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Physical Sciences Section

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STUDY OF CABLE OIL AND PAPER OIL COMPOSITE SAMPLES DOPED WITH ADDITIVES UNDER HIGH ELECTRICAL STRESS

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(Received February 22, 1992; revised October 15, 1992)

The effects of aromatic additives have been investigated on the performance of mineral cable oil used in 132kV paper insulated underground cable in service in Riyadh area. Samples containing different concentrations of these additives were used and evaluation made on conduction current, burst current and breakdown voltage. Virgin samples of the dielectric paper used in this cable were impregnated in these oil samples for the investigation of power factor and breakdown voltage. The results indicate that an optimum concentration of the additives improves the performance of liquid as well as the paper-liquid composite.

Key words: Aromatic additives, Cable oil, Paper oil, High electric stress.

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EFFECT OF CALCINATION TEMPERATURE ON PHYSICO-CHEMICAL AND CATALYTIC CHARACTERS OF Sn-Mo-O CATALYST

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(Received April 29, 1991; revised October 13, 1992)

The effect of calcination temperature on physico-chemical characters of Sn-Mo-O catalyst (Sn:Mo = 1:3), calcined at different temperature (400-900°) were studied by X-ray and IR spectroscopic methods. It was proposed that the increase in activity and selectivity of catalyst calcined at 600° in acetone formation from propylene and methyl ethyl ketone formation from butene-1, were caused by molybdenum diffusion over the surface. Also, the increase in catalytic activity of Sn-Mo-O catalyst calcined at 600° in ketones formation can be explained by the enrichment of catalysts surface with molybdenum ions as a result of high temperature diffusion, leading to an increase of active centres concentration, which determines the catalytic acidity and leads to its high activity and selectivity in ketone formation reaction.

Key words: Calcination, Silica, Sn-Mo-O catalyst.

SYNTHESIS OF SOME FUROCOUMARIN DERIVATIVES AND THEIR ANTI-MICROBIAL ACTIVITIES

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(Received February 22, 1992; revised October 6, 1992)

Treatment of xanthotoxol (I) with some primary and secondary amines in the presence of formaline solution 40% afforded the Mannich bases (IIa-f). Chlorosulphonation of compound (I) using chlorosulphonic acid led to the formation of xanthotoxol-4- sulphonyl chloride (III), which allowed to react with some primary and secondary amines to give the corresponding sulphonamide derivatives (IVa-f, V, VIa-c). The condensation of the sulphonamide derivatives (V and VIa-c) with some aromatic aldehydes led to the formation of the corresponding Schiff's bases (VIIa-d, VIIIa-d and Xa-d).

Key words: Xanthotoxol-Sulphonamides-Mannich and Schiff's bases.

REACTIONS AND BIOLOGICAL ACTIVITY OF SUBSTITUTED QUINOLINE

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Substituted quinoline reacted with halo compounds, amino acids, urea, amides, anilides and hydrazines. All the synthesized derivatives were biologically investigated.

Key words: Biological activity, Quinoline, Chemotherapeutic drugs.

Biological Sciences Section

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GROWTH, YIELD AND RIPENING OF BASMATI-370 AS INFLUENCED BY DIFFERENT HILL SPACINGS AND PER HILL SEEDLING DENSITIES

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(Received April 2, 1991; revised October 7, 1992)

A field experiment, to evaluate the effects of 1, 2 and 3 seedlings transplanted at 20x20, 25x25 and 30x30 cm spacing on the growth, yield and ripening quality of Basmati-370, was conducted in randomized complete block design with 4 replications and net plot of 3x3 m. Narrower spacing increased the paddy yield, abortive kernels, opaque kernels and sterility per centage. While more seedlings per hill increased the opaque kernels, sterility percentage and panicle bearing tillers per hill. Hill spacing of 20x20 cm and three seedlings per hill produced the maximum paddy yield of 3.90 and 3.83 t ha⁻¹, respectively.

Key words: *Oryza sativa* L., Hill spacings; Seedlings per hill.

A PHYTOSOCIOLOGICAL STUDY OF WEEDS OF MAIZE (*ZEA MAYS* L.) CROP FIELDS IN MARDAN DIVISION

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(Received June 18, 1990; revised March 16, 1992)

A phytosociological investigation was carried out to find the structure and composition of weed communities of corn fields in Mardan division. The leading weed communities recorded on the basis of high importance values were: *Cyperus-Echinochloa-Brackiaria*; *Brackiaria-Trianthema-Cyperus*; *Brackiaria-Sorghum-Leptochloa-Leptochloa*; *Portulaca-Cyperus*; *Dactyloctenium-Amaranthus-Cyperus*; *Brackiaria-Leptochloa-Eleusin*; *Brackiaria-Cyperus-Eleusin*; *Brackiaria-Leptochloa-Echinochloa*; *Brackiaria-Eleusin-Cynodon* and *Cyperus-Brackiaria-Echinochloa*.

A comparison of importance values of maize crop and weed communities (on proportion basis) revealed that approximately 50% cultivated land was covered by dominant, codominant, associated and common weed species. It is presumable that this ratio of weeds infestation severely affect the crop production. A correlation coefficient analysis of the cover (biomass and canopy coverage) of maize and dominant weed species indicated an inversely proportional trend. The distribution of some weeds were found to be affected by ECe.

Key words: Weed, Community, Crop, Cover, Importance value.

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SYSTEMATIC STUDY OF MOLLUSCAN FAUNA OF LAYARI RIVER
Part-I. Archaeogastropoda (Aspidobranchia: Prosobranchia) from the Estuarine Region

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(Received June 23, 1990; revised September 19, 1992)

This paper deals for the first time with the systematic accounts of the gastropod order Archaeogastropoda from the estuary of a river of Pakistan. Two families, 5 genera and 6 species of this order are found in the estuarine part of the Layari river. Among these, three species i.e. *Euchelus circulatus*, *E. atratus* and *Trochus stellatus* and a genus *Gibbula* Risso are new records for Pakistan.

Key words: Prosobranchia, Archaeogastropoda, Layari river.

ANTICANCER AGENTS OF *ARISAEMA JACQUEMONTII* BLUME

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(Received July 11, 1991; revised October 21, 1992)

The account of the physiological properties of the genus *Arisaema* is presented. The petroleum benzene, chloroform and methanol extracts of *Arisaema jacquemontii* Blume have been found to be active against cancer. The methanol extract of the plant has yielded a new compound, arisaeminone (1). Its structure has been assigned on the basis of spectral studies.

Key words: *Arisaema jacquemontii*, Physiological properties, Cancer activity.

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THE FUNGUS *PHALLUS RUBICUNDUS*: POSSIBLE ATTRACTANT AND BIO-CONTROL AGENT FOR MOSQUITOES

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(Received February 16, 1992; revised October 21, 1992)

Fungi of the order Phallales (stinkhorns) are known to attract flies, beetles and termites. Eggs and mature fruiting bodies of these fungi produce a carrion-like smell, which presumably is the attractant. During this study it was observed that the mosquitoes (*Culex* spp.) were attracted to the dissected eggs of *Phallus rubicundus* and subsequently died after feedings on the deliquescent glebae of eggs. This group of fungi should be further investigated for possible mosquito attractant or bio- chemical compounds.

Key words: *Phallus rubicundus*, Mosquito, Attractant.

Short Communication

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**Residual Effect of Methyl Parathion in
Spinach (*Spinacia oleracea* L.)**

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Technology Section

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A NOVEL METHOD FOR THE PRESERVATION OF DEODOURIZED FISH PROTEIN AS POWDER BY THE USE OF EDIBLE SURFACTANTS

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(Received January 19, 1992; revised October 1, 1992)

A stable, wholesome, non toxic, nonhygroscopic and deodourized fish protein powder has been developed by an economically feasible process aimed at eliminating solvent extraction of oils and fats. The product also facilitates the fighting protein malnutrition because transportation of fresh or frozen protein to distant places often is not possible. Bio-technical problem has totally been abrogated by controlling the biochemical problem. It has been possible to protect lipid in fish protein, so as to stop its deterioration inspite of having lipid content as high as 20%. The protein powder is devoid of any hazardous elements. Innovation of the process is to preserve the most perishable valuable part of the fish at room temperature.

Key words: Fish protein, Protein powder, Edible surfactants.

STUDY OF MULLITE FORMATION IN FIRECLAY BRICKS

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(Received December 9, 1989; revised September 24, 1992)

Blends of high alumina clay from Choi, Attock and fireclay from Mianwali have been studied to produce bricks with improved characteristics. Improvement were followed by investigating mullite formation, thermal shock resistance, permanent linear change on reheating, crushing strength, porosity and bulk density.

Key words: Mullite, Fireclay, Bricks alumina refractories.

COMMERCIAL MANUFACTURING OF PASTEURIZED MANGO FRUIT FLAVOURED MILK-BASED BEVERAGES

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(Received July 9, 1992; revised October 15, 1992)

Mango, the king of fruits, is cherished by the rich and the poor alike in Pakistan for its organoleptic, nutritive and therapeutic values. Milk-shakes and mango-fruit beverages are among the most popular beverages in summer. By using different levels of the pulp of 'Chaunsa' variety of mango, and the three popular stabilizers 18 beverages were prepared; and after one day's cold storage, these were organoleptically evaluated by a panel of judges to select the best beverage. Mexpectin RS-450 gave the best results and that formulation was industrially manufactured by HTST pasteurizing and homogenizing at 80°. The industrially manufactured product was packed in brick packs on combi-block machine and by using the triangle taste test, the shelf-life was observed to be 49 days when kept refrigerated.

Key words: Mango, Milk-based beverages, HTST pasteurization.