

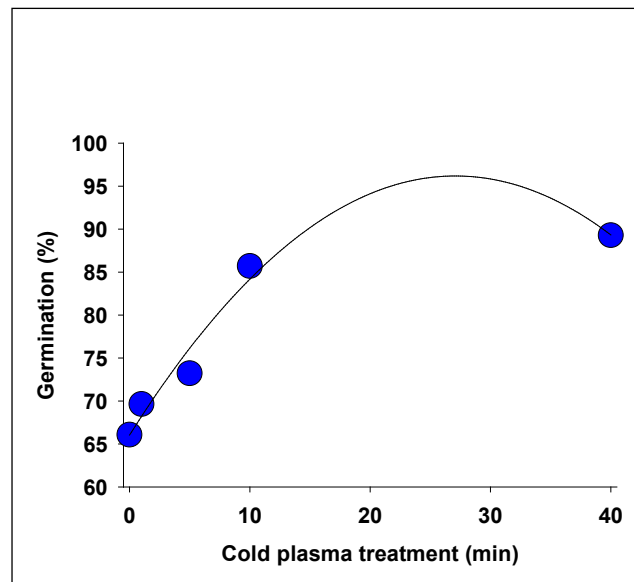
Cold Plasma Newsletter

Volume 1, issue 1 – June 2022

Background. This newsletter will be publicized whenever we have news to share! Meaning, we will not email this till you, unless we think we have something important to disseminate. The newsletter represents a collaboration between researchers at four universities, University of California Davis (principal), University of Minnesota, University of Maryland, and Cornell University. Through a project, funded by CDFA (California Department of Food and Agriculture), we will demonstrate and disseminate information about optimized cold plasma treatments of specialty crops seeds to enhance seedling plug productions and to improve pest and disease management. To maximize project impact, a stakeholder advisory board is included and consulted throughout the project period. Feel free to share this newsletter!

Current issue. In this issue, we present very preliminary data suggesting that cold plasma treatment can markedly increase soybean seed germination. However, we emphasize that results are indeed preliminary, and only meant to support general interest in the use of cold plasma treatment of seeds.

Preliminary study. As we are still in the process of purchasing a cold plasma treatment system (pending administrative procedures), soybean seeds were treated by Prof Annor in his lab at University of Minnesota. Soybean seeds were subjected to one of the following treatments: untreated control, short exposure (1 min), medium exposure (5 min), long exposure (10 min), extra-long exposure (40 min). We also included two additional



treatments: soaking in normal water and soaking in plasma-treated water. After treatment, Prof Annor shipped samples of seeds to the Nansen lab in Davis, and subsamples of 56 seeds ($7 \times 8 = 56$ cell trays) were planted. After eight days, number of germinated seeds in each tray was assessed, and figure 1 shows the correlation between time of cold plasma treatment and germination percentage (out of 56 seeds). It is quite noteworthy that there was to a linear increase in germination percentage from 0-10 min, after which the germination percentage appeared to level

The difference between in germination percentage between control and 10 min treatment (86%) represents an increase of about $[(86-66)/66]$ 30%. To put in perspective, figure 2 shows the correlation between original germination percentage and germination percentage after improving it by 30%.

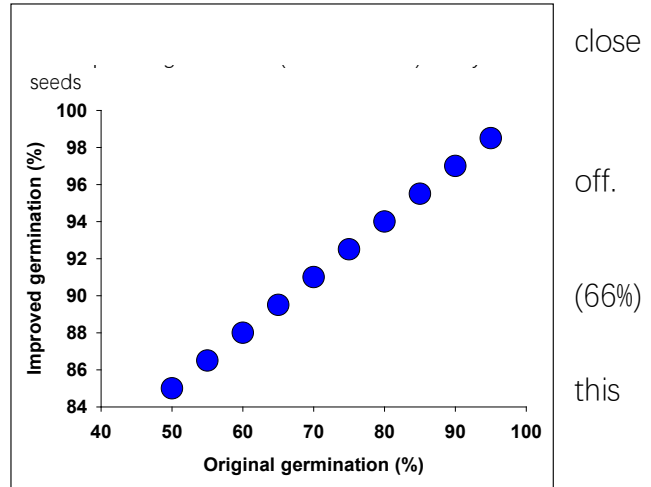
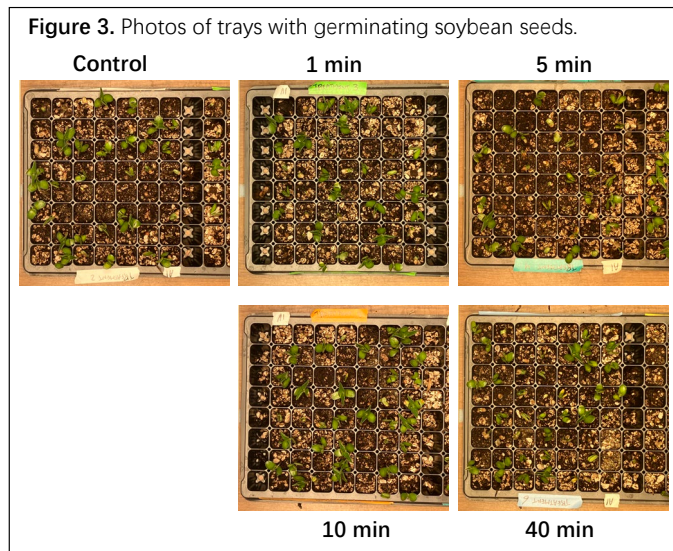


Figure 3 shows photos of trays subjected to the five treatments.



More information. For more information, feel free to contact Professor Christian Nansen (chnansen@ucdavis.edu). Also send Christian an email if you wish be on a mailing list and receive this newsletter by email. Previous newsletters and other sources of related information will be available on the following website: <http://chnansen.wix.com/nansen2/coldplasma>.