

# Journal of Plant Science and Phytopathology

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**Research Article**      **Published Date:-2022-08-03 10:28:45**

[Sanitary update on wheat in Argentina](#)

The wheat production (*Triticum aestivum* L.) in Argentina is the third in importance after soybeans and corn (source: BCR).

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**Opinion**      **Published Date:-2022-07-28 10:16:23**

[Invasive and native woody plant encroachment: Definitions and debates](#)

In this short opinion piece, we discuss the appropriate use of the term 'invasion' for woody plant expansion and refer to the various ways in which the term is being used in the literature. We point out the present confusion and make suggestions for the use of a more appropriate term (i.e., 'woody plant encroachment'). We continue with an overview of the various definitions of 'woody plant encroachment' in the literature, we mention associated alternative terms, and we explain the circumstances in which each of these are used. With this piece, we hope to provide more clarity on the use of correct terminology related to woody plant expansion research.

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**Research Article**      **Published Date:-2022-07-04 10:20:53**

[Genetic variability, divergence, and path coefficient analysis of yield and yield related traits of Durum wheat \(\*Triticum turgidum\* L. var. \*Durum\*\) genotypes at Jamma district, south wollo zone, amhara region, Ethiopia](#)

Durum wheat (*Triticum turgidum* L. var. *durum*) is a member of the Poaceae family and tetraploid (genomes of AABB) with 28 chromosomes ( $2n=4x=28$ ). Narrow genetic variability was a problem to develop genotypes with better adaptation to different agro-ecologies. Therefore, the objective of this study was to investigate the genetic variability, divergence, and path coefficient analysis of durum wheat genotypes by using morphological traits and identifying essential yield-related traits of durum wheat, and to identify promising candidate genotypes to be used in future durum wheat breeding program. The study was carried out on 81 genotypes and the experiment was laid out in a triple lattice design with an arrangement of 9 x 9 x 3 treatment, which made 243 experimental units. Results obtained on genetic variability, path coefficient, and genetic divergent analysis among yield-related traits are presented here under the present study. Generally, the present study revealed the existence of significant genetic variability among the tested genotypes for different traits helpful for direct and indirect selection. This study recommended that the potential durum wheat genotypes 214552, 208150, 238516, 5645, Mekuye, 236984, 7960, 7152, 231599, and 208242 could be used for durum wheat breeding programs for yield and yield component traits improvement under similar agro-ecologies.

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**Research Article**      **Published Date:-2022-06-20 20:40:20**

[Synthesis and characterization of CdS/CeO<sub>2</sub> Nanocomposite with improved visible-light photocatalytic degradation of methyl orange dye](#)

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Different types of photocatalysts in single and binary systems in different molar ratios were synthesized by the co-precipitation method. Crystal structure, surface area, morphology, bandgap energy, functional groups, and optical properties of the as-synthesized photocatalysts were characterized by using XRD, BET, SEM-EDX, UV/Vis, FTIR, and PL instruments, respectively. Photocatalytic activities of the single and binary composite were evaluated by using an aqueous solution of model pollutant MeO. Photocatalytic activities of binary CdS/CeO<sub>2</sub> (1:1) nanocomposite were found to be higher than those of single counterparts. The degradation efficiencies of the binary system were found to be 53.73%. The reusability of the binary photocatalyst was tested and only about 33% decrement was observed after four successive runs. The degradation of MeO dye follows the pseudo-first-order kinetics for the entire as-synthesized nanocomposite. The results also suggest that in the CdS/CeO<sub>2</sub> (1:1) composite the photoinduced electrons and holes can be effectively separated.

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#### Mini Review

Published Date:-2022-06-20 17:31:21

##### [The use of \*Bacillus thuringiensis\* to control plant-parasitic nematodes](#)

Plant-parasitic nematodes are ubiquitous in nature and cause large losses in agriculture. The current concerns regarding the use of chemical pesticides have increased the interest in new control alternatives. One of these is the one based on *Bacillus thuringiensis* (Bt). These Gram-positive bacteria have the ability to synthesize pesticide proteins during sporulation. Some of these proteins have nematicidal properties. Studies have shown that preparations of certain strains of Bt can prevent or slow down the infestation of phytonematodes. The expression of some Bt nematicidal genes in transgenic plants has also demonstrated their effectiveness. Bt is nowadays an effective ecological alternative for controlling plant-parasitic nematodes.

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#### Research Article

Published Date:-2022-06-14 10:29:34

##### [Chemical composition of olive stems essential oil from Ethiopia](#)

In this article, the chemical compounds, antimicrobial and antioxidant activity of the volatile oil from leaves of *Olea Europaea* L. cultivar from Ethiopia has been studied. The essential oil was provided with a dry distillation apparatus and analyzed by GC-MS/FID. This analysis leads to the detection of 128 compounds representing 89.4% of the total oil. The major constituents were methyl ester hexadecanoic acid (4.10%), 2,4-dimethoxyphenolAa (4.05%), 2-methoxy-phenol (3.25%), 3,5-dimethoxy-4-hydroxytoluene (3.20%), 2-methoxy-5-methyl phenol (3.19%), 1,2,3-trimethoxy-5-methyl benzene (2.93%), 2-methoxy-4-vinyl phenol (2.70%), 2-hydroxy-3-methyl-2-cyclopenten-1-one (2.60%), trans-Isoeugenol (2.45%) and (E) -2,6-dimethoxy-4-(prop-1-en-1-yl) phenol (2.25%). The composition of essential oils was dominated by phenolic compounds.

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#### Research Article

Published Date:-2022-06-09 09:15:10

##### [Plant molluscicide based on \*Smolevka white\* \(\*Silene Latifolia\*\) as prevention of pastoral helminthiasis of animals](#)

Soft-bodied is the intermediate host of helminthiasis, in the body of which several development stages of larval forms of helminths occur. There is the highest population density of mollusks in the areas of ruminant grazing, which leads to mass infection of animals with trematodes. To destroy the intermediate host of helminths in agricultural production, molluscicidal remedies of synthetic and plant origin are used. The work aimed to determine the molluscicidal effectiveness of a plant remedy based on *Silene Latifolia* in conditions of natural pastures. The material for work was the green mass of the plant *S. Latifolia* obtained in the warm season from roots, leaves, stems, flowers, and seeds. By grinding this plant, a powder with a particle size of 1-3 mm was obtained. Then, the powder was extracted with ethyl alcohol. The obtained product (concentrate) was an amorphous gel-like mass of dark green color with a specific smell and well soluble in water. Fieldwork in natural pastures was carried out on 5 biotopes with an area of 4-25 m<sup>2</sup>. Three species of gastropods were recorded from freshwater mollusks in the biotopes: *Planorbis planorbis*, *Planorbarius corneus*, *Physa fontinalis*, *Lymnaea truncatula*, and *L. palustris*. The results of experiments conducted in the conditions of pastures indicate a high molluscicidal activity of the studied plant agent on pond fish, intermediate hosts of trematodes pathogens. The effectiveness of the developed molluscicide on gastropods, when treated with a working solution (10.0 g/l) is from 98.1 to 100%.

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#### Research Article

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*Sclerotinia sclerotiorum* (Lib.) de Bary caused white mold disease with a wide distribution worldwide. For the control of the disease, it is fundamental to understand the identification, morphology, and genetic diversity of the fungus. The objective of this study was to collect and characterize *S. sclerotiorum* isolates from different regions of the country. The characteristics evaluated for the mycelium characterization were: the time required for the fungus to occupy the plate; density of the formed mycelium; coloration of the colonies and mycelia growth rate. Sclerotia assessments were based on the time for the formation of the first sclerotia total number formed per plate, the format of distribution in the plate, and the shape of the sclerotia formed by the isolates. Variability was observed for colony colour, type of growth, the diameter of mycelia growth, sclerotia initiation, and number and pattern of sclerotia formation among the isolates. The evaluated populations presented wide variability for the cultural and morphological characteristics, being predominant in the whitish colonies with fast-growing habitats. The majority of isolates produced a higher number of sclerotia near the margin of the plates and with diverse formats. Phylogenetic analysis revealed that the isolates belonged to a similar group of publicly available *S. sclerotiorum* and were dissimilar from the group of *S. minor*, and *S. trifolium* and distinctly differ from *S. nivalis* group. The present study is the first evidence for morphological and genetic diversity study of *S. sclerotiorum* in Bangladesh. Therefore, this report contributes to more information about the morphological and genetic diversity of *S. sclerotiorum* and can be useful in implementing effective management strategies for the pathogen which caused white mold disease.

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## Short Review

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### [Importance of BLUP method in plant breeding](#)

Introduction: The most desirable linear neutral prediction (BLUP) is a standard method for estimating the random effects of a hybrid model. This approach was originally developed in animal breeding to estimate breeding values and is now widely used in many fields of research.

The main practical advantages of using REML/BLUP are:

It allows the comparison of individuals or species over time (generation, year) and space (location, block). Possibility of simultaneous correction of environmental effects, estimation of variance components, and prediction of genetic values.

The best BLUP prediction method, which estimates the averages with high accuracy, especially in mixed models, is also used to evaluate multi-environment experimental data (MET).

Blup is one method is statistical. Pedigree-based blup method.

Materials and methods: The BLUP method achieves this goal by combining phenotypic data and information on pedigree relationships through an index, known as family index selection. This index, which is estimated based on the coefficient of intra-class correlation, exploits the relationships of individuals within a family compared to other families in the population.

Results: The results: show that BLUP has good prediction accuracy compared to other methods. Pedigree-based BLUP method can increase selection yield in production-related traits in *P. zonale* or shelf life of *D. caryophyllus* L.

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## Research Article

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### [Effects of animal manures on growth and yield of maize \(\*Zea mays\* L.\)](#)

A spatial survey to investigate the effects of the use of poultry, sheep, and horse manure on intermediate harvests and maize growth restrictions was conducted on the research farm of Woillu Woreda, Ethiopia during the 2017 planting season. Treatment was performed with Randomized Complete Block Design (RCBD) with three responses. The measured variables were plant length, number of leaves, location indicator (LAI), stem girth, and grain yield obtained. The data collected is subject to variance analysis (ANOVA). Methods were categorized using LSD at a 5% significance level.

The results obtained showed that the growth and yield of Maize were significantly lower in treatment control, indicating that the manure used in the study, especially the chicken manure, had a positive effect on the performance and yield of Maize. The results also revealed that poultry-cleaned sites offer the highest number of leaves per plant, the thick stem, the highest LAI, and the grain yield of 5.7 t/ha. In comparison, a small grain yield of 4.2 t/ha was obtained with the application of horse manure. Sheep manure produced 3.9 t/ha of maize and a small yield of 2.8t/ha of maize was recorded in the control management. Based on the results of the study it can be found that chicken manure seems to promote the growth of maize yield. Therefore, it should be recommended for maize growers in the study area.

[Food applications of Aloe species: A review](#)

Plants have a high concentration of biologically active molecules. Aloe plants tend to store water and important chemical constituents in their swollen and succulent leaves due to their ability to survive in hot and dry conditions, which makes them a unique source of phytochemicals. The Aloe leaf contains more than 200 nutritional substances, including vitamins, minerals, amino acids, and active enzymes. These constituents are analyzed as phytochemical screening (qualitative analysis) or proximate and mineral content analyses (quantitative analysis). Aloe is used as a food product and beverage ingredient. Functional and nutraceutical foods, edible coatings/films, Aloe species as cooked vegetables, and raw eating of Aloe species are how the Aloe plant is considered in food applications. The researchers reported edible Aloes for several species. However, it is not mean that all species of Aloe are edible. It is not only the leaves of Aloe that have nutritional values also other parts of the plant do. The study evaluated the nutritional value of Aloe flowers and their possible use as edible flowers. Aloe species are increasingly being incorporated into different health drinks, foods, and beverages due to the beneficial biological activities of the phytochemicals.

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