

Anther culture of rice

Varietal difference and inheritance of plant regenerability

THIS STUDY was carried out to identify varietal difference and the inheritance of the plant regeneration ability in anther culture of rice. The anthers of 33 Japonica, 11 Indica/Japonica, and 3 Indica rice cultivars were cultured on N-6-Y-1 medium with 1 mg/L NAA and 2 mg/L kinetin. The remarkable variability in plant regeneration was observed among the genotypes, ranging from 0.0% to 19.4%. Most of Japonica rice cultivars showed better culturability than Indica/Japonica and Indica type cultivars. Newly

developed Japonica rice, 'Illmibyeo' and 'Hangnambyeo', showed higher regenerability with 19.4% and 18.1% frequency, respectively.

News source: **Rural Development Administration, Suwon, Korea**

For further information, see *Korean J. Plant Tissue Culture*, v.27(3) pp.163-167.

Micropropagation of cassava

Suspension culture derived from nodal explants

FOR THE micropropagation, node explants of cassava were cultured in liquid MS medium with various concentrations of cytokinins on a rotary shaker (100 rpm) for 2 weeks. The adventitious roots and shoots from the explants differentiated more efficiently in liquid medium than in solid medium. However, root formation was not inhibited in the medium with BAP and kinetin at low concentration (>0.05 mg l⁻¹ deci). Meanwhile, in the medium with BAP and zeatin at high level (<0.25 mg l⁻¹ deci), root

formation was inhibited by callus forming on the cut end of the cuttings. However, all plantlets grown in liquid medium for more than 2 weeks showed symptoms of hyperhydricity.

News source: **Rural Development Administration, Suwon, Korea**

For further information, see *Korean J. Plant Tissue Culture*, v.27(3) pp.185-189.

Callus differentiation of cucumber

Influence of light morphogenesis and protein content

TO INVESTIGATE cucumber (*Cucumis sativus* L.) regeneration from embryogenic calli, shoot tips of aseptically-grown cucumber seedlings were used as explants for establishing tissue cultures. Growth and differentiation of callus were studied by using Murashige and Skoog's (MS) medium containing 0.5-2 mg/L 2,4-D. Plantlets were induced from the shoot tip culture on the plant growth regulator-free MS medium. Non-embryogenic calli and viscous calli

were induced on the medium supplemented with 0.5-2 mg/L 2,4-D, but embryogenic callus was not induced on the same medium.

News source: **Rural Development Administration, Suwon, Korea**

For further information, see *Korean J. Plant Tissue Culture*, v.27(3) pp.213-217.

Gametophytic self-incompatibility in tomato

Role of SRNase

THE TOMATO (*Lycopersicon peruvianum*) has a gametophytic self-incompatibility (GSI) mechanism controlled by a single genetic locus (S locus) with multiple alleles. S RNases, an allelic series of abundant stylar proteins, are products of the S locus in *L. peruvianum* and other Solanaceous plants. The S-11 RNase gene from *L. peruvianum* was introduced into a self-compatible (SC) species (*Lycopersicon esculentum*) to examine whether the expression pattern in the heterologous host mimics that in *L. peruvianum*. The

resultant transgenic *L. esculentum* plants expressed the introduced gene highly in their styles, which is similar to the expression in *L. peruvianum*.

News source: **Rural Development Administration, Suwon, Korea**

For further information, see *Korean J. Plant Tissue Culture*, v.27(3) pp.219-226.

Seeds as repositories of recombinant proteins in molecular farming

SEEDS ARE an ideal repository for recombinant proteins in molecular farming applications. However, in order to use plant seeds efficiently for the production of such proteins, it is necessary to understand a number of fundamental biological properties of seeds. This includes a full understanding of promoters, which function in a seed specific manner, the subcellular targeting of the desired polypeptide, and the final form in which a protein is stored. Once a biological active protein has been deposited in a seed, it is also critical that the protein can be extracted and

purified efficiently. In this review, these issues were examined critically to provide a number of approaches, which may be adopted for the production of recombinant proteins in plants.

News source: **Rural Development Administration, Suwon, Korea**

For further information, see *Korean J. Plant Tissue Culture*, v.27(4) pp.283-297.

Disease management for organic cucumber

TO ESTABLISH AN organic farming system for cucumber, experiments were conducted in 2001-2002. Plant disease resistance inducers, such as ferrous chloride, cinnamon oil and neem oil, were evaluated in the field for foliar diseases on cucumber. Results indicated that ferrous chloride (5,000 ppm) was effective on downy mildew and powdery mildew diseases. Meanwhile, cinnamon oil (800 ppm) had preventive effect on powdery mildew. In another field test, 48% copper salt + fatty acid + rosin acid and 29% riboflavin + DL-methionine + copper sulfate also had preventive effects on downy mildew in cucumber. Compost made from chicken manure and rice husk (CR) was used as

basic compost and its effect was tested on *Phytophthora* blight on cucumber seedlings. Results showed that CR amended with neem cake or oyster powder significantly reduced the incidence of *Phytophthora* blight.

News source: **Hualien District Agricultural Improvement Station, Taiwan, ROC**

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