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8th World Congress on Agriculture & Horticulture

and

16th Euro Global Summit on FOOD & Beverages

March 02-04, 2017 Amsterdam, Netherlands

Water absorption behavior of barley seed cells is affected by ultrasonic waves

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B arley is the main ingredient for malting and brewing in the manufacture of beer. In order to study the effect of sonication on the seed germination percentage and rate as well as the size of barley seed cells, a laboratorial experiment was performed as Completely Randomized Design (CRD) consisting of three replications. The results indicated that the ultrasonic waves affect the seed germination, the germination rate and the seed cell size significantly (at 0.05). The results of mean comparison tests (LSD, 0.05) showed that the highest germination percentage (100%), germination rate and cell size (1370.71 micron) is achieved through 15 min exposure to ultrasonic waves. It is concluded that ultrasonic waves enhance the germination percentage and rate of the seeds through weakening the seeds' cell-wall rigidity resulting in more and faster water absorption by the cells. This leads to enlargement of the cells followed by faster release of α -amylase enzyme which accelerates starch hydrolysis and germination is improved.

Biography

Meisam Nazari is a MSc student in Sustainable International Agriculture at the Georg-August University of Gottingen, Germany. He has performed some researches in terms of improvement of seed germination by ultra-priming method. He has also studied many different subjects as plant-mycorrhizal interactions and biological fertilizers. He has published 5 articles in good ISI journals.

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