

RED AMARANTH

Aurora Treatment Report



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RED AMARANTH

Amaranthus cruentus

GROWN

Vertical Farms, Greenhouse, Open Field

GERMINATION

3-7 Days

HARVEST

20-24 Days

Description

Amaranth is one of the oldest grain crops. The leaves can also be eaten raw or cooked. The younger leaves particularly are mild and tender and, importantly, rich in antioxidants.

Amaranth is particularly susceptible to Anthracnose or Pythium. Those pathogens can be particularly detrimental in terms of losses. An outbreak of either can lead to ~30% yield losses, if untreated.

Aurora Process

The Aurora process is specifically designed to increase seed health by removing pathogens and increasing germination rates. The seeds are exposed to Activated Air™ – which includes a high level of “RONS” (Reactive Oxygen and Nitrogen Species). These actively disinfects the seeds and boosts growth vitality rates and speed - ensuring increased yield for the grower.

Caveats

This treatment protocol was not fully optimised to the seed/pathogen pair; an off-the-shelf protocol was used. There may have been scope for optimisations; additionally, as Zayndu are continuously improving the Aurora product range, it is likely that improved results could be achieved if these tests were re-run now. Please contact your sales rep if you'd like more details.

Pathogens

- Anthracnose
- Pythium

Processing Details

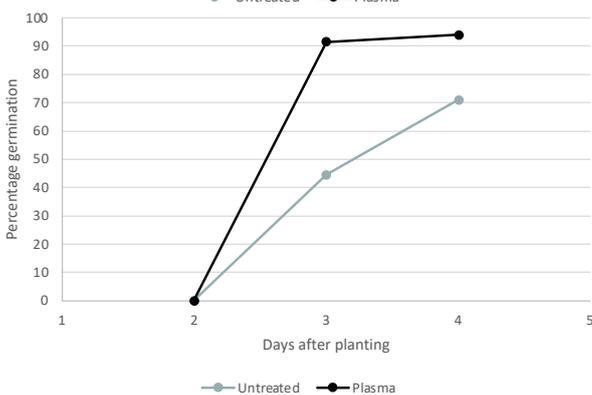
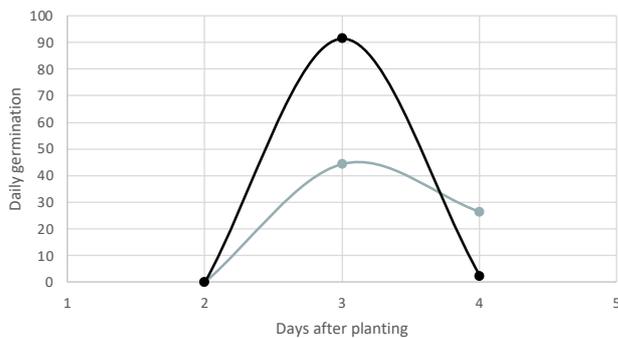
Aurora Model	Z10-1
Treatment Protocol	Z10-08x23
Date of Treatment	January 2022

Required Activated Air™ treatment levels treatment levels reached within the laboratory, under standard operation conditions. Pathology and germination tests were carried out in accordance with industry standard operating procedures (ISTA protocols).

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Germination

Total seed germination improved significantly compared to untreated. An increase from 75% to 94% was observed in this trial, saving both time (reduces cultivating seeds that fail) and money (reduces amount of seeds purchased).



In addition to increasing the total amount of successfully germinated seeds, the process also increased the speed of germination. 91% of treated seeds germinated 3 days after planting, 94% by day 4. In comparison 70% of untreated seeds germinated by day 4.

This improvement enables better prediction of harvestability, with the entire crop germinating within a shorter timeframe than untreated seeds.

Summary

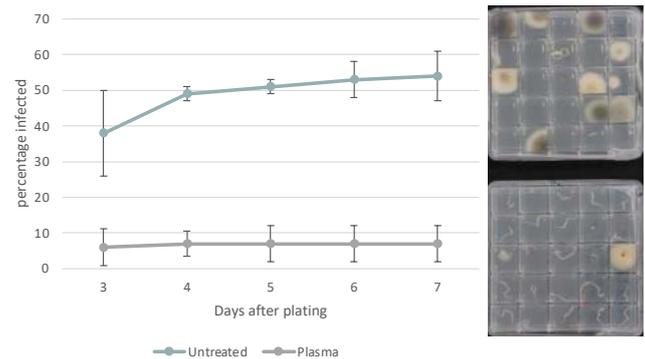
In this example, the Aurora treatment reduced pathogen load significantly, dropping the seed contamination percentage from more than 55% to 5%. The treated seeds also achieved a higher germination, in particular a 19% increase compared to the untreated controls. At the time of writing, we do not have detailed datasets regarding yield yet, but we are sure from the initial trials that they will be very promising.

For more details or to arrange an evaluation please contact our team below

Pathogens

The seeds received were heavily contaminated with fungal pathogens, aggressive enough to potentially reduce yield by 60% when cultivated in CEA conditions.

Treatment substantially reduced the fungal load, dropping seed contamination from over 55% to as low as ~5%.



Overall Yield

Aurora treatment is beneficial to the overall seed health. In fact the Activated Air not only eliminates the pathogen present on the seed and effectively prime them, but we also noticed a faster plant development. This effect will also contribute to shortening the harvesting time.

