

## **Changes in Functional Components and Radical Scavenging Activity of Grain from Korean Maize Hybrids Grown in Different Cultivation Periods**

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### **[Introduction]**

Maize (*Zea mays* L.) is the world's third largest food crop after rice and wheat, and contains large amounts of nutrients, unique flavors, and vitamins. Maize has a wide variety of uses, including its use as a raw material for edible and processed food, in animal feed, and in industrial applications.

The aim of this study was to define the functional components and radical scavenging activities of the grain of various Korean maize hybrid cultivars in two different cultivation periods in the same cropping season. We also determined the optimal cultivation period for each of the maize hybrids with enhanced antioxidatively in South Korea.

### **[Materials and Methods]**

Maize cultivars were grown at the National Institute of Crop Science, RDA, Suwon, South Korea (37°26'N and 126°98' W) during the 2015 cropping season. The cropping season included two growing periods; the first began on 5<sup>th</sup> April (05-Apr) and the second began on 5<sup>th</sup> July (05-Jul). We evaluated the proximate composition, free sugar content, fatty acid composition, carotenoid content, total phenol content, and radical scavenging activity of the grain from various maize hybrid cultivars grown in two different cultivation periods.

### **[Results and Discussions]**

The moisture, crude ash, crude fat, crude protein, total starch, and amylose contents were significantly higher in most of the maize hybrid cultivars when sown on 5<sup>th</sup> April than when sown on 5<sup>th</sup> July. The free sugar content, fatty acid composition, carotenoid content, and total phenol content differed significantly between cultivars and cultivation periods. The highest unsaturated fatty acid compositions of maize hybrids sown on 5<sup>th</sup> April and 5<sup>th</sup> July in were 86.05 and 86.29%, respectively, in the Daanok cultivar. The carotenoid contents were significantly higher in maize hybrids sown on 5<sup>th</sup> July compared to those sown on 5<sup>th</sup> April. The highest total phenol content was 108.09 mg/100 g in Singwangok sown on 5<sup>th</sup> July. The radical scavenging activity of maize hybrids differed significantly between cultivars and cultivation periods.

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