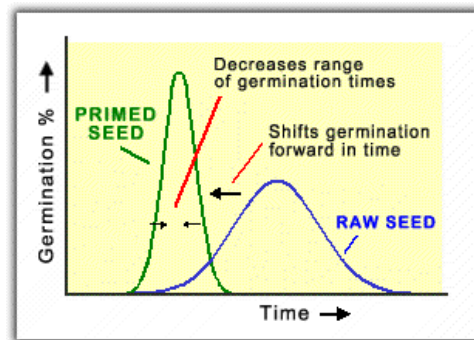
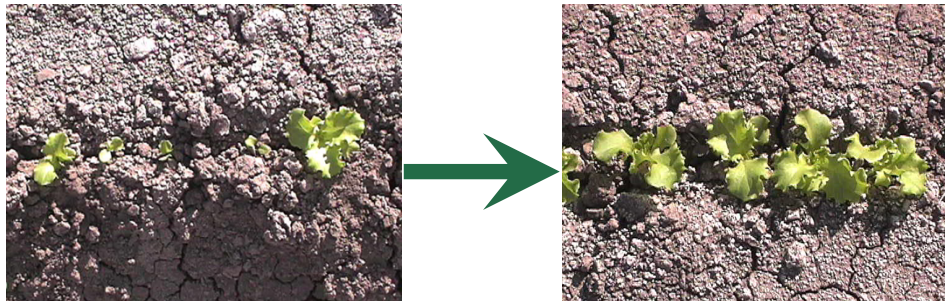
Under controlled conditions embryo development is triggered and brought to just the right stage to optimize germination performance.

- Increase speed of emerge
- Improve uniformity of germination
- Overcome dormancies:
 - Temperature
 - Light
 - Other (rootstock)
- Better control of planning
- Faster production

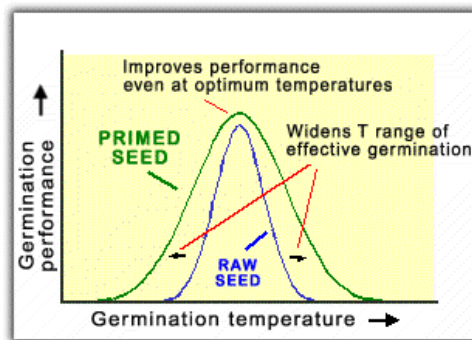
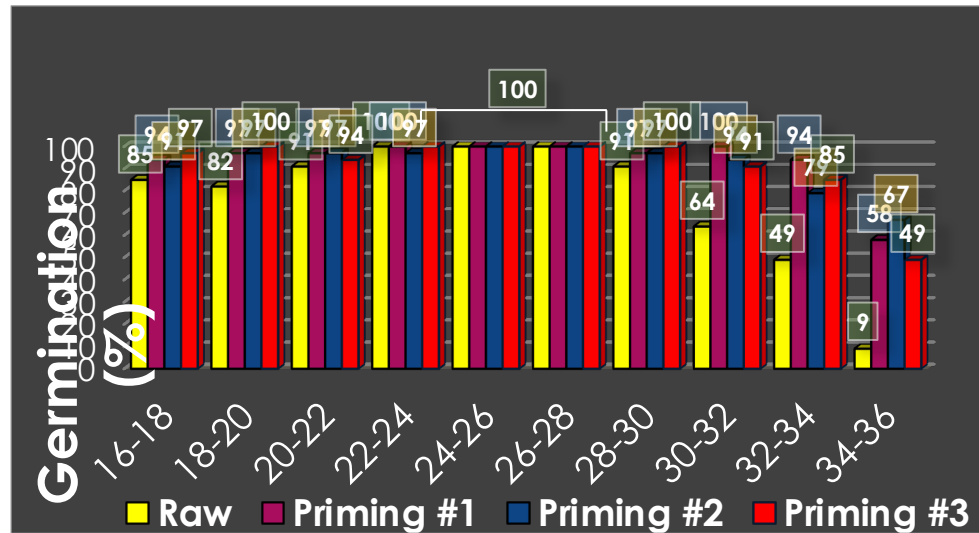
Optimized production, more Usable Transplants.

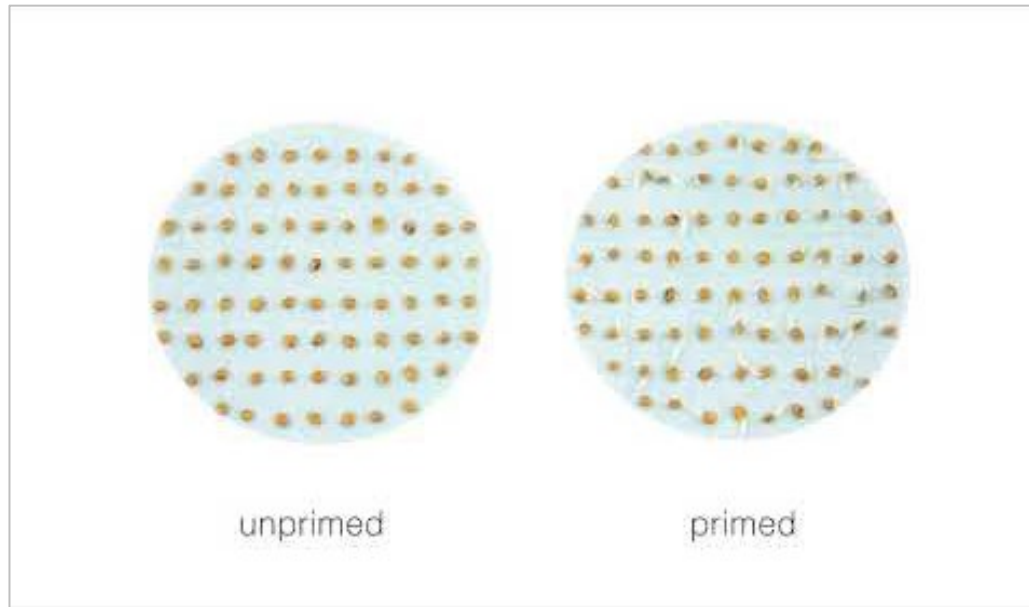


Priming: Lettuce



Thermogradient Table: Raw and Primed



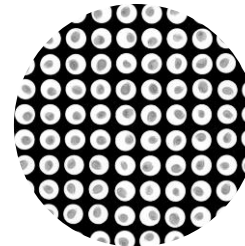


VIDEO EMBEDDED:
CLICK HERE TO VISIT
<https://www.youtube.com/watch?v=SnM95wGCOHc&feature=youtu.be>

Upgrading

Seeds of lower quality are removed either through:

- Physical separations based on weight, shape or other physical characteristics
 - Chlorophyll separation
 - Liquid density separation
 - X-ray image sorter
-
- Seedlot with higher % of good germinating seeds
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- Final seedlot is better suited for high quality market through higher % germinating seed

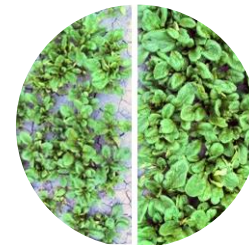
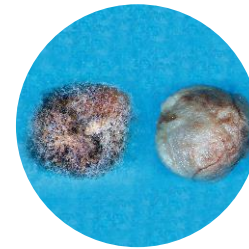


Seed Hygiene

Reduce the number of micro-organisms through smart chemical treatment in brassica

- Seedlot with minimal level of micro-organisms (e.g. fungi, bacteria) in/on the seed
- Higher quality seedlot with better germination and lower levels of infection with *Xanthomonas campestris*

Increased production through reduced infection.



Film Coating

Thin seed coating, optimized per crop and PPP/ biological / fertilizer to be applied at customer's location.

- Low dust
- Smooth flow
- Minimal abrasion
- Good cosmetics
- Effective use of PPP's
- Safe for workers and environment
- Minimal risk of fungicide resistance
- Easy planting



Pelleting

Adapting the shape of seeds by application of large layer of coating material, increasing seed weight by >200%.

- Larger and more uniform seed size (tomato, lettuce, fennel)
- Plenty of seed space to add ingredients
- Facilitates use of mechanical and pneumatic sowing machines
 - Less doubles or empty slots
 - Higher productivity and easier to plant



Improve uniformity with pelleting



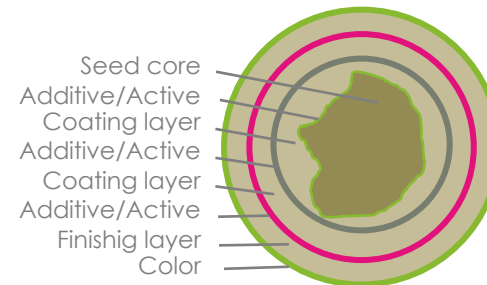
And enhance visibility and cosmetics!

Application of actives, additives & biologicals

We create a coating (film, encrustment or pellet) in which the target ingredient is incorporated. This can be actives, additives, biologicals and nutrients.



- Safest method of applying actives
- Very efficient use of additives
- Most likely effect of biologicals
- Most sustainable use of resources



Why Choose Seeds Enhanced by Incotec?

- Dedicated to seed enhancement / +50 years experience
- Independent supplier
- Wide range of technologies, products and services
- Experience across a wide range of crops
- Dedicated to look for the most sustainable solution
- High quality, expertise and reliable
- Local presence in all regions
- Part of Croda



Microplastic-free solutions





Thanks to **Arcadia Biosciences** for the opportunity to speak with you..

Questions & Answers



Sign up for our next webinar

- **Topic:** Plant architecture: How a plant's architecture should influence your production plans
- **Date:** July 9, 2020
- **Time:** 2pm Eastern time
- **Register at** <https://info.arcadiabio.com/innovation-series>





THANK YOU

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