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Physical Sciences Section

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NITRATION STUDIES IN IMIPRAMINE MONONITRO AND DINITRO DERIVATIVES OF IMIPRAMINE (10-11 DIHYDRO-N-N-DIMETHYL 5H-DIBENZ (b,f) AZEPINE -5-PROPANAMINE)

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Nitration studies in imipramine have yielded 2-nitroimipramine and 2,8-dinitroimipramine. The chemical and spectral data have shown that electrophilic substitution has taken place at C-2 and C-8.

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A MODEL TO DETERMINE THE IMPACT OF IMPROVED AGRICULTURAL EFFICIENCY

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(Received January 1, 1983)

This paper presents in evaluation of various studies conducted to determine the efficient organization agriculture sector. It suggests a methodological improvement through the use of technical coefficients of optimum sized farm firm rather than those of firms which are not of optimum size. Key words: linear programming; optimum firms; efficient organization; Manitoba.

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EFFECT OF CHRONIC ETHANOL ADMINISTRATION ON THE DISTRIBUTION OF TRYPTOPHAN IN APO-TRYPTOPHAN PYRROLASE LACKING SPECIES

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1. Chronic ethanol administration inhibited tryptophan pyrrolase activity in an apoenzyme lacking species like rabbit by causing decrease in substrate/product ratio. 2. Tryptophan enhancement of enzyme activity in control and ethanol treated rabbits again showed inhibition in the latter. 3. The concentration of tryptophan in plasma and of tryptophan and 5-hydroxy tryptamine in brain were significantly decrease in ethanol treated rabbits.

THE INFLUENCE OF SALT CONCENTRATION AND TEMPERATURE ON THE ACTIVATION ENERGY OF AQUEOUS SALT SOLUTIONS BY VISCOSITY METHOD

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(Received October 10, 1983; revised July 22, 1984)

The viscosity of sodium salts, namely, sodium tartarate and sodium oxalate in acidic aqueous ethanol (10-50% v/v) has been measured at 30°. The viscosities at 30°, 40°, 50°, and 60°C have also been measured at different concentrations of sodium salts in 50% ethanol, for the determination of the energy of activation. The viscosity data were found to fit the Jones-Dole equation. The increase in B-coefficient with an increase in temperature leads to the conclusion that the sodium salts behave as a structure breaker in acidic aqueous ethanol.

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ACCURATE MEASUREMENT OF MASS

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Mass is one of the base units of International System (SI) of measurement. Its accurate determination is therefore of considerable significance. Some relevant aspects of accurate measurement of mass have been enumerated. The procedure adopted for accurate comparison of masses has been elaborately described. The results of comparison of 30 pieces of a set of masses have been reported along with a measure of uncertainty of results. A sample certificate of authentication usually issued, as a result of these measurement, has also been included. The paper is rather elementary but it should pave way for further publications on similar topics.

MOLYBDENITE OF KOHISTAN, HAZARA DIVISION

Fazal A. Siddiqi, M.A. Qaiser, Kamin Khan and M. Amin

PCSIR Laboratories, Peshawar

(Received April 28, 1983; revised, July 15, 1984)

Chemical, mineralogical and X-ray analyses data of molybdenite of the Kohistan area are being presented for the first time. This ore contains subordinate amounts of tremolite, calcite, pyrite and quartz.

Biological Sciences Section

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PRESERVATION OF LEAF PROTEIN CONCENTRATE OBTAINED FROM *TRIFOLIUM RESUPINATUM* AND *PANICUM ANTIDOTALE*

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(Received May 26, 1984; revised September 16, 1984)

Microorganisms, Lipids, enzymes and moisture are the factors responsible for rapid deterioration of leaf protein concentrate at room temperature. Acetic acid (2%) successfully checked microbial and non-microbial deterioration of the leaf protein concentrate. The combined effect of emblic myrobalan leaf powder and acetic acid was more pronounced.

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REVISION OF *AJUGA* LINN. (LABIATAE) FROM PAKISTAN

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(Received December 13, 1980; revised, October 8, 1984)

Based on our studies regarding the species of *Ajuga* in the different herbaria of Pakistan as well as the herbaria at Kew, Edinburgh and Geneva, it was found that *Ajuga macrosperma* Wall has not been recorded from Pakistan so far, is reported in this paper. The distribution of *A. macro-sperma* Wall, is so limited that only one specimen is lying at Kew herbarium, London and one is available at the PARC herbarium, Islamabad.

EFFECT OF INCREASED SALT STRESS ON YIELD AND YIELD COMPONENTS IN RICE**Muhammad Siddique Sajjad***Nuclear Institute for Agriculture and Biology, Faisalabad, Pakistan*

(Received February 11, 1984; revised August 9, 1984)

Six genotypes previously identified as relatively salt tolerant were grown under five saline sodic condition in the artificially salinized cemented field basins. The basins were provided with the automatic drainage system at their bases. Both the genotypes and their yield and yield components reacted differently to salt stresses. Although all the plant attributes were afflicted by the harmful effects of saline sodic conditions, yet yield per plant were affected to the maximum. The salt tolerance limits of genotypes are also presented.

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BIO CHEMICAL STUDIES ON VIOLA ODORATA

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(Received November 24, 1982, revised September 23, 1984)

Preliminary investigation have been carried out upon the different organic and inorganic ingredients of the aqueous extract of *Viola odorata* which is an important medicinal plant in the Ayurvedic and Unani system of medicine for use against the ailments of the naso-pharyngeal tract.

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EFFICACY OF CERTAIN GRANULAR SYSTEMIC INSECTICIDES AGAINST THE GREEN PEACH APHID*

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(Received February 16, 1984; revised July 8, 1984)

Carbofuran G (0.84 kg a.i./ha), disulfoton G (Disyston = 1.12 kg, Solverix = 1.68 kg) and phorate G (1.68 kg) exhibited partial control of the green peach aphid, *Myzus persicae* (Sulzer) when applied as side-dressing 18 days after transplantation of tobacco seedlings.

Technology Section

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SUGARCANE PROCESSING AT THE VILLAGE LEVEL

Part V. An Evaluation of the Sugarcane Crusher (Belna, Trapiche)* and Some Suggestions to Improve Juice Extraction.

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(Received July 26, 1984)

The small sugarcane crusher (*belna, trapiche*) introduced in the sub-continent some hundred years ago has been thoroughly studied and evaluated. Its efficiency has been compared with the big sugar mill. The factors which affect the extraction of juice have been studied. Proper alignment and roll setting improve the juice percentage-cane upto 5%. The "feeler gauge", a small instrument has been introduced to achieve the suitable roll setting. Animal driven crusher operates at face speed 7 feet per minute but the electrically driven crusher operating at 42 feet per minute causes substantial loss in juice extraction. An optimum face speed of 20 feet per minute for the electrically driven crusher has been recommended. Face configuration also plays an important role in the juice extraction, while roll size has insignificant effect on the juice extraction. Proper maintenance and education of farmers in handling this machinery is very important for the proper working of this cottage industry.

Technical results of "gur" processing technology of Pakistan have been determined. Juice percentage cane varies from 52 to 60 percent as compared to that of the mills (74 - 77%). Purity of juice (77 to 90%) at village level is better than the mills (77 to 84%). Bagasse percentage (30 to 50%) and pol percentage bagasse (7 - 12%) are far more than at the mill level (bagasse percentage 30%) and pol percentage (bagasse 2.5%). This village level industry gets better quality of cane (pol percentage cane 13.7) than big sugar mills (pol percentage cane 11.5).

Introduction of feeler gauge, leveller and proper maintenance is recommended for the "gur" technology. Improvement in harvesting techniques and infra-structures for the transportation of sugarcane have also been recommended for the big mills.

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COMMERCIALY EXPLOITED GLASS RAW MATERIALS OF PAKISTAN*

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(Received April 16, 1984)

Representative samples of sand, dolomite, marble/limestone and soda feldspars now being commercially exploited by the glass industry have been evaluated for their chemical and mineral contents and utility. Sands from Mianwali possess a SiO_2 content over 99% and of Fe_2O_3 of less than 0.04% after simple water washing. The Fe_2O_3 content of Thana Bullah Khan samples is in the range of 0.09 – 0.1%. On the basis of the Fe_2O_3 , CaO and mineral contents of the marble/limestone, samples from Swawai (Swabi) and Pampokha (Swat) areas are rated as the best calcite limestones. The pampokha limestone has some streaks of dolomite embedded in it. The feldspars from Dadar Sanitorium and Jaba are good soda feldspars, while the feldspar from Dalbori shows some Ca spar contents as is also confirmed by chemical analysis. The dolomite of Gundai Turrako Hills shows iron contents of 0.1 – 0.2%.

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EFFECT OF FARMYARD MANURE ON THE AVAILABILITY OF ZnSO_4 IN TWO DIFFERENT TEXTURED SOILS

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(Received June 17, 1984; Revised October 8, 1984)

A soil incubation study was conducted on two texturally different alkaline calcareous soils to note the effect of premixing of ZnSO_4 with farmyard manure on the Zn availability in soil. Premixing of ZnSO_4 with farmyard manure about 12 hr. before its incorporation into the soil had little effect on Zn availability in loamy sand soil. On loamy clay soil it increased Zn availability ($P < 0.01$) than ZnSO_4 added alone at 25 ppm Zn application. At a lower rate of 5 ppm Zn application it had little effect on Zn availability. In both soils, native Zn decreased drastically after four weeks' incubation. More than 50 and 70% of the applied Zn could not be extracted by 0.005 M DTPA in the loamy sand and loamy clay soils, respectively, after four weeks of incubation. Zinc addition had no effect on Cu availability in the loamy sand soil but it increased its availability in the loamy clay soil significantly.

SEPARATION-SPECTROPHOTOMETRIC DETERMINATION OF Co(II) AND Mn(II) IN THE THIOCYANATE SYSTEM

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(Received March 27, 1982; revised August 13, 1984)

An investigation of complexes formed between Co(II) and Mn(II) and thiocyanate in hydrochloric acid solutions has been carried out, and the extractability of Co(II) by high molecular weight amine (HMWA) in organic solvent and its separation from Mn(II) was examined. The blue complex of Co(II)-SCN is quantitatively extractable into an organic phase containing tribenzylamine (TBA) a high molecular weight amine (HMWA), whereas the coloured complex of Mn(II)-SCN formed under the same conditions gets separated in the aqueous phase. Based on this selective extractability in the tribenzylamine (TBA), a method has been developed for the separation and spectrophotometric determinations of Co(II) and Mn(II). The extractability of the complex by a HMWA suggests that the coloured species is anionic.