

Comparison of yield and its components in spring sown wheat and barley by path coefficient analysis

In-Bae Choi¹⁾, Hak-Sin Kim, Jae-Bok Hwang, Hui-Su Bae, Bon-Il Ku, Hong-Kyu Park,
Tae-Seon Par and Geon-Hwi Lee

¹⁾National Institute of Crop Science, RDA, Hyeoksin-ro, Wanju-gun, Jeollabuk-do 55365, Korea

Abstract

Recent abnormal weather, especially continued rainfall during sowing season causes difficulty in proper sowing of wheat and delayed sowing after November 15 is concerned about freezing damage during winter, resulting in reduction of wheat yield. To correspond government policy of crop sufficiency improvement and produce and supply raw wheat and barley steadily, expansion of cultivation area is necessary and spring sowing of wheat is required. To obtain basic information on the improvement of spring sown wheat and barley production, comparison and path coefficients analysis was conducted for yield and yield related components from autumn and spring sown wheat and barley. Path analyses were known as very useful in clarifying the effects of yield components on grain yield formation, which were not accurately reflected in simple correlation analyses. Most cultivated 5 wheat and 9 barley cultivars were sown on October and February at Cheon-ju province according to standard sowing method. For the spring sowing of wheat and barley, the varieties having vernalization degree I ~ III are seeded in the mid of February and seeding rate is 200 ~ 250kg/ha which is increased by 25% than autumn sowing. N-fertilizer of 95 kg/ha and the same amount of P, K dressed in autumn are applied at once as basal fertilizer. The magnitude of direct effect in each yield components on yield was in sequence as follows. In autumn wheat, grain number per spike \geq the number of spike per m^2 $>$ 1000-grain weight and in spring wheat, grain number per spike \geq the number of spike per m^2 $>$ 1000-grain weight. In autumn naked barley, 1000-grain weight $>$ the number of spike per m^2 , grain number per spike and in spring barely, the number of spike per m^2 $>$ grain number per spike $>$ 1000-grain weight. In autumn covered barley, grain number per spike $>$ the number of spike per m^2 and in spring covered barley, the number of spike per m^2 $>$ grain number per spike, 1000-grain weight. In autumn malt barley, the number of spike per m^2 $>$ 1000-grain weight and in spring malt barley, the direct effects of three yield components were similar. According to the path analysis of yield components for spring sown wheat and barley, it was suggested that adequate number of spike per m^2 was most important factor for yield increase.

Keywords: spring wheat, spring barley, yield, yield components, path analysis

Corresponding author*

In-Bae Choi

Address: National Institute of Crop Science, RDA, Hyeoksin-ro, Wanju-gun, Jeollabuk-do 55365, Korea

Tel and Fax: 82-63-238-5275, 82-63-238-5255

E-mail: ibchoi@korea.kr