

PA-41

Analysis of Morphological Characteristics and Compositional Changes of Naked Oat Grains According to Harvest Time in the Central Region of Korea

Young Cheol Yoo¹, Seuk Ki Lee^{1*}, Jeong Ju Kim¹, Mi Jin Chae¹, Myoung Na Shin¹, A Reum Han¹, Won Tae Jeon¹, Shin Gu Kang¹, Dae Woo Lee¹, Jin Seok Lee¹, Woon Ho Yang¹

¹Crop Cultivation & Environment Research Division, NICS, RDA, Suwon 16613, Korea

[Introduction]

Hullless oats are generally harvested 45 days after heading(DAH). It is known that 1000 grain weight, the grain yield, and the germination rate are high at that time. In the central region of Korea, hullless oats were sown in the spring, and the change in grain characteristics and composition were evaluated to examine the appropriate harvest time.

[Materials and Methods]

This study was conducted in the field of Department of Central Area Crop Science of National Institute of Crop Science (NICS), Suwon, Gyeonggi province, Korea. On February 25, 2021, the early-ripening(Joyang, JY) and late-ripening (Daeyang, DY) hullless oat cultivars were sown with a ridge width of 25cm using a barley drill seeder. Cultivation management was performed according to the Rural Development Administration standard cultivation methods. After harvesting at intervals of 5 days from 40 to 55 days after planting, the grains were threshed and stored in a low-temperature storage (temperature: 5°C, humidity: 45%) and used for testing. Seed size (length/width/thickness), changes in grain components, and germination rate were investigated.

[Results and Discussion]

The grain length, width, and thickness of DY were 8.53±0.82mm, 2.48±0.31mm, and 1.96±0.21mm, respectively. And the grain length, width, and thickness of JY were 8.97±0.84mm, 2.52±0.30mm, and 2.02±0.21mm, respectively. The grain characteristics of hullless oat according to harvesting time, the length was the largest at the 40 DAH(8.86±0.86mm) and the smallest at the 55 DAH(8.65±0.92mm). However, width and thickness did not show any distinct trends. The germination rate of DY showed the highest at 97.4±1.34% in the 55 DAH, and JY showed the lowest at 86.2±5.17% in the 40 DAH. The avenanthramides (AVNs), which are known as a functional component of oats, showed higher contents in DY. And the AVN contents were increased according to harvesting time delayed after 45 DAH.

[Acknowledgement]

This study was supported by grant from“Development of mid-customized cultivation technology and Processing Materials of Domestic Oats”(Project No. PJ015085), Rural Development Administration, Republic of Korea.

*Corresponding author: E-mail, sklee77@korea.kr Tel, +82-31-695-0645