Proceedings of the 13th ISTRC Symposium, 2007
pp. 56 – 59

Production of amylose-free sweetpotato plants by RNAi

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Abstract. In sweetpotato roots (*Ipomoea batatas* (L.) Lam., cv. Kokei 14) 18 to 20 % of the starch is amylose and the other major component is amylopectin. Granule-bound starch synthase I (GBSSI) is one of the key enzymes which catalyzes the formation of amylose in starch granules, a linear á-(1,4)Dglucan polymer, from ADP-glucose. In this study, sweetpotato plants were transformed to produce amylose-free starch by RNA interference (RNAi). The gene construct that encoded double stranded RNA (dsRNA) of *GBSSI* first exon was introduced into the sweetpotato genome by *Agrobacterium tumefaciens*-mediated transformation to inactivate the endogenous *GBSSI* gene. Starches from 80% of transgenic lines showed red-brown staining pattern by iodine staining, indicating a reduction of amylose content. Starches from these transgenic plants, which showed red-brown staining pattern were confirmed to be amylose-free by calculations from the blue value at 680 nm.