

Dynamics of Agricultural Biotechnology

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incorporation into glycine and serine. It is concluded that the tricarboxylic acid cycle operates in *H. contortus* and that *H. contortus* is capable of catabolizing long-chain fatty acids.

1804 KAPUR, J; SOOD, ML. 1984. *Haemonchus contortus*: lipid biosynthesis from C14-labelled acetate and glucose. *Z. fur Veterinarmedizin, B*, 31, 225-230.

Incorporation studies with labelled substrates showed that adult *H. contortus* has extremely active mechanisms for synthesizing all classes of complex lipids including free cholesterol. More of the label from acetate was incorporated into total lipids than from glucose. The ratio of synthesis of polar:non-polar lipids was 3.991 with acetate and 1.223 with glucose. Among non-polar components, most of the label from acetate was incorporated into free fatty acids, triacylglycerols, hydrocarbons and pigments, whereas label from glucose was incorporated into triacylglycerols and free fatty acids only. Among polar lipids most of the label from acetate was incorporated into phosphatidyl choline and from glucose into phosphatidyl choline and phosphatidyl ethanolamine.

1805 PADHI, NN; DAS, SN. 1985. Intra-uterine embryogenesis in *Helicotylenchus abunaamai* Siddiqi, 1972. *Ind. J. of Nematology*, 15: 1, 125-126; 7 ref.

Intra-uterine embryogenesis is described in *H. abunaamai*. It is suggested that it is a result of unfavourable environmental conditions.

1806 PAWAR, CS; BHATNAGAR, VS; JADHAV, DR. 1985. Some predatory insects and their parasites. *Science and Culture*, 51: 3, 101-102; 1 ref.

Lists are given of recently discovered insect and nematode parasites of the predators of insect pests of gramineous and leguminous crops in Andhra Pradesh, India. The predators were the coccinellid *Menochilus sexmaculatus*, which fed on mites, aphids and eggs and larvae of noctuids of the genus *Heliothis*; eumenids of the genus *Delta*, which also preyed on *Heliothis* larvae; the syrphid *Xanthogramma scutellaris* [*Ischiodon scutellaris*], which preyed on aphids infesting sorghum, maize and pearl millet; *Chrysopa* spp., which fed on aphids and eggs and small larvae of other insects on maize, sorghum, groundnut, safflower and *Vigna radiata*; and *Mantis* spp., which were general predators of insects on pigeonpea [*Cajanus cajan*]

1807 PRASAD, RS; SINGH, RP. 1983. Studies on immunity produced by irradiated infective larvae of

Haemonchus contortus. *Haryana Agricultural University Journal of Research*, 13: 2, 183-190; 17 ref.

Four goats were inoculated intravenously with divided doses of serum collected and pooled from goats which had been double vaccinated with irradiated *H. contortus* larval vaccine before or after the latter had been challenged with infective larvae. Challenge of the passively immunized goats 48 hours after serum inoculation, along with controls, produced PM worm burdens indicating 47% protection in animals given serum from vaccinated goats and 67% protection in animals given serum from vaccinated and challenged goats. Cell mediated immunity, as indicated by the leukocyte migration inhibition test, did not seem to be involved. Polyacrylamide gel electrophoresis showed a significant increase in beta globulins in vaccinated animals. Counter-current electrophoresis was a promising test for detecting immunity.

1808 SWARUP, G; DASGUPTA, DR. 1986. **Plant parasitic nematodes of India**. Indian Agricultural Research Institute, New Delhi, India. 497 p.

This book contains 27 chapters by different authors on a variety of subjects concerning nematology in India. Chapter 1 deals with the achievements of nematological research in India in the last 25 years and outlines future prospects, while chapters 2-4 deal with the general morphology, taxonomy and physiology of nematodes. The next 8 chapters give individual accounts of the root-knot and cyst forming nematodes, *Rotylenchulus reniformis*, *Pratylenchus* spp., *Radopholus similis*, *Tylenchulus semipenetrans*, *Fergusobia* spp. and entomophilic nematodes. Chapter 13-21 assess the effect and control of plant parasitic nematodes on rice, wheat, vegetables, pulse crops, oilseed crops, potatoes, tobacco, mushrooms and sugarcane. The last 6 chapters review the transmission of plant viruses by nematode vectors, nematode management and newer approaches to nematode control, plant resistance, biological control and quarantine methods. Some of the reference lists at the end of chapters are incomplete due to time and space constraints but a full list of references is available from the editors.

WEEDS

1809 IMAM, MM; MIRZA, MY; AHMAD, H. 1987. Role of biotechnology in weed control. *Progressive Farming*, 7: 1, 62-64.

Weed biology and conventional weed control methods are discussed and consideration is given to the role of

biotechnology in weed control with particular emphasis on herbicide resistance in crops.

1810 NAGAR, PK; SAHA, S. 1985. **Distribution of cytokinin-like activity in different plant parts of the water hyacinth, *Eichhornia crassipes*.** *Physiologia Plantarum*, 64: 3, 328-332; 22 ref.

Cytokinin-like activity in extracts of leaf laminae, petioles, shoots, roots and flowers of young plants of *Eichhornia crassipes* was analysed using the soyabean callus bioassay. In all plant parts analysed, 2 prominent peaks of cytokinin activity having elution vol. similar to zeatin and zeatin riboside were detected. Putative cytokinin glucoside-like activity was detected only in leaves and flowers. The cytokinin complements of the leaves and the roots were qualitatively different. It would appear that cytokinins supplied by the roots were metabolized in the leaves or that certain cytokinins were synthesized in the leaves themselves. The possible significance and distribution of cytokinins in different plant parts in relation to roots is discussed.

1811 RAM, RL; SINGH, MPN. 1991. **In vitro haustoria regeneration from embryo and in vitro formed leaf callus cultures in *Dendrophthoe falcata* (L.F.) Hings.** *Advances in Plant Sciences*, 4: 1, 48-53; 14 ref.

Embryo and leaf calli of *D. falcata* grown in modified White's medium showed concn-dependent differentiation of haustoria on exposure to IAA and IBA. Concn >4 ppm stimulated additional haustoria differentiation from callus cultures. White's medium containing IBA 5 ppm and casein hydrolysate 2000 ppm was ideal. Increasing the concn of IBA from 5 to 10 ppm suppressed haustoria differentiation but caused profuse callusing. To a certain extent the formation of haustoria from callus cultures could be chemically controlled.

AROMATIC PLANTS

1812 KOTHARI, SL; CHANDRA, N. 1986. **Adventitious shoot production from stem internode and callus cultures of *Artemisia scoparia* Waldst. et Kit.** *Journal of Plant Physiology*, 124: 5, 409-412; 12 ref.

A. scoparia is used for the isolation of scoparone, a compound with hypotensive and tranquillizing properties. Stem internode sections and callus derived from them (on a medium containing 0.5 mg/litre kinetin and 1 mg/litre IBA) were cultured on Murashige and Skoog media supplemented with various cytokinins and/or auxins. Shoot differentiation in explant and callus cultures occurred only with IAA and BA combinations

and the best results were obtained with high IAA/BA ratios. No shoot differentiation occurred when auxins or cytokinins were used singly. Explants formed roots with IAA, NAA or 2,4-D alone, but not with IBA; no root differentiation occurred in the presence of cytokinins. Callus cultures formed roots with IAA, IBA, NAA or 2,4-D (1 mg/litre), but IBA at 3 mg/litre gave the best results; kinetin or BA at low concentrations (0.1-0.5 mg/litre) also induced rooting.

1813 PHILIP, VJ; NAINAR, SAZ. 1986. **Clonal propagation of *Vanilla planifolia* (Salisb.) Ames using tissue culture.** *Journal of Plant Physiology*, 122: 3, 211-215; 15 ref.

Plantlets were produced in vitro from aerial root tips taken from elite vines and cultured on Murashige & Skoog medium. This rapid multiplication method is recommended for the production of material free from *Fusarium batatatis* var. *vanillae*.

1814 PHILIP, VJ; PADIKKALA, J. 1989. **The role of indoleacetic acid in the conversion of root meristems to shoot meristems in *Vanilla planifolia*.** *Journal of Plant Physiology*, 135: 2, 233-236; 13 ref.

Aerial root tip explants cultured in MS media containing more than 5 mg/litre IAA continued to grow as roots, but the root meristem of young tips grown in media containing 1-5 mg/litre IAA developed into shoots and plantlets. Scanning the root tip extracts for IAA using UV, TLC, GLC and GC-MS showed higher levels of auxin in root tips from old aerial roots and also in young cultured tips in which the root meristem had transformed to shoots.

ORNAMENTAL PLANTS

1815 BHATTACHARYA, PS; BHATTACHARYYA, BC; BHATTACHARYA, PS; DAS, N; DEY S. 1990. **Table-top *Chrysanthemum* garden.** *Chrysanthemum (NCS, USA)*, 46: 3, 150-151.

1816 BHATTACHARYYA, PS; MAITI, TK; BHATTACHARYYA, BC. 1990. **New cost effective method of rooting of in vitro grown ornamental plants.** *International Symposium on Industrial Biotechnology*. (Hyderabad, India: 1990: November 18-20). Osmania University. p. 44.

1817 PRADESH, JITENDRA. 1988. **Plant health. A useful service for large scale propagation of ornamental plants through micropropagation.** *Acta Horticulturae*, No. 226: 115-120; 2 ref.