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Review Article **Published Date:-2017-12-07 00:00:00**

[Role of polyamine metabolism in plant pathogen interactions](#)

Polyamines are aliphatic amines found in all living cells, and they are necessary for several fundamental cell processes. Their protective role against various abiotic stress factors has been reported in different plant species, while the mechanism by which polyamines act during plant-microbe interaction is still poorly understood. The several types of the interactions between the plants and the microbes outline a diverse and complex picture of the action mechanisms. The present review focuses on this aspect of the mode of action of polyamines and polyamine metabolism during biotroph and necrotroph interactions between plants and pathogens. It seems that apoplastic metabolism of polyamines of the host and the accumulation of H₂O₂ as a result of polyamine catabolism play important signalling roles in plant-pathogen interactions. The manipulation of the members of the polyamine-induced signalling pathways could increase the host plant resistance to biotic stresses.

Research Article **Published Date:-2017-10-11 00:00:00**

[Chlorophylls and xanthophylls of crop plants as dyes for Dye-Sensitized Solar Cells \(DSSC\)](#)

Natural dyes have become a viable alternative to expensive and rare organic sensitizers because of their low cost, easy attainability, abundance of supply of raw materials and environmental friendliness. Chlorophyll, the most abundant pigment, can be extracted from plant leaves with simple and inexpensive methods, but it's difficult to use as a Dye-Sensitized Solar Cells (DSSC) sensitizer due to the absence of OH and COOH groups. The opposite is true for xanthophylls, a particular class of carotenoids that contain free hydroxyl groups and thus may be considered as potential DSSC sensitizers. In this work we describe a new and inexpensive method of chlorophyll extraction from leaves based on the use of a basic solvent that provides the creation of COOH groups, allowing chlorophyll binding on the TiO₂ layer. This modified chlorophyll dye showed a higher DSSC efficiency level (0.72%) compared to xanthophylls, which had lower efficiency.

Research Article **Published Date:-2017-09-27 00:00:00**

[Evaluation of genetic diversity in germplasm of paprika \(*Capsicum* spp.\) using random amplified polymorphic DNA \(RAPD\) markers](#)

Capsicum spp. is one of the most important economical horticulture crops due to its high consumption either by fresh vegetable or dried spice. Molecular genetic markers offer a number of applications in the genetic improvement of crop plants, which plays an important role in the areas of plant classification and breeding programs. The polygenetic characters of rare species, which are difficult to analyze by traditional methods can be analyzed easily and classified by using molecular markers. In our study, genetic relationships of twenty-two paprika species were examined to estimate their genetic variations/similarities and to detect the polymorphism present within and among the paprika species by using RAPD-PCR markers. The results revealed that the maximum similarities among the 16 ICBD lines were 100%. The ICBD 03 had 76% similarity compared with other ICBD lines. The CC01 had comparatively low similarity with ICBD forms (30%), followed by EC01 (28%), EC02 (33%), CC02 (35%), and Kt.PI-19 (60%). The similarity between EC01 and EC02 were 54%. Kt.PI-19 showed different similarities compared to CC01 (41%), CC02, EC01 (38%), EC02 (29%) and ICBD 03 (40%). The different combinations were tried to optimize the RAPD-PCR profile, which helped to assess the polymorphism/similarities within and among the Paprika germplasms were studied.

Research Article **Published Date:-2017-09-25 00:00:00**

[Effects of Site Factors on the Clonal Growth of *Phyllostachys bambusoides* f. *shouzhu* Yi](#)

In order to provide theoretical foundation for forestation of *Phyllostachys bambusoides* f. *shouzhu* Yi, the site factors, and the morphological character and biomass of standard bamboo were investigated in 16 sample spots of bamboo forest in Liangping county, Chongqing City, and then the effects of site factors on the clonal growth was discussed. Three site factors as the slope position, altitude, species diversity, had significant effects on the clonal growth of the bamboo. The effects of the gradient, slope aspect, humus thickness, and soil thickness were little, but that of slope aspects was not significant. The altitude of above 800 m, the upper slope, the steep slope and slope, and the thin soil were not suitable for its clonal growth. The results showed that (1) the main site factors affecting the growth of *P. bambusoides* f. *shouzhu* were slope position, soil thickness and humus thickness; (2) The forestation site of *P. bambusoides* f. *shouzhu* should be selected at the flat ground and the gentle slope of the hills below altitude of 800 m, and the slope position of the forestation site should be selected at the mid and lower position of a hill; (3) Soil thickness and humus thickness should be kept at a suitable level; (4) The diversity of plant species in the bamboo forest should be kept at a suitable level for keeping its growth environment.

Research Article

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[Physiological impact of Zinc nanoparticle on germination of rice \(*Oryza sativa* L.\) seed](#)

Nanoparticles affects growth and development of Plant. Zinc is an important micronutrient that regulates various physiological responses in plant. Application of nanoparticles for modulating plants physiological response is a recent practice. Zinc nanoparticles has been widely used in industry for several decades. However, no significant work had been made on its potential use in agriculture. Understanding physiological effect of Zn NP on rice seed germination could suggest the basis for its prospective application in agriculture to improve plant growth. In the present experiment effect of Zn NP was studied in Kmj-6-1-1 which is a commonly growing rice cultivar of Karimganj district of Assam, India. An exposure to Zn NP (0 mg/L, 5mg/L, 10mg/L, 15mg/L, 20mg/L & 50mg/L) caused significant changes in radicle and plumule length, mass (fresh & dry mass) and seed moisture content in rice. Antioxidant enzymes like guaiacol peroxidase (GPx), catalase (CAT), superoxide dismutase (SOD) and glutathione reductase (GR) also increased due to ZnNP treatment. This suggest that Zn NP may significantly alters antioxidant metabolism during rice seed germination. In conclusion, Zn NP protected rice plants from ROS damage by improving levels of antioxidant enzyme activities during germination. As a consequence the Zn NP treated seeds, showed better potential for germination. Further, genomic analysis of germinating rice seeds are needed to elucidate the molecular mechanisms by which Zn NP modulates germination process in rice.

Short Communication

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[HBV: Genomic Structure, HBVsAg Isolation and innovative Virotherapy Initiation in the Middle East](#)

Hepatitis B virus (HBV) is one of the world's major infectious diseases with 350 million people who are chronic carriers of HBV [1]. Significant minorities go on to develop liver cirrhosis or hepatocellular carcinoma and over 1 million die annually from HBV-diseased liver. Janahi E. at faculty of science, Bahrain University, Bahrain has submitted the following information [2], on HBV-genome organization as part of his Ph.D. degree (2007) in Imperial College, England. HBV genomic organization has 4 Open Reading Frames (ORFs) i.e. Pre-S/S Gene, Pre-C/C ORF, P ORF and X ORF. Regulatory Elements has 4 promoters (pre S2, pre S1, C promoters and X promoters), Pregenomic RNA, Enhancers (Enh 1 and Enh 2) where they are involved in cccDNA formation, Glucocorticoid-Responsive Element which is located in X ORF and P ORF overlapping, Polyadenylation Signal (Direct Repeat 1 (DR1) and Direct Repeat 2 (DR2)), Epsilon-Stem Loop and Post-Transcriptional Regulatory Element. HBV genotype D is prevalent in our Middle East area. The HBV genome is a partially relaxed-circular dsDNA molecule consisting of a full length strand (minus strand) with a single unique nick and a complementary (positive strand) of variable length. HBV is considered as a para-retrovirus because its replication involves the reverse transcription of an intermediate-RNA function, of pre-genomic RNA (pgRNA). Replication of HBV genome starts with the encapsidation of the pgRNA and encodes HBV polymerase into an immature nucleocapsid formed by the viral core antigen.
