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Properties of Sugi as High Bench Culture Media for Strawberries

Mayumi SATO[1)], Naoto SAITO[1)], Kazuto SEKI[1)], Eiji FUKUKAWA[2)] and Haruhiko NAKAZUMI[2)]

1) Hokkaido Forest Products Research Institute
2) Hokkaido Prefectural Dohnan Agricultural Experiment Station

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Abstract: The properties of bark and wood of sugi (*Cryptomeria japonica* D. Don) as high bench culture media for strawberries were investigated. Three cultivars, “Toyonoka”, “Kentarou” and “HS-138” were cultured with sugi bark or wood beds. Yield, fruit weight and sugar content of strawberries were measured, and the results were compared with those using standard compost.

The yield of standard sizes with bark was 77% of the standard compost. The components and the water holding capacity of bark seemed to affect the yield. In the water extracts of the bark (bark : water ; 1 : 10, w/w), vanillic acid (4.7 mM), vanillin (0.1 mM), *p*-hydroxybenzoic acid (5.1 mM) and 3-hydroxy-4-methoxybenzaldehyde (0.6×10^{-2} mM) were detected by GC-MS. These compounds indicated the inhibitory effects on the growth of komatsuna (*Brassica campestris* L. var. *perviridis*) in 0.5 mM.

The yield of strawberries with bark was lower than that with the standard compost even after curing in open air. When the medium was composed of two layers (upper layer : standard compost, lower layer : bark), the yield of strawberries was equal to that with the standard compost. As a result, high permeability and low water holding capacity of the bark would cause a decrease of water content of the medium and low yield of strawberries. The yield of standard sizes with wood stored in open-air was lower than that with green wood. It was considered that the water absorption and water holding ability were decreased by open-air storing. Therefore, the open-air stored wood had a tendency to lose its water easily and affected the growth of strawberries.

It was considered that the components of the bark would be decrease by watering during production of strawberries ; therefore, the water holding ability of bark and wood rather than their components would affect the yield of strawberries.

Keywords: *Cryptomeria japonica*, bark, allelopathy, strawberry, high bench culture

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