

PA-086

## Evaluation of Germination Characteristics in Common Buckwheat (*Fagopyrum esculentum*) Seed

Ju-Young Choi<sup>1</sup>, Seong-Woo Cho<sup>3</sup>, Swapan Kumar Roy<sup>1</sup>, Jae-Buhm Chun<sup>4</sup>, Soo-Jeong Kwon<sup>1</sup>, Jwa-Kyung Sung<sup>1</sup>, Jun-Ichi Sakagami<sup>2\*</sup>, Sun-Hee Woo<sup>1\*</sup>

<sup>1</sup>Department of Crop Science, Chungbuk National University, Cheong-ju 28644, Korea

<sup>2</sup>Department of Biological production, Faculty of Agriculture, Kagoshima University, Kagoshima 890-0065, Japan

<sup>3</sup>Department of Agronomy and Medicinal Plant Resources, Gyeongnam National University of Science and Technology, Jinju, Korea

<sup>4</sup>Crop Foundation Division, National Institute of Crop Science, RDA, Wan-ju, Korea

### [Introduction]

The common buckwheat (*Fagopyrum esculentum* cv Harunoibuki) was used in the present study. The internal conditions of the embryo include genetic differences, maturity of the seeds, and whether the seeds are dormant. The external conditions of the embryo include water, oxygen, and temperature. Under the external conditions of the germ, moisture is very necessary for the activation of enzymes for the decomposition of the food and for the transfer or use of the food. Humidity caused by too much water damages crop production and directly contributes to the decrease in crop volume. Inorganic nutrients and nitrogen absorption are reduced due to lack of oxygen, generation of toxic metabolites, root growth is suppressed, nitrogen into the ground, and various amounts of current are poor, resulting in reduction of flesh.

### [Materials and Methods]

The seeds of common Buckwheat (*Fagopyrum esculentum* cv. Harunoibuki) used in this study were collected from the Kagoshima University, Japan. Seeds were surface-sterilized and grown in an incubator with controlled conditions (28°C, 16 h day/8 h night, 150  $\mu\text{mol}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$  light intensity) for 7 days in dark condition. After 7 days of germination, the seedlings were exposed to aerobic (treatment 1) and anaerobic (treatment 2) condition maintaining 5 cm water level. Emergence test of seeds and embryos were taken every 24 hours for seven days. The number of germinated seeds was measured. Embryonic irradiation was examined for germination rates, embryo count, average number of days of germination, germination velocity, average rate of germination, and seed germination uniformity.

### [Results and Discussion]

The germination started at the second day after injury. T-testing for control and treatment 1 showed significant differences only on day 2 of bedding, and there have been no significant differences since then. The germination started at the second day. At second day, germination rate showed significant differences ( $p > 0.05$ ) in aerobic condition compared than the control. Until day 4, the germination rate increases gradually. From day 5-7, the germination percentage reaches around 50%, but no significant differences were observed in aerobic condition compared than the control. However, the germination percentage was not satisfactory (below 5%) with anaerobic condition). In case of control, the rate of germination was 50 percent after 57 hours of dental injury, and in case of oxygen-supplied treatment, the rate of germination was 50 percent after 62 hours. In the case of treatment 2, it was almost 100 percent unborn. The average number of germination days for all germinated seeds took 71 hours for control, 76 hours for oxygenated treatment 1 and 126 hours for treatment 2. Control is equal to 21 hours for the germination uniform, and transaction 2 is uniform from 30 hours for the transaction Uniform.

\*Corresponding author: Tel. +82-43-261-2515, E-mail, shwoo@chungbuk.ac.kr