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THE RAMAN STUDIES OF TRIHYDROGEN HEXACYANOCOBALTATE(III) $H_3Co(CN)_6$

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(Received October 27, 1980 ; revised August 4, 1982)

The Raman spectra of Trihydrogen hexacyanocobaltate(III) has been studied in the solid state and aqueous solution. Solid trihydrogen hexacyanocobaltate(III) $H_3Co(CN)_6$ is unusual in possessing abnormality high value for the wavenumber of the antisymmetric CN stretching vibration and a NHN distance in $H_3Co(CN)_6$ which indicates the shortest N-H-N hydrogen bond yet discovered.

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GRAIN AND PROTEIN YIELD CORRELATION IN WHEAT AS INFLUENCED BY CROP CULTIVAR AND NITROGEN FERTILIZER

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(Received August 18, 1980; revised July 21, 1982)

Two parameters namely the yield of protein and the yield of grain were correlated in ten high yielding cultivars of wheat. This relationship was, however, found non-significant. Hence, the protein content of the existing wheat cultivars need further improvement to enhance the per ha yield of protein. The effect of nitrogen fertilizer on such correlations in two wheat cultivars, Khushal-69 and Mexi Pak-69 was also studied. It was observed that the increase in grain yield due to nitrogen fertilizer resulted in a significant increase in the protein yield of both the cultivars, which suggests that in intensive cultivation, nitrogen fertilizer can play an important role in increasing the protein yield along with the yield of grain.

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SOME REACTIONS ON 3[2′-(4′H, 2′, 1′)-BENZOXAZIN-4′-ONYL] COUMARINS AND 3(2′-QUINAZOL-4′-ONYL)COUMARINS

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(Received January 27, 1981; revised February 21, 1982)

3(2′-Quinazol-4′-onyl) coumarin (II) was obtained by fusion of 3(2′-(4′H, 3′, 1-benzoxazin)-4′-onyl)coumarin (I) with ammonium acetate or formamide by fusion at 190°. II reacts with benzoyl chloride or phosphorus oxychloride yielding the corresponding 4′-substituted quinazolines derivatives (III). I reacts with amines giving the corresponding anilide derivatives (V). I or II reacts with hydrazine hydrate to give salicylazines (VII) and pyrazolinone (VIII). Michael reaction of I with ethylacetoacetate, diethylmalonate or acetylacetone gives pyranobenzopyrandiones (IX) or 3, 4-disubstituted 3,4-dihydrocoumarin (X). I and IIIb react with sodium azide to give tetrazole derivatives (XI and VI).

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AN APPLICATION OF POTASSIUM PERMANGANATE AS AN OXIDANT FOR THE DETERMINATION OF NITROGEN IN AGRICULTURAL AND ANIMAL PRODUCTS

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A method has been described for the determination of nitrogen in agricultural and animal materials in the Kjeldahl digests by the use of potassium permanganate. The material is digested with sulphuric acid using mercury and potassium sulphate as catalyst. The resultant ammonium sulphate is reacted with potassium permanganate in the presence of potassium bromide and sodium hydroxide in a special flask. The unreacted potassium permanganate is then determined iodometrically.

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PHYSICO CHEMICAL CHARACTERIZATION OF *LAWSONIA ALBA* OIL OF THE FAMILY MYRTACEAE

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Biological Sciences Section

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ROOT-KNOT NEMATODES ASSOCIATED WITH BANANA IN PAKISTAN*

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EFFECT OF DIFFERENT LEVELS OF IRON MANGANESE AND PHOSPHORUS ON THE YIELD AND NUTRIENT CONTENT OF RICE

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(Received March 24, 1980; revised December 20, 1981)

The effects of Fe, Mn and P on the growth of plant parameters and their contents were studied using rice in a calcareous soil. It was observed that the applications of Fe, Mn and P either alone or in combination has no beneficial effects except in isolated cases on the yields, plant height and growth of tillers. Accordingly any of them when applied together or in combination to the growth medium, tended to reduce the uptake of each other by rice, straw and grain. Further research on this line using foliar application of these nutrients may give some conclusive results.

Short Communication

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LEAFHOPPER INFESTATION OF VEGETABLE AND FRUIT PLANTS IN SIND-PAKISTAN DURING 1979–1980

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Technology Section

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BIOSYNTHESIS OF GLUCOSE ISOMERASE BY LOCALLY ISOLATED *STREPTOMYCES ALBUS* IN SHAKE FLASKS

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(Received December 23, 1981)

Streptomyces albus WRL–7 was locally isolated for the synthesis of intracellular enzyme glucose isomerase in shake flasks. Of all carbohydrates: xylose induced maximum enzyme synthesis. The optimum level of xylose was1.0 % w/v and the amount of enzyme produced was 3.36 U/ml. The xylan, polymer of xylose, containing agricultural by-products such as corn cobs, wheat bran, rice bran or cotton seed hulls were evaluated as such or their hydrolysate for enzyme synthesis. The productin of glucose isomerase was induced by all of them but enzyme production was better in the presence of corn cobs or wheat bran. Effect of partial replacement of xylose by glucose was also investigated but the results of enzyme formation were not encouraging. Effect of the addition of nitrogen sources such as peptone, yeast extract, beef extract, malt extract CSL or casein on the production of glucose isomerase was also studied. Peptone or CSL was found to be 1.0 % i.e., 3.21 U/ml. The production of enzyme in the presence of inorganic nitrogen sources, however, was greatly effected. The mineral nutrition of the selected culture was also inestigated. The presence of Mg^{++} and Co^{++} was found to be essential for enzyme synthesis.

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MICROBIAL SYNTHESIS OF XANTHAN GUM BY LOCALLY ISOLATED *XANTHOMONAS CUCURBITAE**

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(Received September 20, 1981)

Biosynthesis of xanthan gum was studied using locally isolated *Xanthomonas cucurbitae* (PCSIR--52). Of all carbohydrates, such as xylose, glucose, fructose, sorbose, mannose, galactose, sucrose, maltose, lactose or starch, sucrose was found to be an ideal substrate for the production of gum. The optimum level of sugar was 3 %. The addition of corn steep liquor resulted in maximum gum formation by the culture. The pH control near neutrality by adding $CaCo_3$ (0.1%) greatly increased the formation of polysaccharide. The production of xanthan gum in 10 l glass-stainless steel fermenter was better as compared with shake flask cultures.

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INHIBITION OF BULK POLYMERIZATION OF VINYL ACETATE IN THE PRESENCE OF CASTOR OIL PREPOLYMER (COP)

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(Received June 27, 1981)

The bulk polymerization of vinyl acetate was inhibited in the presence of small amounts of Castor Oil Prepolymer (COP). Polymerization were carried out at 25° using benzoyl peroxide as a catalyst and dimethyl aniline as promotor. A plot of induction period VS concentration of COP and the usual polymerization curves in presence of COP is reported. A possible explanation has been given.

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THE THERMAL DEGRADATION OF COPOLYMERS OF VINYL ACETATE AND VINYL ALCOHOL

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(Received September 24, 1981)

A study on the thermal degradation of copolymers of vinyl acetate and vinyl alcohol (V–OAC/V–OH) has been carried out using techniques such as Thermal Volatilization Analysis (TVA), Thermal Gravimetric Analysis (TGA) and Differential Thermal Analysis (DTA). It has been found that stability to weight loss decreases with the increase of vinyl acetate content in the copolymer. product analysis by Infrared Spectroscopy of the copolymers degraded in steps indicates that there is no interaction between adjacent acetate and alcohol units in the chain and deacetylation of V–OAC units proceeds separately from and at lower temperatures than decomposition of the V–OH units.

INTRODUCTION

1M solution of NaOH was used as supplied by Hopkin