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イチゴ高設栽培用培地へのスギ粉碎物の適性

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Properties of Sugi as High Bench Culture Media for Strawberries

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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 (4.7mM), vanillin (0.1mM), *p*-hydroxybenzoic acid (5.1mM) 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 0.5mM.

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 decreased 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.

Key words: *Cryptomeria japonica*, bark, allelopathy, strawberry, high bench culture
スギ, 樹皮, アレロパシー, イチゴ, 高設栽培

スギの樹皮および間伐材粉砕物のイチゴ高設栽培用培地としての適性を検討した。「とよのか」「けんたろう」「エッチェス-138」の3品種を高設栽培し、収穫後、収量、果重、糖度を調査し、結果を標準培土と比較した。スギ樹皮を培地として栽培した結果、規格内収量は培土の77%であった。これには樹皮含有成分と保水性が影響していると考えられた。GC-MS分析により、スギ樹皮の水抽出物(樹皮:水;1:10, w/w)からvanillic acid (4.7mM), vanillin (0.1mM), *p*-hydroxybenzoic acid (5.1mM), 3-hydroxy-4-methoxybenzaldehyde (0.6×10^{-2} mM) が検出された。これらの化合物はコマツナ (*Brassica campestris* L. var. *perviridis*) に対して 0.5 mM で生育阻害活性が認められた。

野外堆積したスギ樹皮粉砕物培地のイチゴの収量は標準培土より低かった。培地を上下2層(上層:標準培土, 下層:樹皮)として栽培すると、収量は標準培土と同等になった。これらの結果、スギ樹皮粉砕物の透水性の高さと保水性の低さが培地の含水量を減少し、イチゴの収量が減少したと考えられた。スギ材粉砕物では、生材よりも野外堆積した粉砕物の規格内収量が少なかった。これは野外堆積した粉砕物の方が吸水性および保水性が低いため、乾燥がちになり、イチゴの生育に影響を与えたためと考えられた。

イチゴ栽培では含有成分がかん水によって溶出し、減少するため、含有成分よりも、保水性が収量に影響すると考えられた。

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