

Dynamics of Agricultural Biotechnology

SAARC Bibliographical Database



SAARC

SAARC Agricultural Information Centre

Dynamics of Agricultural Biotechnology

SAARC Bibliographical Database

A S Chandel and R M Kamal



SAARC Agricultural Information Centre (SAIC)

**SAARC Agricultural Information Centre (SAIC)
BARC Complex, Farmgate, Dhaka 1215, Bangladesh**

Published : 1995

Cover design : Mafruha Begum

**Price : US\$ 10.00 for SAARC countries
US\$ 15.00 for other countries**

Chandel, A S and Kamal, R M

Dynamics of agricultural biotechnology: SAARC bibliographical database. Dhaka: SAARC Agricultural Information Centre, 1995.

ii, 321, liii p.

1. Biotechnology, bibliography. 2. Agricultural biotechnology, bibliography. 3. SAARC Agricultural Information Centre. i. Jt. Author. ii. Title.

Published by : Director, SAARC Agricultural Information Centre (SAIC)

Printed at : Panir Printers, 9 Nilkhet, Dhaka 1205

CONTENTS

| | |
|-------------------------------|-------|
| <i>Preface</i> | i |
| <i>Introduction</i> | ii |
| GENERAL BIOTECHNOLOGY | 1 |
| FUNGI | 10 |
| CYANOBACTERIA | 15 |
| ALGAE, SPIRULINA PLATENSIS | 16 |
| BACTERIOLOGY | 16 |
| FIELD CROPS | 18 |
| CEREAL GRAINS | 18 |
| GRAIN LEGUMES | 80 |
| FIBRE CROPS | 99 |
| STARCH CROPS | 110 |
| ALKALOIDAL CROPS | 115 |
| SPICE CROPS | 130 |
| OILSEED PLANTS | 135 |
| ESSENTIAL OIL PLANTS | 162 |
| MEDICINAL PLANTS | 165 |
| GUM AND RESIN PLANTS | 183 |
| FRUIT CROPS | 183 |
| VEGETABLE CROPS | 204 |
| CROP DISEASES | 233 |
| INSECT PESTS | 236 |
| WEEDS | 242 |
| AROMATIC PLANTS | 243 |
| ORNAMENTAL PLANTS | 243 |
| FORESTRY | 253 |
| FEED AND FODDERS | 269 |
| AGRICULTURAL WASTES | 274 |
| BIOGAS | 277 |
| ANIMAL HUSBANDRY | 280 |
| SERICULTURE | 316 |
| AQUACULTURE | 320 |
| <i>Relative Subject Index</i> | i |
| <i>Term Index</i> | iv |
| <i>Author Index</i> | xxvii |

Nodal explants from seven genotypes of two mulberry species were induced to form multiple shoots on MS medium with three different concentrations of benzyladenine (BA). BSRM-19 was found to be highly responsive genotype for in vitro shoot and root proliferation. Regenerated plants were successfully established in soil after acclimatization.

2428 ZAMAN, A; ISLAM, R.; JOARDER, OI; BARMAN, AC. 1993. **Clonal propagation of mulberry from mature field grown trees.** *International Plant Tissue Culture Conference.* (Dhaka Univ., Dept. of Botany: December 19-21).

2429 ZAMAN, A; ISLAM, R; ISLAM, S; BARMAN, AC; JOARDER, OI. 1994. **Effects of aminoacids on cloning of mulberry microshoots: observation, analysis and consequences.** *Bull. Sericult. Res.* V.5.

2430 ZAMAN, A; ISLAM, R; JOARDER, OI; BARMAN, AC. 1992. **Effects of different sugars on in vitro shoot proliferation of *Morus alba* cv SI.** *Bull. Sericult. Res.* 3: 14-17.

2431 ZAMAN, A; ISLAM, R; BARMAN, AC; JOARDER, OI. 1992. **Effects of pH on in vitro rooting of mulberry (*M. alba*).** *Bang. Silk,* 3:76-78.

2432 ZAMAN, A; ISLAM, R; BARMAN, AC; AHAD, A; QUADER, MA; JOARDER, OI. 1993. **Effects of sucrose, pH and temperature on the vitro rooting of mulberry (*Morus alba* L. cv SI) microshoots.** *Bull Sericult. Res.* 4: 10-13.

2433 ZAMAN, A; ISLAM, R; HOSSAIN, M; HOSSAIN, ABM BAIZEED; BARMAN, AC; JOARDER, N. 1992. **In vitro clonal propagation of mulberry (*Morus alba* cv SI) Effects of agar and pH on shoot proliferation.** *Bull. Sericult. Res.* 3: 51-54.

2434 ZAMAN, A; ISLAM, R; AHAD, A; ISLAM, S; BARMAN, AC; JOARDER, OI. 1994. **In vitro technique as an efficient tool for the micropropagation of mulberry : microbial interruption in different seasons.** *Bull. Sericult. Res.* V.5.

2435 ZAMAN, A; ISLAM, R; HOSSAIN, M; JOARDER, OI; AHAD, A; BARI, MA. 1993. **Morphogenetic behavior of mulberry (*Morus alba* C776) seedling shoot tip explants.** *J. Bioscience,* 1: 49-53.

2436 ZAMAN, A; ISLAM, R; HOSSAIN, M; BARI, MA; JOARDER, OI. 1993. **Plant regeneration and seedless fruit formation in nodal explant cultures of *Morus alba* L. Cv. SI.** *Sericologia,* 33: 2, 313-322.

2437 ZAMAN, MA; RAHMAN, SM; JOARDER, N; ISLAM, R. 1991. **Mass propagation of mulberry (*Morus alba* L.) through axillary bud culture.** *Plant Tissue Culture,* 1: 75-78.

AQUACULTURE

2438 HOSSAIN, MS. 1992. **Tissue localization of *Aeromonas salmonicida* strains following bath challenge in Atlantic salmon, *Salmo salar* L..** *Bangladesh Journal of Microbiology,* 9: 2, 67-73.

The localization of nine *Aeromonas* strains within the tissues of atlantic salmon parr, *Salmo salar*, was determined following bath challenge. Of 6 tested, kidney was the site where bacteria were largely localized. The reference virulent strain FCS was found to localize in very high numbers ($1.48 \times 10(1)$ cfu/g issue) in the kidney. Other than FCS, a virulent strain B901044 (3) was found to localize in considerable numbers ($3.9 \times 10(2)$ cfu/g tissue) in the spleen. There was no apparent difference in the localization pattern of the other *A. salmonicida* strains.

2439 JANA, BB; SARKAR, G; KUNDU, G. 1985. **Pattern of physicochemical changes in the water during hatching of Indian carp eggs in a Chinese hatchery.** *Aquaculture,* 47: 1, 89-96; 17 ref.

Physicochemical changes in the water were monitored at different stages of embryo and larval development of Indian carp (*Cirrhinus mrigala*) eggs in a Chinese hatchery system with 75-85% hatching success. At a water temp. of 29.3°C, mass hatching of the embryos started at about 11-12 h after fertilization, and was completed within 4 h. The amount of dissolved oxygen and chemical oxygen demand ranged between 4.8 and 9.63 mg/litre and between 16.5 and 185.0 mg/litre resp. A marked rise in the concentration of bicarbonate and total hardness of the water after egg transfer into hatching tanks was perhaps due to liberation of calcium and magnesium ions from the egg mass. A sharp decline in phosphate content during hatching was associated with the building of bones, while the ammonia level was greatly increased due to a high rate of nitrogenous excretion during hatching.

2440 JHINGRAN, VG. 1987. Possibilities and constraints in fish production and the roles of genetic engineering and biotechnology. *Agricultural applications of biotechnology: Proceedings of the Nayudamma Memorial Symposium*. (Madras: 1986: Dec 15-17)/edited by AN Rao, HYM Ram. Committee on Science and Technology in Developing Countries. p. 169-180.

This discussion considers the varieties of *Cyprinus carpio*, and the improvement of their performance by hybridization, selection, induction of gynogenesis, polyploidy and sex inversion, and by genetic engineering.

2441 KAGWADE, PV; KABLI, LM. 1991. Embryonic development of larvae on the pleopods of the spiny lobster *Panulirus polyphagus* (Herbst) and the sand lobster *Thenus orientalis* (Lund) from Bombay waters. *Indian Journal of Fisheries*, 38: 2, 73-82.

2442 KARUNASAGAR, I; ROSALIND, G; KARUNASAGAR, L. 1991. Immunological response of the Indian major carps to *Aeromonas hydrophila* vaccine. *Journal of Fish Diseases*, 14: 3, 413-417.

Fingerlings of the three major types of Indian carp, i.e. *C. catla* (Hamilt.), *L. rohita* (Hamilton) and *C. mrigala* (Hamilton), were immunized using a haemolysin-negative mutant of *Aeromonas hydrophila*. Very high titres of antibodies were induced in *C. catla*, followed by *C. mrigala* and *L. rohita*. Immunized fish showed good protection against homologous challenge. Moderate protection against heterologous challenge was observed in *C. mrigala* and *L. rohita*.

2443 KAVUMPURATH, S; PANDIAN, TJ. 1992. Hybridization and gynogenesis in two species of the genus *Brachydanio*. *Aquaculture*, 105:2, 107-116.

Reciprocal crosses between *Brachydanio frankei* and *B. rerio*, performed by mixing milt and eggs, resulted in hybrids phenotypically intermediate between.

2444 PATRA, BC; ADTYA, AK. 1989. Induced spawning and embryonic development of the carp *Labeo rohita* (Hamilton). *Journal of Ecobiology*, 1: 3, 236-240; 10 ref.

Pituitary extracts from mature common carp (*Cyprinus carpio*), silver carp (*Hypophthalmichthys molitrix*) and a mixture of Indian major carp species (*L. rohita*, *C. mrigala* and *C. catla*) were administered to sexually mature male and female *L. rohita*. A dose of 2-4 mg/kg body weight followed by a resolving dose of 4-6 mg/kg after 6h resulted in a spawning rate of 20-85%; the optimum resolving dose of 6 mg/kg resulted in a spawning rate of 75-85%; 81-89% of the eggs hatched.

2445 SINGH, S; SINGH, TP. 1985. Kinetic studies on the enzymes involved in estrogen biosynthesis and evidence for existence of a single 5-one-3beta-hydroxysteroid dehydrogenase complex in the ovary of the freshwater catfish, *Clarias batrachus*. *General and Comparative Endocrinology*, 58: 3, 458-463; 23 ref.

2446 TOOR, HS; SEHGAL, HS; BRAR, CS. 1983. Water-soluble phosphates: observed effects on embryonic development, hatching time, and survival of common carp. *Progressive Fish Culturist*, 45: 2, 134-135; 7 ref.

Newly fertilized eggs of *Cyprinus carpio* were incubated in water with 11 phosphate concentrations from 0.08 to 0.78 mg/lit. (50 eggs per conc.). Incubation time (interval from fertilization to hatching of 50% of eggs) was 60 h at the lowest phosphate conc., was max. (78h) at 0.14 mg phosphate/lit., and fell to 43h at 0.78 mg/lit. Hatching rate increased from 48% at 0.08 mg/lit to 88% at 0.12 mg/lit, then fell to 56% at 0.78 mg/lit. The percentage of deformed larvae was ≤ 10 at all concentrations; it was minimal at 0.12 and 0.14 mg/litre.