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BREEDING IN HOST TREES OF TASAR SILKWORM FOR HIGHER FOLIAGE PRODUCTIVITY

Ravi Kumara R.*¹ and Sneha M.V.²

¹Department of Sericulture Science, University of Mysore, Mysuru, Karnataka, India.

²Silviculture and Forest Management Division, Institute of Wood Science & Technology, Bengaluru, Karnataka, India

Email: chandraravi.seri4@gmail.com

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Abstract: Tasar sericulture is a forest-based "Vanya silk" industry, exclusively suited to the economy and social structure of developing countries because of its low minimum investment, which provides sustainable livelihoods to rural communities. The tasar sericulture holds great promise and needs to be given special attention to promote conservation and sustainable utilization of natural resources. Tasar food plants play a major role in tasar silk production. The tropical tasar (*Antheraea mylitta* Drury) is a polyphagous in nature; it feeds over 51 species of host plants. These plants are classified as primary, secondary, and tertiary food plants based on their feeding preferences/rearing performance. The growth, development, and economic characteristics of silkworms are influenced to a great extent by the variety of food plants and the nutritive content of their foliage. Therefore, the primary objectives of the host plant breeding are to increase the leaf yield and quality with a fast-growing nature, along with drought tolerance, in addition to insect pest and disease resistance. The improvement of them in breeding programmes will help in improving the genetic base of the currently available host plants. Thus, the purpose of this article is to provide a comprehensive overview of the primary host plants (Arjuna, Asan, Sal, and Queen's crepe myrtle) of the tropical tasar silkworm, including plant description, genetic resources, genetics, and breeding methods for improving higher foliage productivity for higher silk production.

Keywords: Arjuna, Asan, Host plant breeding, Queen's crepe myrtle, Sal, Tasar silkworm

A REVIEW ON INTEGRATED NUTRIENT MANAGEMENT IN RADISH (*RAPHANUS SATIVUS* L.)

Poluka Lahari¹, Vishal Tripathi^{2*}, Etalesh Goutam³, Daksh Arora¹, Vishal Ahlawat¹, Bharti³, Lokesh Kumar³ and Krishan Kumar Singh⁴

^{1,2&3}Department of Horticulture, Lovely Professional University, Jalandhar (Punjab)-144411, India

⁴Department of Agriculture, Maharishi Markandeshwar (Deemed to be University), Mullana, Ambala (Haryana)-133203, India

Email: vishal.26759@lpu.co.in

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Abstract: Integrated Nutrient Management (INM) is one of the most popular approaches at this time which has been replaced a component of chemical fertilizers with organic manure and has a huge importance in the sustainable agriculture. Several researchers have stated that combining chemical fertilizer with organic manure is becoming a very beneficial approach, not only for preserving increased productivity but also to improve agricultural production stability. INM being a source of energy improves soil's physical properties as well as have a major impact on the environment, even after the harvest of the crop. Therefore, fulfilling our goal of eco-friendly measure it can be concluded that INM, is a proven tool that

can provide good amount of nutrients to plants as per their requirement as well as reduce total cost of cultivation, create favorable soil physiochemical conditions and a healthy environment which is free from constraints and find safe ways to dispose of agriculture wastes.

Keywords: Agriculture waste, Chemical fertilizer, INM, Nutrients, Organic manures

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CHARACTERISING THE DIVERSITY OF RICE LANDRACES FOR EFFECTIVE CROP MANAGEMENT AT A REGIONAL SCALE WITH FARMERS' PARTICIPATION

Bhagya Laxmi¹, Uday K. Nagubandi² and N. Sivaraj^{*3}

^{1,2} Program Officer, Watershed Support Services and Activities Network (WASSAN), Hyderabad 500 068 Telangana and ³ Principal Scientist, ICAR- National Bureau of Plant Genetic Resources, Regional Station, Hyderabad 500 030

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Abstract: Two hundred and two accessions of traditional landraces/varieties augmented from Andhra Pradesh, Odisha, Karnataka and Tamil Nadu states were characterized for 12 qualitative and 7 quantitative traits under natural farming/organic farming environment through a NGO network. The study revealed high degree of variation in agro-morphological traits of rice landraces with a Shannon diversity index ranging from 0.0136 to 0.5080. The coefficient of variation was more than 10% for majority of the quantitative traits studied, highest being total number of tillers (38.2%) followed by panicle length (22.8%). Promising accessions suiting to organic/natural farming ecosystems, effective crop management at regional level and donors for various economic traits that would fit into a sustainable cropping system model are discussed.

Keywords: Rice, Landrace, Characterization, Germplasm, Organic farming, Natural farming

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STANDARDIZATION OF MICROPROPAGATION TECHNIQUE FOR *IN VITRO* CALLUS GENERATION FROM NODAL EXPLANTS OF *BUCHANANIA COCHINCHINENSIS* (LOUR.) ALMEIDA

Banda Sailatha¹, Shalini Mudalkar^{1*}, Sreedhar Bodiga², Reeja Sundaram¹, Akkenapally Snehanjali¹ and Eega Kavya Sree¹

¹Dept. of Forest Biology and Tree Improvement, Forest College and Research Institute, Mulugu, Siddipet, Telangana

²Dept. of Basic and Social Sciences, Forest College and Research Institute, Mulugu, Siddipet, Telangana

³Dept. of Silviculture and Agroforestry, Forest College and Research Institute, Mulugu, Siddipet, Telangana

Email: shalini.mudalkar@gmail.com

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Abstract: The present research entitled "Standardization of micropropagation technique for *in vitro* callus generation from nodal explants of *Buchananiacochinchinensis* (Lour.) Almeida." was conducted in the tissue culture laboratory of Forest Biology and Tree Improvement, Forest College and Research Institute, Mulugu, Siddipet during 2020-22. The main objective of the present study was to generate *in vitro* callus from the nodal explants of *Buchananiacochinchinensis*. Callus was generated from the cut end of nodal explants after 3-4 weeks of inoculation. Maximum callus response (178.00 ± 2.08) was observed in WPM supplemented with 2mg/L TDZ and optimum callus response (155.66 ± 0.88) was observed in MS supplemented with 2,4-D (4mg/L) and followed by MS with 3mg/L 2,4-D and minimum callus response of 34.66 ± 2.60 was observed in MS alone and followed by MS supplemented with 0.5mg/L 2,4-D. In the present study, the protocol was standardized for callus generation from the nodal explants.

Keywords: Callus, Chironji, *In vitro*, Nodal explant, Murashige & Skoog, Woody Plant Medium

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GROWTH PROMOTORY EFFECTS OF COPPER-CHITOSAN NANOPARTICLES ON SOYBEAN

Swati^{1*}, Hansa Kumari Jat¹ and Arunabh Joshi²

¹Rajasthan Agriculture Research Institute, Durgapura, Jaipur, Rajasthan, India

²Department of Molecular Biology and Biotechnology, Rajasthan College of Agriculture, Maharana Pratap University of Agriculture and Technology, Udaipur, Rajasthan, India
Email: swatijhajhria90@gmail.com

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Abstract: In agriculture, search for biopolymer derived materials are in high demand to replace the synthetic agrochemicals. In the present study, the efficacies of Cu-chitosan nanoparticles (NPs) to boost plant growth promotory activity against bacterial pustule disease of soybean were evaluated. Cu-chitosan NPs treated plants showed significant growth promotory effect in terms of plant height, root length, root weight, nodule number, weight of nodule, number of pod per plant and 100 seed weight in pot experiments. In field experiment, plant height, root length, root weight, nodule number, weight of nodule, number of pod per plant and 100 Seed weight were enhanced in NPs treatments. This is an important development in agriculture nanomaterial research where with biological control, biodegradable Cu-chitosan NPs are better compatible.

Keywords; Copper-chitosan Nanoparticles, Bacterial Pustule Disease, Soybean, *Xanthomonas axonopodis*

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EFFECT OF ORGANIC PRODUCTS ON PULSE BEETLE, *CALLOSOBRUCHUS MACULATUS* FAB. (COLEOPTERA: CHRYSOMELIDAE) INFESTING COWPEA

Shubham S. Patil¹, Vaishali P. Sawant^{2*} and Devadatta G. Jondhale³

¹Department of Agril. Entomology, College of Agriculture, Dapoli. Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli, Ratnagiri (M.S.).

^{2,3}Regional Agricultural Research Station, Karjat, District–Raigad (M.S.).
Email: vps_25478@rediffmail.com

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Abstract: Pulses are mainly damaged by bruchids in storage. To manage pulse beetles/bruchids organically, the research work on ‘Effect of different organic products on pulse beetle, *Callosobruchus maculatus* Fab. (Coleoptera: Chrysomelidae) infesting cowpea’ was carried out in the laboratory at the Department of Agricultural Entomology, College of Agriculture, Dapoli at room temperature $25 \pm 30^\circ\text{C}$ and Relative humidity 85 ± 2 per cent during the year 2019-20. Eight different organic products like Agniastra, Jeevamrit, Ghanajeevamrit, Brahmastra, Neemastra, Mixed-leaf extract, Dashparni extract and Chilli-Garlic extract at 3% concentration were tested against pulse beetle, *Callosobruchus maculatus* Fab. Homogenous fifth susceptible generation of pulse beetle, *C. maculatus* was taken as test insect and cowpea as a test pulse. During developmental studies, observations on efficacy of various parameters like fecundity, developmental period, adult emergence, adult longevity, weight loss, germination percentage etc. were recorded. Mean oviposition period of *C. maculatus* on cowpea ranged from 4 to 6.67 days, highest fecundity was observed in untreated control i.e. 679.67 and lowest in Dashparni extract i.e. 514.33 and same results observed in adult emergence i.e. 611.33 and 403.67. Due to different organic products, development period ranged from 22.67-27.00 days, adult longevity in female was ranging between 8.67 to 11.33 days whereas in male, it ranged from 7.00 to 9.67 days. Mean per cent weight loss ranged from 8.79 to 9.98% in cowpea. Mean germination percentage was highest in Jeevamrit and Ghanajeevamrit amongst all different pulses.

Keywords: Pulse beetle, Cowpea, *Callosobruchus maculatus*, Chilli-garlic extract

STUDIES ON INTERVAREITAL HYBRIDIZATION, SEED GERMINATION AND SEEDLING EVALUATION OF GLADIOLUS

¹Monica, K.R., *²T. Usha Bharathi, ²Rajiv Kumar, ¹Ambreen Taj, ²Preeti Sonavane, and ¹G.B. Narabhenchi

¹University Of Horticulture Sciences, Bagalkot PG Campus, Bengaluru

²ICAR- Indian Institute of Horticultural Research, Bengaluru - 560089

Email: t.ushabharathi@gmail.com

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Abstract: The intervarietal hybridization was carried out between *Fusarium* wilt resistant (Arka Aayush, Arka Gold) and susceptible (Arka Pratham, Pink Friendship) varieties in eight different cross combinations. The results revealed that among the eight cross combinations six produced seed set and two cross combinations viz., Pink Friendship × Arka Aayush and Pink Friendship × Arka Gold has not set seeds upon hybridization. The cross combination Arka Gold × Pink Friendship has registered the highest capsule set percentage (41.1%) and mean number of capsule set per spike (2.05) as compared to other cross combinations. The highest number of seeds per capsule (60.93), number of ill filled seeds (27.11) and second highest ill fill seeds per capsule (33.80) and maximum seed germination of 40.00 per cent was recorded in the cross Arka Aayush × Arka Pratham.

Keywords: Gladiolus, Hybridization, Seed set, Germination

EFFECT OF ORGANIC SOURCES AND INDUSTRIAL BY PRODUCTS ON BIOCHEMICAL PROPERTIES OF RADISH

*V. Arulkumar¹, S.R. Shri Rangasami² R. Murugaragavan³ and D. Venkatakrishnan⁴

**Department of Soils and Environment, Agricultural College and Research Institute, Tamil Nadu Agricultural University, Madurai-625104*

²*Rice Research Station, Tamil Nadu Agricultural University, Ambasamudram -627401*

³*Department of Soils and Environment, Agricultural College and Research Institute, Tamil Nadu Agricultural University, Madurai-625104*

⁴*Department of Soil Science and Agricultural Chemistry, Faculty of Agriculture, Annamalai University, Annamalai Nagar – 608002*

Email: arulkumar46@gmail.com

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Abstract: Antioxidants and minerals like calcium and potassium are abundant in radish. These nutrients work as a team to lower high blood pressure and lower your risk of developing heart disease. The radish is a good source of naturally occurring nitrates that enhance blood circulation. Radish actually aids in the cleansing and detoxification of our liver and stomach; black radish and its leaves have long been used to treat jaundice due to their ability to eliminate extra bilirubin. And due of its specific characteristic, it also aids in the purification of our blood. They also control hypothyroidism due to the sulphur level in them. Based on the various medicinal properties the experiment has been conducted to improve the biochemical properties of radish by utilizing the various organic sources.

Keywords: Chlorophyll, Carbohydrate, Ascorbic acid, Crude protein

EFFECTS OF GRAIN AND NUT SOURCES ON *PHYTOPHTHORA NICOTIANAE* VAR. *PARASITICA* GROWTH AND SPORULATION

Subhash Sri Sanjay Malempati*, Sushma Nema, Vibha Pandey and Jayant Bhatt

Department of Plant Pathology, Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur, MP -482004
Email: malempati@jnkvv.org

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Abstract: Influence of various grain and nut sourced culture media [viz. Oatmeal agar (OMA), Whet meal agar(WMA), Black wheat agar (BWA), Green gram agar(GGA), soybean meal agar(SMA), Pistachio agar (PIA)] were tested to evaluate the influence of mycelial growth and sporangial production of *Phytophthora nicotianae* var. *parasitica*. Among the culture media tested, both PIA and SMA agar exhibited maximum colony growth (90.00 mm) followed by GGA (89.00 mm), WMA (88.00 mm), OMA(86.66) and BWA(84.66). The mycelial growth pattern was similar in all the cultures with a slightly radiate pattern. But the SMA exhibited the highest sporangia production in water.

Keywords: Cultivation, Growth, Nut, Nutrition, *Piper betle*

IRON CONTENT ESTIMATION IN THE PROMISING GENOTYPES OF FINGER MILLET (*ELEUSINE CORACANA* L.) UNDER BASTAR PLATEAU EDAPHIC CONDITIONS

Prafull Kumar¹*, T.P. Chandrakar¹, D.P. Singh¹, Kiran Tigga², Poonam Kumari³
and R.S. Netam¹

¹SGCARS, Jagdalpur, IGKV, Raipur, CG, India (494 001)

²RMDCARS, Ambikapur, IGKV, Raipur, CG, India(497 001)

³KVK, Jagdalpur, IGKV, Raipur, CG, India (494 001)

Email: prafull397@gmail.com

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Abstract: The present experiment was conducted to portray the core collection of germplasm accessions; with special reference to trait specific classification, screening for blast disease and cross combination studies, during *Kharif* 2020-21 at Research cum Instructional Farm, S G College of Agriculture and Research Station, Jagdalpur, IGKV, Raipur, Chhattisgarh, India. In iron profiling, The iron content in the evaluated sample were recorded between 2.04 to 4.60 mg/100g of grain with the mean of 3.07 mg/100g. Entry GEC122 had maximum iron content (4.60 mg/100g) over the genotypes under current evaluation environment; which was followed by GEC69 (4.45 mg/100g), GEC11 (4.42 mg/100g), IC0477890 (4.05 mg/100g), IC0476864 (3.96 mg/100g), GEC270 (3.56 mg/100g), IC0477406 (3.55 mg/100g), GEC132 (3.50 mg/100g), IC0476838 (3.30 mg/100g), IC0476707 (3.29 mg/100g) and GEC352 (3.29 mg/100g). Among the check varieties GPU-28 recorded maximum content (3.92 mg/100g) followed by CG Ragi, GPU-67 and IR 01 (3.50, 3.25 and 3.13 mg/100g respectively). When percent superiority over the check varieties were taken into consideration; genotype GEC122 recorded maximum superiority 17.22 % over the best check variety for the trait. The other genotypes which outyielded were GEC69 and GEC11 with 13.52 and 12.63 % superiority against the best check.

Keywords: Nutritional profile, Finger millet, Iron content, Germplasm

DIB-1: A NEW SELECTION FOR FLAVORING FOOD

Parmeshwar Lal Saran*¹, Hiteksha I. Damor¹, Rohan Sarkar¹, Dipak Kumar Ghosh² and Manish Kumar Suthar¹

¹*ICAR-Directorate of Medicinal and Aromatic Plants Research, Boriavi-387 310, Anand, Gujarat*

²*Department of Spices & Plantation Crops, Bidhan Chandra Krishi Viswavidyalaya
Mohanpur, Nadia-741252*

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Abstract: The *Ocimum basilicum* L. having genetic resources with huge diversity for the food flavoring. Diversity is a prerequisite for proficient selection and crop improvement in basil. The basil diversity based on appearance, flavors, herbage yield, essential oils and chemical content provide great opportunities for developing new aromatic crops. Basil elite DIB-1 has severe leaf puckering and is rich in methyl eugenol (30%) may be used for flavoring food products. This elite can be promoted as new selection to flavor five star dishes.

Keywords: *Ocimum basilicum* L., Leaf puckering, Methyl eugenol, Flavouring food

YIELD GAP ANALYSIS OF TOMATO THROUGH FRONT LINE DEMONSTRATION (FLD) IN CHAMPHAI DISTRICT OF MIZORAM

Malsawmkimi* R. and Vanlalduati¹

Krishi Vigyan Kendra, Khawzawl Champhai District Mizoram: 796310

Krishi Vigyan Kendra: Khawzawl Champhai District: Mizoram

¹*Department of Soil Sc., Krishi Vigyan Kendra Khawzawl Champhai District: Mizoram*

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Abstract: The present study was carried out by Krishi Vigyan Kendra, Champhai District to study the impact of improved techniques on yield gap and economic benefits between frontline demonstration (FLD) and farmer's practice (FP) of tomato crop under open condition for three consecutive years 2018-19 to 2020-21. The productivity gain under FLD over existing practices of Tomato cultivation created greater awareness and motivated the other farmers to adopt suitable production technology of tomato variety Arka Abhed in the District. Existing farmer's practices were treated as control for comparison with demonstrated technology. The result of FLDs conducted by Krishi Vigyan Kendra, Champhai District in tomato crop shows a greater impact on farmer's livelihood due to significant increase in yield over local check. An average yield of 392.38 q/ha was recorded in frontline demonstration and in farmer practices it was just 208.04 q/ha. Thus, the average technology gap, extension Agap, and technology index of 407.61, 184.34 and 50.95 percent respectively were obtained between demonstration and farmer practices.

Keyword: Front Line Demonstration, Tomato, impact, extension gap

CARBON SEQUESTRATION POTENTIAL OF MANGO ORCHARDS OF SIDDIPET DISTRICT OF TELANGANA STATE

Milkuri Chiranjeeva Reddy*, Mhaiskar Priya Rajendra, Rohith Ravula, Mallavajjala Ramcharan Sharma, Akkenapally Snehanjali and Bojja Harish Babu

Forest College and Research Institute, Mulugu, Siddipet, Telangana 502279

Department of Silviculture and Agroforestry, Forest College and Research Institute,

Mulugu, Siddipet, Telangana 502279

Email: chiranjeevamilkuri@gmail.com

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Abstract: Mango which is called King of Fruits was widely cultivated in the tropical region of the India. The current investigation was carried out in farm land managed mango orchards in Mulugu Mandal, Siddipet District. Three mango orchards were considered for the study. The mango orchard of farm land 3 was recorded highest biomass with 36.85 t ha^{-1} followed by mango orchard of farm land 2 with 10.65 t ha^{-1} . The carbon stock of three mango orchards ranged in between $4.37 \text{ t ha}^{-1} - 17.37 \text{ t ha}^{-1}$. The carbon sequestration potential of mango orchards ranged in between $16.02 \text{ t ha}^{-1} - 63.68 \text{ t ha}^{-1}$. The study revealed that the mango orchards not only serve as production system but also serves carbon sinks. The study also revealed that tree production systems are important components of Indian agriculture and should be promoted on agricultural lands in order to reduce CO_2 emissions.

Keywords: Biomass, Carbon stock, Carbon sink, Carbon sequestration, Mango