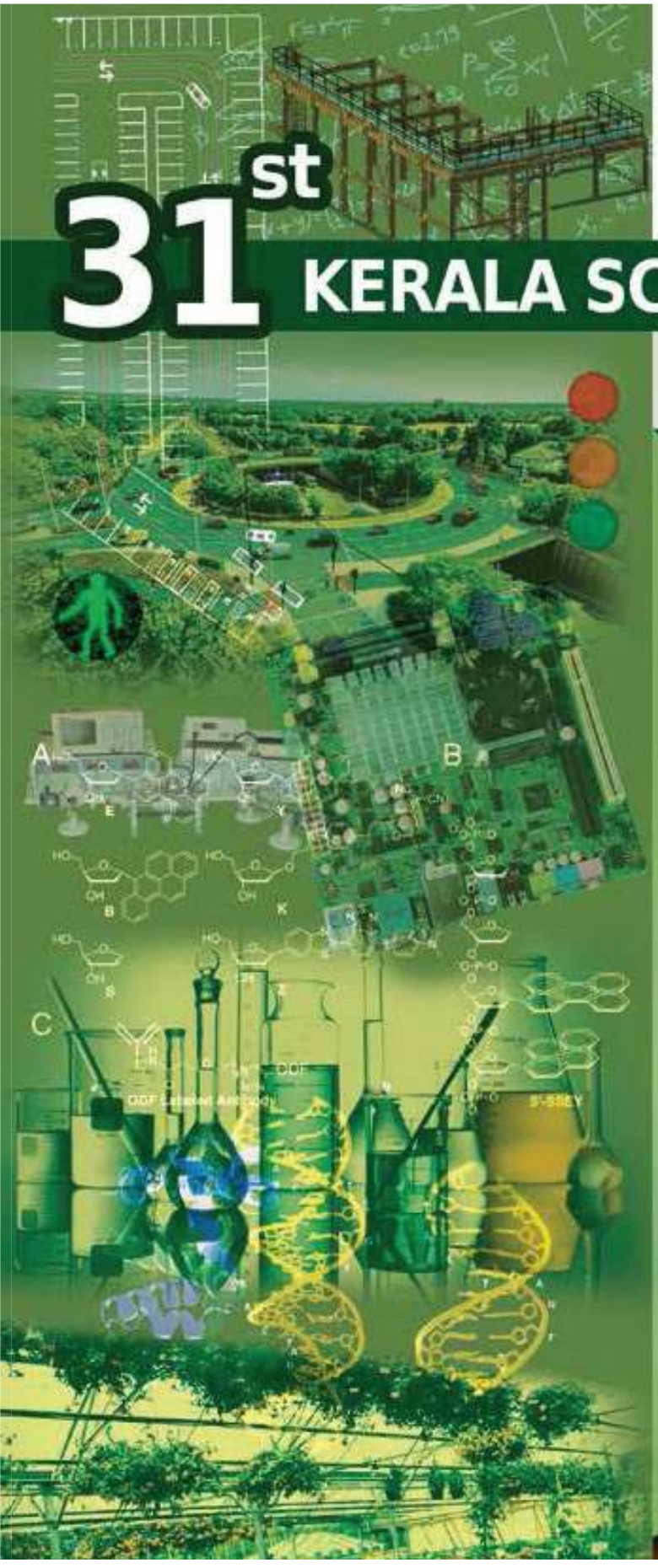

Our environment
Our future
Science and technology for
Rebuilding Kerala

31st KERALA SCIENCE CONGRESS

02-03 February, 2019
Fatima Mata National College, Kollam

Abstracts

सत्यमेव जयते

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Focal Theme
Our Environment – Our Future: Science and Technology for Rebuilding Kerala

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Member Secretary, KSCSTE &
General Convener, 31st Kerala Science Congress

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treatment produced the lowest crop growth parameters. Net irrigation requirement for the aerobic rice is 380 mm for the cultivated season, whereas the same modeled using CROPWAT for anaerobic rice is 819 mm, which showed a water saving to the tune of 57 %.
Conclusions: To conclude, direct method of line sowing along with 125 % of recommended dose of inorganic fertilizers will result in higher crop and water productivity under aerobic rice cultivation.
Keywords: Aerobic rice, Productivity, CROPWAT Model.

09-10

EFFECT OF BISPHENOL A ON THE PROTEIN TURNOVER REGULATING ENZYMES AND PROTEIN PROFILE IN THE MALE *DROSOPHILA ANANASSAE* (DOLESCHALL)

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Background: Bisphenol A (BPA), major industrial chemical and an environmental estrogen, is present in various types of plastic products and has residual effect on the ecosystem. Adult males of *Drosophila ananassae* which were developed in culture with BPA at concentrations of 10, 15 and 20mg/L were tested for effects in protein profile and protein turn over regulating enzymes.
Methods: Estimation of total protein**,** SDS PAGE and assays of Cathepsin D, Leucine amino peptidase, Transaminases and Phenyl oxidase using standard protocols.
Results: Significant changes in protein profile and enzyme activities in the studied concentrations indicate stress response to BPA.
Conclusion: BPA induces stress in the males of *Drosophila ananassae* which were developed in BPA containing media. Bishenol A present in the environmental matrices is detrimental to invertebrates.
Key words: *Drosophila ananassae*, Bisphenol A, protein profile, Transaminases, Phenyloxidase, Leucine amino peptidase, Cathepsin D

09-11

ANALYSIS OF GENETIC DIVERSITY IN *ANANAS COMOSUS* (L.) MERR HYBRIDS USING ISSR MARKER

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[2]Department of Botany, University of Kerala, Kariavattom, Thiruvananthapuram.

Background: Pineapple, *Ananas comosus* (L.) Merr., is a commercially demanding important tropical fruit that belongs to the family Bromeliaceae. In pineapple sexual reproduction is rare in nature due to self-sterility.Hybridization is possible due to heterozygosity and hybrids are valuable materials in breeding programmes and a wide variety of genotypes could be generated. Genetic variations are very important in crop improvement and it forms the basis of development of new varieties.
Method: Two pineapple hybrid plants (coded as KM 1 and KM 2) from the cross between *Ananas comosus* cv. Mauritius female (coded as M) and *Ananas comosus* cv. Kew male(coded as K) and one hybrid (coded as AK) from the cross between *Ananas comosus* cv. Kew female and *Ananas comosus* var. *bracteatus* male (coded as A) were selected for the present study. DNA isolation was done using NucleoSpin® Plant II Kit (Macherey-Nagel). The quality of the DNA isolated was checked using agarose gel electrophoresis. Nine primers were used for ISSR- PCR analysis. The PCR products were checked in 1.2% agarose gels prepared in 0.5X TBE buffer containing 0.5 µg/ml Ethidium bromide. For analysing the molecular data, strong and reproducible bands were scored. The analysis was carried out in power marker software.
Results: In the present study, genetic diversity among the parents and hybrids of a combination of pineapple varieties were analyzed using 9 ISSR primers. But 7 primers only produced banding patterns. Out of the 7 primers, 6 produced polymorphic bands and one primer produced a monomorphic band. In total, primers produced 33 bands, out of which 31(94.29 %) were polymorphic and 2 (5.71%) were monomorphic. In the UPGMA tree, two principal clusters were formed. The first principal cluster consists of A, AK and KM 1. The second principle cluster contained M, K and hybrid

KM 2.
Conclusion: This study proves that ISSR marker is a powerful tool for the detection of genetic variability in different cultivars and hybrids of *Ananas comosus.* So the morphological similarities between hybrids and parents are proved by the molecular analysis.
Keywords: *Ananas comosus,* Genetic diversity, ISSR marker, UPGMA

09-12

POLYPHENOLIC COMPOUND AND ITS FREE RADICAL SCAVENGING POTENTIALITY OF WILD AND CULTIVARS OF *IMPATIENS BALSAMINA*

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Plants are valuable sources for vast array of secondary metabolites. Among them anthocyanins are naturally occurring flavonoids and are the largest group of water soluble pigments derived from the precursor phenylalanine. These are natural colourants with immense biological potentialities. Bright color of anthocyanins ensures a natural healthy alternative to synthetic dyes. Balsam is one of the species show wide variation in terms of colour and shape of flower and are widely distributed throughout the Northern hemisphere and tropics. Tribals use the coloured floral extracts of *Impatiens balsamina* against snakebite, burn, warts, rheumatism, fractures, hair growth, constipation etc. Interestingly, the ethnic usage is not validated scientifically. Anthocyanins are proven for its nutraceutical values. Initially the anthocyanin from Balsam species was screened followed by evaluation of antioxidant potential of the promising species. Significant levels of total phenols and flavonoid content was noticed in the wild and cultivar of *I.balsamina*. Subsequently, the antioxidant potential was analysed. Remarkable scavenging potentialities were showed against metal chelating, ABTS radical, DPPH and FRAP assays and the results were comparable with the synthetic antioxidant like ascorbate and catechin. The varied potentialities of the radical scavenging by the extracts may be due to the factors like stereo selectivity of the radicals or due to the varied fractions of anthocyanin in the crude extract. Further studies are warranted to isolate and fractionate the major anthocyanins from the Balsam species.
Keywords: Balsam, Anthocyanin, Ascorbate, Catechin, *I.balsamina.*

09-13

THE EFFECT OF RHEUMATOID ARTHRITIS SYNOVIAL FLUID ON THE TH17 / TREG RATIO IN A HEALTHY BLOOD SAMPLE

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Background: Rheumatoid Arthritis is a chronic autoimmune disorder that affects the joints and leads to their inflammation. The synovial fluid of Rheumatoid Arthritis patients contains many pro-inflammatory cytokines like IL-1β, IL-23, IL-15, IFN-ϒ, TNF-α etc. The peripheral blood sample of Rheumatoid Arthritis patients was found to have disturbed Th17/Treg balance, due to the expansion of Th17 cells and Th17-related proinflammatory cytokines. Decreased frequency of Treg cells have also been observed. Th17/Treg balance is very important for a healthy immunoregulation. A disruption in this pattern can lead to the development of autoimmunity.
Method: Healthy blood sample was taken and cultured with 10% cell-free Rheumatoid Arthritis synovial fluid at 37°C in 5% $CO_2$for 18 hours. Mitogen stimulation was given for 6 hours. Surface staining and intracellular staining for Th17 and Treg cells were carried out and acquired in Flow Cytometry.
Results: From the analysis of the plots obtained, there is a slight increase in the value for Th17 cells and a considerable decrease in the value of Treg cells from the control, signifying a notable increase in the Th17/Tregratio. The Th17/Treg