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## REVIEW ON LAND USE, LAND COVER ANALYSIS AND SOIL LOSS ESTIMATION THROUGH RUSLE AND GEOSPATIAL TECHNOLOGIES

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**Abstract:** The changes in land use and land cover over the land surface are contributing factors to soil erosion due to their effects on soil health, nutrient status, and sedimentation in water bodies. Understanding the processes that cause soil erosion allows one to more quickly identify locations in a landscape that are prone to erosion and address the issue in a systematic way. The geospatial technologies and their integration with soil erosion models have been widely employed to predict the potential status of soil erosion around the world. The purpose of this study was to evaluate the usefulness of geographical information system and remote sensing techniques in determining land use land cover and soil erosion prediction.

**Keywords:** Digital Elevation Model, Land use, Land cover, RUSLE, Soil erosion, Watershed Prioritization

## A REVIEW ON EFFECT OF VARIOUS WEED MANAGEMENT APPROACHES IN SORGHUM [*SORGHUM BICOLOR* (L.) MOENCH]

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**Abstract:** Sorghum is a crop which is facing the problems like lacking inputs, grown in marginal lands that too without proper care. These situations lead to weed infestation as it is mostly grown in monsoon periods; pest and disease attack is more common due to improper management. But most importantly weeds are the greatest menace in case of sorghum due to its slow growing nature in early days of its life cycle. Different types of weeds compete with the crop for different kinds and levels of inputs like water, nutrients, CO<sub>2</sub>, sunlight and space. Hence, weeds become a great threat to sorghum growth and development.

**Keywords:** Forage sorghum, Weeds, Herbicide, Mode of action, Intercropping

## OCCURRENCE OF INSECTS- PESTS AND NATURAL ENEMIES ON NIGER IN NORTHERN HILLS OF CHHATTISGARH

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**Abstract:** The present experiment was conducted at experimental area of Research-cum-Instructional Farm at Raj Mohini Devi College of Agriculture and Research Station, Ambikapur (C.G.), during the period of study from 27<sup>th</sup> August 2021 to 2<sup>nd</sup> December 2021 at different stages of crop. The niger variety JNC-9 was sown and investigation revealed that nine species of insect-pests and three species of natural enemies. The crop was infested by leaf hopper, green stink bug, red pumpkin beetle, flea beetle, bihar hairy caterpillar, green semilooper, tobacco caterpillar, niger caterpillar and semilooper at the different crop growth stages and lady bird beetle, dragonfly and spider were recorded as a natural enemies.

**Keywords:** Insect-pests, Natural enemies, Niger, Occurrence

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## **EXTENSIVE SURVEY AND SURVEILLANCE OF DISEASE OF NAGPUR MANDARIN (*CITRUS RETICULATA* BLANCO) IN CITRUS BUFFER ZONES**

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*Received-04.07.2022, Revised-13.07.2022, Accepted-25.07.2022*

**Abstract:** The present investigation was carried out to identify and estimate the disease incidence of citrus (*Citrus* spp.) in Citrus buffer zone. The survey was carried out on major diseases like Gummosis, Sooty mold, Twinge blight, Barak eating caterpillar and Zinc deficiency. By following the methodology of per cent Disease Index, the severity of these diseases that cause considerable yield loss and its incidence were recorded from July 2020 to June 2021. Of all the agricultural diseases that threaten citrus crops, Gummosis and Sooty mold are the most devastating. Severe infections of Gummosis can cause defoliation, blemished fruit, premature fruit drop, twig dieback and general tree decline. Sooty mold induces stunting, stem pitting and low bearing of some varieties. Based on the study, Gummosis and Sooty mold has more incidence of about 61.3 per cent and 55.35 per cent, respectively. On comparing the survey period (*i.e.* from July to June) the disease incidence in the month of January is quite high, and it is due to the climatic factors which favors the easier and faster spread of the pathogens.

**Keywords:** Per cent disease index, Gummosis, Sooty mold, Biotic / Abiotic factors

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## **IMPACT OF COVID-19 ON CONSUMPTION PATTERN IN CHHATTISGARH – AN EXPLORATORY STUDY**

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**Abstract:** The present study aims to examine the impact of COVID-19 on Consumption pattern of rural households. This research study was conducted in the periphery of Raipur city in the state of Chhattisgarh. Study is comparison of Consumption pattern of sampled household's 2 years in the form of pre and post covid-19 pandemic. Total 300 households were selected through random sampling methods. Study revealed that the percentage change total expenditure in the food items more increase reported in edible oils which was 22.55% and more decrease in cereals which were 4.11%. The percentage change of total expenditure in the non food item increased in medical & health care which was 35.37% and more decrease in education which was 0.31%. Also found that in marginal farm households reported that expenditure in food and non food item's percentage change was 4.40 % and 8.21% respectively and in small farm households 7.36% and 8.82% respectively, however landless household's expenditure in food and non food item's percentage change was 6.23% and 7.15 % respectively. Overall percentage change over pre COVID in food items and non food items expenditure were 6.04% and 8.12%. Study revealed that there were obvious disparities among pre COVID and post COVID in rural consumption expenditure regarding. Need to do more attention should be placed on study area in order to up-scale their living standards as

more poor households dominate in this area. This can be done by generating more and attractive employment opportunities in the rural sector.

**Keywords:** Consumption Pattern, COVID-19, Food item, Non-food item, Pandemic

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## EFFECT OF WEED MANAGEMENT ON WEED DENSITY AND PRODUCTIVITY OF WHEAT (*TRITICUM AESTIVUM* L.) UNDER LATE SOWN CONDITION

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**Abstract:** A field experiment was conducted at Crop Research Center, Sardar Patel University of Agriculture & Technology, Meerut, Uttar Pradesh during the *Rabi* season of 2019-20 and 2020-21 under late sown condition to assess the performance of post-emergence application of Pinoxaden, Isoproturon, Metsulfuron, Clodinafop-propargyl, 2-4,D and Iodosulfuron-methyl in combination with pre-emergence application of Pyroxasulfone on wheat (*Triticum aestivum* L.). The experiment laid out in Randomized Block Design (RBD) having three replication. The treatments comprised of Isoproturon @ 1000 g a.i. ha<sup>-1</sup>+2,4-D @ 500 g a.i. ha<sup>-1</sup> as PoE T<sub>1</sub>, Pyroxasulfone @ 127 g a.i. ha<sup>-1</sup> as PE T<sub>2</sub>, Pyroxasulfone @ 127 g a.i. ha<sup>-1</sup> as PE + 1 HW T<sub>3</sub>, Pyroxasulfone @ 127 g a.i. ha<sup>-1</sup> PE *fb* sulfosulfuron + metsulfuron (RM) @ 32 g a.i. ha<sup>-1</sup> PoE T<sub>4</sub>, Pyroxasulfone @ 127 g a.i. ha<sup>-1</sup>PE + Pinoxaden @ 40g a.i. ha<sup>-1</sup> as PoE T<sub>5</sub>, Pinoxaden @ 40g a.i. ha<sup>-1</sup> as PoE T<sub>6</sub>, Pinoxaden @ 40g a.i. ha<sup>-1</sup> as PoE +1 HW T<sub>7</sub>, Pinoxaden + clodinafop-propargyl @ 40 g a.i. ha<sup>-1</sup> as PoE T<sub>8</sub>, Pyroxasulfone @ 127 g a.i. ha<sup>-1</sup> as PE + Mesosulfuron-methyl + Iodosulfuron-methyl sodium @ 30+6 gram a.i. ha<sup>-1</sup> PoE T<sub>9</sub>, Mesosulfuron-methyl + Iodosulfuron-methyl sodium @ 30+6 gram a.i. ha<sup>-1</sup> PoE T<sub>10</sub>, Weed free T<sub>11</sub> and Control (Unweeded check) T<sub>12</sub>. Treatments effects were evaluated in terms of weed density and productivity of wheat. The results revealed that the maximum weed density at 60 and 90 DAS in Pyroxasulfone @ 127 g a.i. ha<sup>-1</sup> as PE + Mesosulfuron-methyl + Iodosulfuron-methyl sodium @ 30+6 gram a.i. ha<sup>-1</sup>PoE T<sub>9</sub> was found *at par* with Pyroxasulfone @ 127 g a.i. ha<sup>-1</sup> PE *fb* sulfosulfuron + metsulfuron (RM) @ 32 g a.i. ha<sup>-1</sup> PoE T<sub>4</sub>, Mesosulfuron-methyl + Iodosulfuron-methyl sodium @ 30+6 gram a.i. ha<sup>-1</sup>PoE T<sub>10</sub>, Pinoxaden + clodinafop-propargyl @ 40 g a.i. ha<sup>-1</sup> as PoE T<sub>8</sub> and Pyroxasulfone @ 127 g a.i. ha<sup>-1</sup>PE + Pinoxaden @ 40g a.i. ha<sup>-1</sup> as PoE T<sub>5</sub> and significantly higher than the rest of treatments during both the year. The results also revealed that among the different weed management treatments the highest grain yield (46.5 & 48.2 q ha<sup>-1</sup>) was obtained under weed free treatment, which was *at par* with (45.3 & 46.4 q ha<sup>-1</sup>) with the application of Pyroxasulfone @ 127 g a.i. ha<sup>-1</sup> as PE + Mesosulfuron-methyl + Iodosulfuron-methyl sodium @ 30+6 gram a.i. ha<sup>-1</sup>PoE T<sub>9</sub> and Pyroxasulfone @ 127 g a.i. ha<sup>-1</sup> PE *fb* sulfosulfuron+metsulfuron (RM) @ 32 g a.i. ha<sup>-1</sup> PoE T<sub>4</sub> (43.9 & 45.3 q ha<sup>-1</sup>) during both the years. Application of Pyroxasulfone @ 127 g a.i. ha<sup>-1</sup> as PE + Mesosulfuron-methyl + Iodosulfuron-methyl sodium @ 30+6 gram a.i. ha<sup>-1</sup>PoE found significantly lowest weed density and higher productivity of wheat crop due to non availability of laborers.

**Keywords:** Wheat, Herbicide, Weed dynamics, Productivity, Profitability

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## SDS-PAGE PROTEIN PROFILING AND TRUE PROTEIN ESTIMATION FROM NON-INFECTED AND INFECTED LEAVES OF INDIAN MUSTARD (*BRASSICA JUNCEA* L.) BY *ALTERNARIA BRASSICAE*

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**Abstract:** The primary objective of the current research investigation is to estimate the total protein content and protein profiling from non-infected and infected leaves of 10 varieties of Indian mustard (*Brassica juncea* L.) to check the effect due to *Alternaria brassicae*. The protein content was estimated by UV-Vis spectrophotometric technique using the conventional Lowry's method. The highest protein was seen in non-infected leaves while the lowest was found in the infected leaf of moderately resistant variety (Rohini). The true protein in all varieties was found to be altered due to infection i.e. decreased. Diversity within non-infected and infected leaves of *Brassica juncea* can be analyzed at molecular level with the help of leaves protein by using SDS-PAGE. Total 6 bands were obtained both from samples of non-infected and infected leaves. Through statistical analyses dendrogram was formed and varieties were clustered into different groups by applying UPGMA (un-weighted pair group mean analyses).

**Keywords:** Indian mustard, Alternaria blight, Folin-lowery, SDS-PAGE, Protein profiling

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## SEASONAL ACTIVITY OF PREDATORY WASPS ATTACKING ON EUROPEAN HONEYBEE, *APIS MELLIFERA* L. COLONIES IN NORTHERN HILL REGION OF CHHATTISGARH, INDIA

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**Abstract:** A study was carried out at Honey Bee Park of Raj Mohini Devi College of Agriculture and Research Station, Ambikapur under All India Coordinated Research Project on Honey Bees and Pollinators of Surguja District during 02 July 2021 to 24 September 2021 to study on seasonal activity of predatory wasps i.e. *Vespa tropica*, *Vespa auraria* and *Vespa orientalis* were observed. Among these three species *Vespa auraria* was found the most abundant and common enemies of honey bee, *Apis mellifera*. Peak predatory activity was observed during fourth week of July (3.00 wasps) i.e., 30 Standard meteorological week (SMW), when must often coincided with the floral dearth period. Morning and noontime were peak time of attack than late day, which most often coincided with the activity of bees. In this research paper details are being given about the *Vespa auraria* for the advantage of farmers, students and beekeepers so that they can manage the incidence of these enemies.

**Keywords:** *Apis mellifera*, Floral dearth, *Vespa tropica*, *Vespa auraria* and *Vespa orientalis*, Predatory wasp

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## RESPONSE OF PADDY STRAW AND WEED BIOMASS MULCHING ON GROWTH, YIELD AND ECONOMIC PERFORMANCE OF GINGER (*ZINGIBER OFFICINALE*)

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**Abstract:** Ginger is an important spice crop in the North eastern region of India. It is consumed as a vegetable as well as in dried form as spice. It is also considered as a cash crop for enhancing the livelihood and economic condition of the ginger growers in this region of India. An on farm trial was conducted on ginger using the technology of paddy straw and weeds biomass mulching in Ngangching village of Mon district of Nagaland under rainfed condition during the year 2020. From the trials conducted, it was observed that the growth attributes and yield were increased in the technology plots compared to the farmers practice of no mulching. The mean B:C ratio from the trial was also 4.2 as compared to farmers practice of 3.5.

**Keywords:** Crop, Ginger, Growth, Weed, Yield

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## **STUDY ON GENOTYPIC AND PHENOTYPIC COEFFICIENT OF VARIATION IN FIELD PEA (*PISUM SATIVUM* L.) PARENTS AND THEIR CROSSES**

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**Abstract:** The experiment study was conducted with 6 parent and their 15 F<sub>1</sub>'s (21 genotypes) obtained through half diallel cross. Simple measures of variability, such as phenotypic and genotypic coefficients of variation, these measures are commonly used for the evaluation of variability. The estimates of coefficient of variation provide an idea about the degree of variability present among the genotypes under study. Parents and crosses included in the current experiment showed significant genetic variation. Traits primary branches per plant, pod per plant and plant height recorded high genotypic coefficient of variation (GCV) with high phenotypic coefficient of variation (PCV).

**Keywords:** Genotypes, Phenotypic, Variation, Variability, Parent