

**PB-1**

## Evaluation of Immature Embryogenesis and Regeneration in cv. Bobwhite under Speed Breeding System

Ha Neul Lee<sup>1</sup>, Man Bo Lee<sup>1</sup>, Heung Ju Kwon<sup>1</sup>, Jae Yoon Kim<sup>1\*</sup>

<sup>1</sup>Department of Plant Resource, College of Industrial Sciences, Kongju National University 54, Daehak-ro, Yesan-eup, Yesan-gun, Chungcheongnam-do, 32439 Republic of Korea.

### [Introduction]

It is important to differentiate wheat embryogenic callus (EC) to save labor and time in wheat (*Triticum aestivum* L.) transformation and tissue culture techniques. In this experiment, for efficient wheat transformation and tissue culture, we evaluated the EC appearance rate according to immature embryo size and a change in regeneration rate as tissue culture period increases. Furthermore, the regeneration rate of EC under selection pressure was evaluated.

### [Materials and Methods]:

Immature embryos collected 10 or 14 days after anthesis from cv. Bobwhite grown under speed breeding conditions. After 8, 12, and 16 weeks of culture in wheat callus induction media (WCI), callus were grouped into three groups by morphogenic features and subsequently transferred to regeneration media. To optimize selection pressure, 8-week-old callus was transferred to a regeneration medium supplemented with 15 mg/L and 30 mg/L of hygromycin, and the regeneration rate was evaluated.

### [Results and Discussion]

The embryogenic callus (EC) appeared relatively large and creamy in color. There was no significant difference in the EC appearance rate between embryos harvested 10 days after anthesis (10 DAA) and 14 DAA. The size of immature embryos affects the EC appearance rate. The EC appearance rate of 1 mm, 1.5 mm, and 2.0 mm immature embryos was 47.2%, 50%, and 37.5%, respectively. There was no significant difference in the regeneration rate depending on the callus induction period, but 16-week-old callus showed a delay in regeneration compared to 12-week-old callus. The regeneration rates were 30.1% and 2.9% in the medium containing 15 mg/L and 30 mg/L hygromycin, respectively. The selection pressure was low in the regeneration medium supplemented with 15 mg/L of hygromycin, and many escapes were observed. Hygromycin greater than 30 mg/l may help lower the escape probability.

### [Acknowledgement]

This work was carried out with the support of “Cooperative Research Program for Agriculture Science and Technology Development (Project No. PJ016528)” Rural Development Administration, Republic of Korea.

\*Corresponding author: E-mail, jaeyoonkim@kongju.ac.kr Tel. +82-41-330-1210