

PA-15

Difference in Fiber Content Between Soil Characteristics of Cultivation Sites and Sweetpotato Varieties

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[Introduction]

Sweetpotato varieties with high fiber content in the storage root have poor texture when steamed or roasted. This study was conducted to investigate the difference in fiber content among the sweetpotato varieties and soil characteristics of cultivation sites.

[Material and Methods]

Cultivation varieties were orange fleshed sweetpotato (Hogammi, Pungwonmi, Sodammi), light yellow fleshed sweetpotato (Jinyulmi), and purple fleshed sweetpotato (Danjami). Collection of storage roots (Hogammi) and soil sample of growing regions were 19 sites. The fiber content of cultivars, the degree of visual fibrousness, and the relationship between soil characteristics and fiber content were investigated.

[Results and Discussion]

The average fiber content of ‘Hogammi’, ‘Sodammi’, ‘Pungwonmi’, ‘Danjami’, ‘Jinyulmi’ cultivars was 95.71, 66.73, 44.55, 40.55, and 38.53 mg/100g FW, respectively, from the samples collected at the farms in Haenam, Muan, and Unbong, Korea. There was no significant difference between site-specific conditions and varieties. Based on the degree of visual fibrousness, ‘Hogammi’ has an average of 3.6~4.0 with lots of thick stringy fibers. The fiber content of ‘Hogammi’ cultivar was measured at across 19 sites representing the main sweetpotato growing regions of Korea. The fiber content of ‘Hogammi’ at 19 sites were from 115.82 and 114.6 mg/100g in Haenam 2 and Boryeong 1, to 87.46 mg/100g in Hamyang. However, the fiber content at the rest of 16 sites was within the range of 94.63 ~108.52 mg/100g, although there were some site-level differences. The fiber content of sweetpotato storage roots were positively correlated with soil phosphorus ($R^2 = 0.58^{**}$), and also with organic matter ($R^2 = 0.52^*$), and pH ($R^2 = 0.51^*$), respectively, which were significant at 1% and 5% levels. We found that the fiber content of sweetpotato storage roots increased with increasing phosphorus content, organic matter and pH in the soil.

[Acknowledgement]

본 연구는 농촌진흥청(과제번호: PJ01513202) 과제 연구비 지원에 의해 이루어진 결과로 이에 감사드립니다

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