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*Finding A Biomarker Of Physiological Ageing In Potato Seed Tubers*

Physiological ageing is dependent upon the progression of time and also on environmental stress. Younger seed is desirable for optimum stem number and tuber size, while older seed produces more stems and a greater number of small tubers. The finding and generating of a biomarker of physiological ageing in seed tubers would enable growers to alter their crop management strategies to better their crop performance. I am testing whether these genes play any role in the physiological ageing of potato seed. In addition, I am testing salicylic acid to effectively slow the physiological ageing. Genes from plant and animal systems were found, characterized, and synthesized into primers. The potato tubers were physiologically aged by fluctuation of the storage temperatures of 45°F, 50°F, and 55°F. RNA was isolated from the tubers by a phenol-chloroform method. First strand synthesis was used to convert RNA into a cDNA by Rt-PCR. Primers were used to screen the characterized genes for expression in potato using PCR. Out of the eight genes found and characterized from plant and animal systems, six expressed in potato. Genes from animal and mammalian systems that expressed may have a role in the ageing process of potato. The FOX03 gene expressed in all stages of temperature treatment. The salicylic acid treatment reduced stem height and stem count in all of the cultivars tested when the treatment temperatures were above 55°F.