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Physical Sciences Section

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MUSTARD SEED MEAL IN LAYER'S FEED*

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(Received August 18, 1980)

Enzymatically detoxified mustard seed meal (DMSM) was used as a substitute for sesame-seed cake, blood, or fish meal or decorticated cotton seed meal in layer's rations. The results showed that 100% sesame seed cake, 33% blood and 33% fish meal or 100% decorticated cotton seed cake could be replaced by DMSM in layer's ration. No deterioration in egg quality and production was observed.

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MICA FROM MEGO KATZ, LOI SHILMAN, KHYBER AGENCY, N.W.F.P.

M.A. Qaiser, M. Alauddin, M.A. Chaudhry and A.H. Khan

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(Received August 6, 1981)

Chemical, X-ray, and differential thermal analysis data are presented for Mica from Mego Katz, Loi Shilman, Khyber Agency. This mica has been identified as phlogopite with subordinate amounts of calcite and quartz. Its application for the manufacture of fire – resistance board, high temperature heat insulation bricks and decorative tiles were also studied.

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FIELD EVALUATION OF ACARICIDES FOR THEIR EFFECTIVENESS AGAINST WHITE MITE, *SCHIZOTETRANYCHUS* SPP. ON SUGARCANE

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(Received July 10, 1980)

Several new acaricides were evaluated against sugarcane white mite, *Schizotetranychus* spp., during 1969–1970. The sugarcane crop was sown at Punjab Agricultural Research Institute, Faisalabad, in a randomized block design. Each compound was sprayed three times at 10-day intervals.

Data on mite population and mortality were recorded 24 hr before, and 48 and 96 hr after each treatment. Twentyseven leaves were observed from each treatment. One square inch area from the top, middle and bottom of each leaf was observed under the microscope.

Chlorobenzilate, ethion, formothion and methylparathion were significantly more effective than other chemicals used against this pest. These acaricides provided more than 90 % control of white mite during the four days observation period. Four other compounds, chloropropylate, bromophosethyl, tetradifon, and azinphosethyl were relatively less effective. Further studies of their effect on predatory mites and integration with other cultural practices for the management of this pest are suggested.

Short Communication

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PHYSICO-CHEMICAL CHARACTERISTICS AND FREE FATTY ACID CONTENTS OF OLIVE FRUITS STORED UNDER DIFFERENCT CONDITIONS

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Short Communication

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A STUDY OF THE ALKALOIDAL CONTENT OF *DATURA METEL* (SOLANACEAE) GROWN IN PAKISTAN

Fatima Bi, Z. Kapadia, Wadood Qureshi and Yasmeen Bader

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(Received March 1, 1981)

Biological Sciences Section

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EVALUATION OF SHORT STATURE MUTANTS OF BASMATI-370 FOR YIELD AND GRAIN QUALITY CHARACTERISTICS*

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(Received June 26, 1980)

Three short stature mutants were induced in an indica rice cultivar by gamma irradiation. The mutants were assessed for their yielding ability and grain quality characteristics. All the mutants out yielded the parent variety, Basmati-370. The increase in yield of the mutants ranged from 19.37% to 29.66%. DM-2 gave the highest yield (3587.96 kg/ha) among the mutants. As regards physical, cooking and eating quality characteristics, there was no significant difference in water absorption, volume expansion ratios and stickiness among the mutants and Basmati-370. However, Basmati-370 was scored best for flavour as this variety had strong aroma as compared to its mutants which were scored for moderately strong aroma.

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ACTION OF A JUVENILE HORMONE ANALOGUE, STAUFFER R–20458, INSECT GROWTH REGULATOR, ON THE MORPHOGENESIS AND ADULT ECLOSION OF THE LABORATORY REARED HOUSE FLY, MUSCA DOMESTICA (L.)

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(Received April 8, 1981)

Hormonal activity induced by Stauffer R-20458 in each stage (egg, larva, pupa and adult) of the house fly has been studied. Bioassays of eggs, larvae and adults revealed that each stage was slightly responsive to JHA, but non was as susceptible as the newly ecdysed pupal stage. The period of maximum sensitivity to R - 20458 extended to 1–2 hr after cessation of larval feeding. This period of sensitivity decreased as the pupae became older. Adults did not emerge from the treated pupae. Dissections revealed a gradient of pupal - adult intermediates within.

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INDUCED VARIABILITY FOR HEADING DATE, PLANT HEIGHT AND TILLER NUMBER IN TRITICALE *

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(Received July 13, 1981; revised February, 1982)

Induced variability for heading date, plant height and tiller number in M_2 populations derived from γ-rays and EMS treated seeds of two triticale varieties namely DR-IRA (T_{33}) and Beagle (T_{937}) has been assessed.

For heading, the varieties responded differently. Earliness was induced in variety Beagle (T_{937}) while a mean response of lateness was induced in DR-IRA (T_{33}). Plant height was decreased in all treatments except EMS treatment of variety DR–IRA. In Beagle progeny of one plant in 25 kR dose produced all dwarf plants with stiff stem. The mutagenic treatments in general have depressive effect on tillers per plant.

Variability was substantially enlarged in all the treated populations of both the varieties.

Technology Section

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A FINE GRAIN MUTANT OF AN INDICA RICE VARIETY IR-6

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(Received February 1, 1981)

Dry seeds of an indica rice cultivar (IR-6) were irradiated with fast neutrons and a fine grain mutant was selected from segregating generations. As regards yield, yield components, protein contents, cooking quality and sensory characteristics, the mutant was comparable to that of IR-6. However, the grains of mutant were long, slender, translucent and nonchalky as compared to coarse and chalky grains of the parent variety which resulted in 8 % higher head rice recovery in this fine grain mutant.

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EXPERIMENTAL STUDY CONCERNING ENERGETIC INTERACTION OF GAS BUBBLE WITH LIQUID METAL SOLIDIFYING IN SAND MOULD

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(Received September 30, 1981)

This paper summarizes experimental methods and results of the casting experiments conducted in foundry shop of N.C.E.T., Karachi to observe certain phenomenas about gas formation in SiO_2 based sand mould. The apparatus essentially consists of a mould in which alloys, e.g., Brass, Cast Iron and. Steel, were cast, connected with a manometer for measuring gas pressure, which was replaced by a baloon for collecting gas when analysis was required. The experimental datas collected have shown that gas pressure developed in the mould cavity varies in four ways: firstly it increases abruptly immediately after pouring, then it decreases slowly, followed by slight increase and then permanent decrease. The analysis of mould gas was carried out with gas chromatograph and was found to be essentially consisting of CO_2, CO, N_2 and H_2, O_2 and hydrocarbons. As a conclusion, the energetic interaction, giving behaviour of gas bubble at different stages of pressure versus the alloys with different rates of solidification and physical morphology of some of the gas defects, have been elaborated.

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SOME INVESTIGATIONS CONCERNING THE MECHANISM OF SWELLING IN BRASS, CAST IN SiO_2 BASED MOULDING SAND

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(Received February 6, 1982)

The present paper presents experimental study of the mechanism of swelling of Cu-base alloys, a problem faced by non-ferrous foundry of Karachi Shipyard and Engineering Works Pakistan.

In experimental study the influence of different factors i.e., casting-temperature, weight of flux, grade of ramming and different casting techniques on Swelling has been observed to understand the mechanism of swelling. The detailed theoretical and practical study has confirmed that a casting is susceptible to swelling when either the mold is weakly rammed i.e., below 30 dietert number or insufficient weight is placed on the cope or openpit casting technique is applied.

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SUSCEPTIBILITY OF 5TH INSTAR *DIACRISIA OBLIQUA* WLK. LARVAE TO ORGANOPHOSPHORUS INSECTICIDES

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(Received August 18, 1980)

The 5th instar *Diacrisia obliqua* Wlk. larvae reared at 28± 1° and 60±2% R.H. were treated with different concentrations of Diazinon, Malathion, Nuvacron, Nuvacron combi and Dipterex. The larvae were found to be more susceptible to Nuvacron combi and Dipterex. The theoretical and practical implications of these investigations are also discussed.