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SIMAROUBA GLAUCA: A WONDER PARADISE TREE

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Abstract: A rainfed wasteland evergreen edible oil tree, *Simarouba glauca*, is commonly known as 'Laxmitaru' or 'paradise tree' belonging to family Simaroubaceae. The specific name *glauca* means covered with bloom which refers to the bluish green foliage. *Simarouba glauca* is a species of flowering tree that is native to Florida in the United States. *Simarouba* forms an important source of edible oil for various South and Central American countries and is widely grown in countries like Costa Rica, El Salvador, Honduras, Cuba, Nicaragua, Mexico, Haiti and Jamaica. Cultivation of *simarouba* was introduced in India by National Bureau of Plant Genetic Resources as a potential source of vegetable oil during late sixties in sub-humid climate of Orissa. Later in seventies, the cultivation of *simarouba* spread to semi arid, dry and saline land areas of other Indian states like Gujarat, Maharashtra, Tamilnadu, Karnataka and Andhra Pradesh. *Simarouba* tree has an ability to grow well even in marginal wasteland/dry land with degraded soil. *Simarouba* is a unique tree that all its parts are useful in one way or other. Seeds are economically important, as they contain 55–65% edible oil, which can be used in manufacture of vegetable fat or margarine. *Simarouba* oil is also used in industrial manufacture of soap, lubricant, paint, polishes and pharmaceuticals, etc. Shells (endocarp) are used in hard board industry. Semi sweet fruit pulp, containing 11–12% sugars is eaten and is well suited for fermentation/beverage industry. Bark and leaf of *simarouba* contain triterpenes useful in curing amoebiasis, diarrhoea and malaria. This evergreen tree can be grown to prevent soil erosion and waste land reclamation. It can be cultivated in marginal land or wastelands to overcome oil shortage and economically viable and ecologically sustainable. The aim of this paper is to highlight the Pharmacological importance of different parts of the plant *simarouba glauca* and it may give a good platform for future researcher to carry out the various research activities on *simarouba glauca* plant.

Keywords: *Simarouba glauca*, Paradise Tree, Growth parameters, Cultivation practices

REPERCUSSIONS OF BARLEY (*HORDEUM VULGARE* L.) VARIETIES ON GROWTH, YIELD ATTRIBUTES AND YIELD UNDER VARYING PRECISION NUTRIENT MANAGEMENT PRACTICES

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Abstract: A Field experiment was conducted at Instructional Agronomy Farm, Rajasthan College of Agriculture, Udaipur (Rajasthan) during *Rabi* 2014-15 and 2015-16. The experiment was consisted 15 treatment combinations, comprising of three varieties (RD 2035, RD 2552 and RD 2786) and five precision nutrient management practices (PNMP₁: RDF – half N, full P₂O₅ and K₂O as basal + remaining half N as top dressing after first irrigation, PNMP₂: RDF – half N, full P₂O₅ and K₂O as basal + remaining half N as top dressing before first irrigation, PNMP₃: 50 % of recommended N and full P₂O₅ and K₂O as basal + Green Seeker based N top dressing after first irrigation, PNMP₄: 70 % of recommended N and full P₂O₅ and K₂O as basal + Green Seeker based N top dressing after first irrigation, PNMP₅: Soil Test Crop Response). The experiment was conducted in factorial randomized block design and it was replicated three times. Pooled results showed that dry matter accumulation, CGR, RGR, effective tillers, grains ear-1, test weight and grain yield were recorded significantly higher in variety RD 2552 over RD 2035 and RD 2786. Similarly, STCR based nutrient management (PNMP₅) gave significantly higher dry matter accumulation, CGR, RGR, effective tillers, grains ear-1, test weight and grain yield (50.64 q ha⁻¹) which was at par with application of 70 per cent of recommended N and full P₂O₅ and K₂O as basal + Green Seeker based N top dressing (PNMP₄) while, significantly higher over rest of the nutrient management treatments.

Keywords: Barley, Green Seeker, STCR, Yield, Dry matter, CGR, RGR

SYNERGETIC EFFECT OF ZINC ON NITROGEN CONTENT IN MUNGBEAN (*VIGNA RADIATA* L. WILCZEK) GENOTYPES

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Abstract: The field experiment was carried out at Instructional Farm, College of Agriculture, Mandor, Jodhpur during *kharif* season of 2019 to study the synergetic effect of zinc on nitrogen content. Under the present investigation, 4 varieties of mungbean and 7 doses of zinc in 28 treatments combinations were taken as experimental factors to study their effect on mungbean. The Field experiment was laid out in factorial randomized block design (RBD). The varieties under experimentation had significant influence on nitrogen content of mungbean at maturity stage. Substantially, highest nitrogen contents were observed in the grain (3.93 %) followed by stover (2.52 %) and pod wall (0.82 %) of mungbean respectively. Further, application of zinc at 6 kg/ha being on par with 5 kg/ha to mungbean fetched significantly highest nitrogen content in grain and stover of mungbean.

Keywords: Mungbean, Nitrogen, Synergism, Zinc

PERPENDICULAR DISTRIBUTION OF MACRO NUTRIENTS AND MICRONUTRIENTS OF GHATPIPARIYA VILLAGE OF DHANORA BLOCK IN SEONI DISTRICT, MADHYA PRADESH, INDIA

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Abstract: A study was undertaken to evaluate the nutrient fame of soils of Ghatpipariya in Seoni district, Madhya Pradesh, India. A total of 5 Series Soil samples were collected from different physiography-Soil relationship namely Plateau, Escarpment, Pediments and Alluvial Plain and analyzed for pH, electrical conductivity, organic carbon, available nitrogen, available P₂O₅ and available K₂O, and available micronutrients (Zn, Mn, Fe & Cu) using standard analytical methods. Based of fertility ratings, pH of soils was neutral to moderately alkaline. Electrical conductivity of all the soils ranged from 0.07 to 0.26 dSm⁻¹ which are within the acceptable limit and the soils have no salinity hazard at present. Organic carbon content in soils ranged from 0.17 to 1.92 per cent in different horizons . Soils of Ghatpipariya -2 series have high organic carbon content, whereas, soils of Ghatpipariya -4, Ghatpipariya -5 series have low organic carbon content. The calcium carbene varied from 1.45 to 5.3 %. Cation exchange capacity of soils range from 39.1 to 62.6 cmol(p⁺)kg⁻¹. Higher CEC values were observed in soils of Ghatpipariya -4 and Ghatpipariya -5. Based on the fertility parameters the soils are low in available N, low to very high in available P and medium to very high in available K. similarly available micronutrients *viz.* Fe, Mn and Cu were high in all the soils, while, deficiency of available Zn was observed in the soils of Ghatpipariya -1, Ghatpipariya -2, Ghatpipariya -3, Ghatpipariya -4 and Ghatpipariya -5. Predicated on soil characterization and fertility analysis the information generated will help in sustainable development and to enhance the crop productivity.

Keywords: Soil fertility, Macro-nutrients, Micro-nutrients, Ghatpipariya

EFFECT OF PLANT GROWTH REGULATORS ON ECONOMICS OF GARDEN PEA IN VARANASI CONDITIONS

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Abstract: A field experiment was conducted during winter season 2017-2018 to study the effect of different plant growth regulators (Salicylic acid, NAA and GA3) on economics of garden pea. The plant growth regulators were applied as foliar application at three intervals (30, 45 and 90 DAS). The foliar application of NAA @ 40 ppm observed maximum gross returns (392975.00 Rs/ha), net returns (327580.00 Rs/ha) and benefit cost ratio (5.01:1). These results are conclusive that foliar spraying NAA @ 40 ppm may positively increase economics of garden pea.

Keywords: Garden pea, Plant growth regulators, Salicylic acid, GA3, NAA

CLIMATE CHANGE- PERCEIVED IMPACTS ON AGRICULTURE, VULNERABILITY AND ADAPTATION STRATEGY TO MITIGATE IT BY FARMERS OF ALWAR DISTRICT (RAJASTHAN)

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Abstract: Agriculture is the mainstay of the Indian economy, contributing to food security and livelihood of farming community. Climate change and agriculture are interconnected processes as change in climate affects production of agriculture produce. The rapid change in climate *i.e.* increasing temperature, long dry spell in rainy season, late set of monsoon *etc.* makes farmers condition vulnerable and pathetic. Farmers are not able to adapt fast enough in order to mitigate climate change adverse effects on agriculture. In order to be willing to take adaptation strategy, farming community need to perceive that the climate is changing, and need to take measure to mitigate its adverse effect on agriculture practices. There is also need to study about farmers faced constraint to climate change adaptation. In order to understand farmers perception on climate change and its impact, to identify adaptation needs and constraint faced to adaptation, structured schedule, focus group discussion and trend analysis has carried out of farmers of Alwar district. The study found that majority of farmers aware about the climate change and also perceived the increasing in temperature and low rainfall in district. For the maximum (82.00 percent) farmers show that climate change affects the quality and quantity of ground water and about more than 80 percent farmers says that climate change means unpredictable weather, decreasing of irrigation sources and less or no rain. This study also collected information on climate change adaptation strategies applied by farming community to mitigate its effect and make farming a profitable business. This is observing that farmers not aware about the low requirement water crops and also they were not practicing to conserve rain water for future use. Majority of farmers (more than 70 percent) were indicated that they are increase animal husbandry because of loss in crop production activity and also only cultivating traditional crop (millets and mustard especially). This study is suggested that agriculture scientist, policy maker and other line department need to more in tune with farmers and extension functionaries need to understand of how climate is changing in order to improve adaptation policy, formulation and implementation. Also need of capacity building at local level is vital to enable to adapt to changing climate.

Keyword: Climate Change, Agriculture, Vulnerability, Adaptation strategy

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EFFECT OF IRON, MOLYBDENUM AND *RHIZOBIUM* ON BIOLOGICAL PROPERTIES OF SOIL IN SUMMER GROUNDNUT (*ARACHIS HYPOGAEA* L.)

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Abstract: The study was carried out to determine the effect of iron, molybdenum and *Rhizobium* on biological properties of soil in summer groundnut. The field experiment comprised of eighteen treatment combinations with three levels of iron 0, 5 and 10 kg Fe ha⁻¹, three levels of molybdenum 0, 1 and 2 kg Mo ha⁻¹ and two levels of *Rhizobium*: without *Rhizobium* and with *Rhizobium* inoculation were studied with GG-34 variety of groundnut in randomized block design in factorial concept with three replications. Among all the treatments application of 10 kg Fe ha⁻¹, 1.0 kg Mo ha⁻¹ and seed inoculation with *Rhizobium* proved superior over other treatments.

Keywords: Iron, Molybdenum, *Rhizobium*, Groundnut

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GROWTH, YIELD ATTRIBUTES AND YIELD OF BOTTLE GOURD (*LAGENARIA SICERARIA*) AS INFLUENCED BY WOOL WASTE AND INORGANIC FERTILIZERS IN ARID REGION

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Abstract: A field experiment was conducted during *kharif* season 2018 at research farm of Agricultural Research Station, SKRAU, Bikaner, to study the effect of wool waste and inorganic fertilizers on growth, yield attributes and yield of bottle gourd (*Lagenaria siceraria*) in loamy sand soil. The experiment was laid out in randomized block design with ten treatments and three replications. The treatments viz., T₁- Control, T₂- Recommended dose of fertilizer, T₃- wool waste @ 20 t ha⁻¹, T₄- RDF + wool waste @ 20 t ha⁻¹, T₅- RDF + wool waste @ 20 t ha⁻¹ + 1 per cent FeSO₄, T₆- RDF + wool waste @ 20 t ha⁻¹ + 1 per cent FeSO₄ + 0.5 per cent ZnSO₄, T₇- STCR recommendation fertilizer dose, T₈- STCR recommendation + wool waste @ 20 t ha⁻¹ + 1 per cent FeSO₄, T₉- STCR recommendation + wool waste @ 20 t ha⁻¹ + 1 per cent FeSO₄ and T₁₀-STCR recommendation + wool waste @ 20 t ha⁻¹ + 1 per cent FeSO₄ + 0.5 per cent ZnSO₄. Application of wool waste and inorganic fertilizers had significant influence on growth parameters, yield attributes and yield of bottle gourd as compared to control. The results revealed that application of RDF + wool waste @ 20 t ha⁻¹ + 1 per cent FeSO₄ significantly improved the number of branches plant⁻¹, number of fruit vine⁻¹, weight of fruit, diameter of fruit and average length of fruit in comparison to control. Significantly higher vine length at 30, 60 and 90 DAS, days to appearance of first flower and yield were also observed with RDF + wool waste @ 20 t ha⁻¹ + 1 per cent FeSO₄.

Keywords: Bottle gourd, Wool waste, Fertilizers, Growth, Yield attributes

EMPLOYMENT GENERATION FROM APICULTURE FOR SCIENTIFIC BEEKEEPING BY APIARIST IN NORTHERN HILLS ZONE OF CHHATTISGARH, INDIA

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Abstract: Apiculture is a significant sustainable, and environmental sound activity involving integration of forestry, social forestry and Agricultural supporting activity since it provides nutritional, economic, and ecological balance, while providing employment and income. India has a good potential for beekeeping and to become a major honey exporting nation. Apiculture is an engrossing off farm practice for low-resource people that provide employment opportunities to rural youth. The study aimed to improve income through apiculture. A study was conducted at three districts of Northern Hills Zone of Chhattisgarh namely Surguja, Surajpur and Balrampur during the year 2021 and 2022. From each district 50 respondents were selected randomly thus sample comprised of 150 beekeepers. The data was collected through pre - structured schedule, analyzed by using SPSS program and interpreted subsequently.

Keywords: Beekeeping, Honey bees, Beekeeper, Employment generation, Chhattisgarh

PRODUCTION COST OF *DENDROCALAMUS STRICTUS* (SOLID BAMBOO) SEEDLINGS IN DIFFERENT NUTRIENT MANAGEMENT

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Abstract: An experiment was conducted to evaluate the production cost of *Dendrocalamus strictus* seedlings owing to integrated nutrient management as different treatments at FC&RI nursery. The above experiment was included the soil application of nutrients and bio fertilizers with different concentrations, viz., N, P₂O₅, K₂O, VAM, FYM and Azospirillum (2.0, 1.25, 1.25; 1.5, 0.938, 0.938; and 1.0, 0.625, and 0.625 g kg⁻¹ of soil). The results showed that 1.5 g N, 0.938 g P₂O₅, and 0.938 g K₂O integrated with FYM (500 g), VAM (40 g), and Azospirillum (20 g) kg⁻² of soil produced superior growth and decreased the nursery time by 53 days. For this treatment, the cost of fertilizer for 1000 seedlings has been worked out at Rs. 1909.95, and a reduction of 67 days was achieved over control.

Keywords: *Dendrocalamus strictus*, Bio-Fertilizers, VAM, FYM, Azospirillum