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EFFECT OF FERRIC ALUM MORDANT ON ANNATTO-DYEING OF COTTON FABRIC

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(Received March 9, 1991; revised May 27, 1992)

The natural dye annatto was extracted from the plant species *Bixa orellana* and applied to pure white cotton fabric using ferric alum salt [$NH_4Fe(SO_4)_2.12H_2O$] as mordant. The quantitative determination of the amount of dye uptake in the fabric substrate was measured by extracting using stabilised DMF at 140° (dimethylformamide containing free radical inhibitor). The result obtained showed that the amount of dye uptake increased with the percentage strength of the mordant used for the pretreatment of the fabric before dyeing.

Key words: *Bixa orellana*, Ferric alum salt, Annatto-dyeing, Cotton fabric.

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MIXED-LIGAND COMPLEXES OF CHROMIUM(III), IRON(III) AND RUTHENIUM(III) WITH HOMOPHTHALIC ACID AND HETEROCYCLIC AMINES

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(Received September 23, 1991; revised May 24, 1992)

Several new mixed-ligand complexes of chromium(III), iron(III) and ruthenium(III) with homophthalic acid (hpH_2) and nitrogen-containing heterocyclic bases have been prepared and characterised by elemental analyses, conductometric, magnetic, infrared and electronic spectral studies. The complexes have the composition $K[M(hp)_2.L_2]$, where M=Cr(III), Fe(III) or Ru(III); hp=dianion of homophthalic acid; L=quinoline (Q), isoquinoline (IQ), pyridine (Py), 2-picoline (2-Pic) or 4-picoline (4-Pic). A proposed octahedral structure for all the complexes is supported by magnetic and spectral data.

Key words: Mixed-ligand, Complexes, Amines.

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GROUP CALIBRATION OF MASSES
Part–II. Masses of Denomination 500 gm to 1 mg

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(Received July 22, 1990, revised September 7, 1991)

A standard design scheme has been applied to different decades of masses starting from 500 gm to 1 mg in order to study the process parameters in the calibration of masses in terms of the 1 kg national reference standard mass. The standard deviations and the uncertainties have been computed in each case taking into account the systematic uncertainty of the 1 kg reference standard mass and the random errors of measurement.

Key words: Reference standard, Design scheme, Group calibration, Systematic and random uncertainty.

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DIGESTIBILITY OF ALKALI TREATED CORN COBS

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(Received March 25, 1990; revised May 2, 1992)

The dry matter digestibility of corn cobs on treatment with sodium hydroxide, potassium hydroxide or calcium hydroxide increased from 23.5–55.88, 41.5 and 48.48% respectively. Successive treatment with 4.0% sodium hydroxide and 2.0% calcium hydroxide increased dry matter digestibility to 64.44%. Improvement in the digestibility of cellulose, minerals and organic matter was also observed with these treatments. Reduction in neutral detergent fibre especially in hemicellulose contents from 18.92–12.00% along with two fold increase in reducing sugars was noticed. A significant reduction in lignin contents was also observed due to the action of alkalies on corn cobs.

Key words: Corn cobs, Alkali treatment, Digestibility.

Short Communication

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Preparation and Mechanisms Studies of Thioglycollic Acid

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PRELIMINARY STUDIES ON SENSORY EVALUATION AND NUTRITIVE VALUE OF SOYBEAN YOGHURT

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(Received September 3, 1990; revised June 3, 1992)

Pomegranate and raspberry flavoured soybean milk yoghurt was organoleptically evaluated by a 30 member panel. Sensory assessments of the two flavours show that pomegranate flavoured soybean yoghurt was acceptable to 88% of the panel members and raspberry flavour to 61%. The verdict on appreciation of soymilk based yoghurt by good 75% (average of two flavour) of panel members is encouraging and indicates future prospects for deriving protein from vegetable source such as soybean.

Key words: Soybean yoghurt, Pomegranate, Raspberry flavour, Organoleptic evaluation.

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EFFECT OF TRANSPLANTING AND DIBBLING ON THE YIELD AND YIELD COMPONENTS OF COTTON (*GOSSYPIUM HIRSUTUM* L.)

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(Received July 20, 1991; revised May 5, 1992)

The investigations were carried out to study the effect of transplanting with and without soil, and dibbling methods on plant morphology, seedcotton yield, and its components on cotton (*Gossypium hirsutum* L.) Cv. MNH-93. It was concluded that there were no significant differences between dibbling and transplanting the seedlings with soil. Both these treatments produced significantly higher number of successful hills, monopodial and sympodial branches, number of bolls per plant and yield of seedcotton than transplanting the seedlings without soil. However, there were no treatment effects on ginning turn out and fibre length.

Key words: Cotton, Transplanting, Dibbling, Fibre quality.

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ROLE OF SEAWEED IN POULTRY FEED. *Part –I*

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(Received December 31, 1990; revised April 7, 1992)

Brown seaweed *Cystoseira barbata*, was processed and used in poultry feed. An increase in body weight, number of eggs and shell thickness was observed.

Key words: Poultry feed, Brown seaweed, Karachi coast.

Short Communication

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Antifungal Activity in *Salvia santolinifolia* Boiss

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Short Communication

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Effects of Lead Toxicity on Seed Germination and Seedling Growth of Some Tree Species

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Technology Section

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CHARACTERISTICS OF GLASS MAKING SANDS OF MUNDA KUCHHA, DISTRICT MANSEHRA AND THEIR BENEFICIATION AND UTILIZATION FOR THE PRODUCTION OF COLOURLESS CONTAINER GLASS

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(Received November 20, 1991; revised; May 12, 1992)

Large deposits of silica sand occur at a distance of 50km to the northeast from Mansehra town, near Munda-Kuchha village along the Siran river. Estimated reserves upto a workable depth of 300 feet are 57 million tons. Twelve representative samples were collected from the area for studying their suitability for glass industry. The chemical composition and grain size distribution of these samples were determined. Beneficiation studies by physical and chemical methods were undertaken to remove colour imparting impurities which are a factor for producing the glass of inferior quality. The objective of this study was to upgrade the quality of silica sand to the acceptable limits for the production of colurless container glass. Using physical methods a maximum of 41.66% of the iron, the most undersirable impurity, was removed; by chemical treatment seven of the twelve samples can be brought into the specification for colourless container glass, five can be brought into, or very near, the specification for optical glass.

Key words: Evaluation, Glass sand, Mansehra.

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PREPARATION OF ZINC SULPHATE ELECTROLYTE FROM ZINC SULPHIDE CONCENTRATE

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(Received April 2, 1991; revised May 28 , 1992)

A process is described for the preparation of zinc sulphate solution from a zinc sulphide concentrate that was obtained by flotation of a local lead-zinc ore. It has been shown that 97% ZnO is obtained at a temperature of 925°, while at a lower temperature of 750°, the same percentage of ZnO is obtained if air is passed over the zinc sulphide during roasting. The dissolution of zinc oxide has been studied using sulphuric acid concentrations of 20.5–50.5 gm/l at liquid to solid ratios varying from 11.25–31.50. It has been shown that 97.9% Zn is leached at a H_2SO_4 concentration of 48 gm/l with a liquid to solid ratio of 13.75 in 60 mins. The leach solution has been purified by raising its pH from 2.97–5.80 which resulted in the precipitation of iron and aluminium. Heating the solution during precipitation helps in the coagulation of precipitate for easier filtration.

Key words: Electrolyte, Flotation concentrates, Leaching, Roasting.

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ETHANOL FERMENTATION OF RAW STARCH

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(Received November 30, 1991; revised May 16, 1992)

Ethanol fermentation of raw starch was carried out at 30°, with and without shaking, in a 250 ml conical flask. 90% (v/v) ethanol was produced under shaking conditions while 6.5% (v/v) was produced under static conditions, after 96 hrs, proving agitation to be stimulative for ethanol production. The ethanol yield was further improved to 10% (v/v) when an aerobically cultivated yeast cells or mold mycelium was added to the fermentation broth.

Key words: Yeast cells, Anaerobic, Agitation.