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## EFFECT OF SEED TREATMENT AND GROWING CONDITIONS ON GERMINATION, GROWTH AND SURVIVAL OF INDIAN GOOSEBERRY SEEDLINGS (*EMBLICA OFFICINALIS GAERTN*)

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**Abstract:** The study was carried out at Fruit Research Station, Imaliya, Department of Horticulture, college of Agriculture, JNKVV, Jabalpur, (M.P.) during January 2018 to May 2018. The experiment consist of three growing conditions viz. (C<sub>1</sub>) Open condition, (C<sub>2</sub>) net house, (C<sub>3</sub>) poly house condition and six treatments of seed i.e. (S<sub>1</sub>) water soaking, (S<sub>2</sub>) GA<sub>3</sub> 200 ppm, (S<sub>3</sub>) GA<sub>3</sub> 400ppm, (S<sub>4</sub>) GA<sub>3</sub> 600ppm, (S<sub>5</sub>) Thiourea 0.5%, and (S<sub>6</sub>) Thiourea 1% having 18 treatment combinations. Among the growing conditions poly house and among the seed treatment, GA<sub>3</sub> (600ppm) were proved most promising as compare to others. Among the various treatment combination, the C<sub>3</sub>S<sub>4</sub> treatment combination (poly house and 600 ppm GA<sub>3</sub>) was proved most superior over rest of the treatment combinations with respect to germination parameters, growth parameters and survival parameter like days taken to start 1<sup>st</sup> germination (4.00), days taken to 50% germination (21.67), percentage of seeds germination (53.33%), (73.33%) and (73.33%) were noted at 20, 30, 40 days after sowing, height of shoots (4.38, 8.38, 29.05 and 35.14 cm), number of leaves per seedling (5.64, 33.33, 81.73 and 103.73), girth of stem (1.42, 1.53, 1.63 and 1.80 mm) at 30, 60, 90 and 120 DAS respectively and survival percentage 73.33 at 120 DAS.

**Keywords:** Indian gooseberry (*Emblca officinalis*), GA<sub>3</sub>, Thiourea, Growing, Poly house condition

## DIFFERENT SYSTEM OF HYBRID DEVELOPMENT IN OKRA AND CUCURBITACEOUS VEGETABLES

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**Abstract:** Okra (*Abelmoschus esculentus*) is a monotypic genus under the family Malvaceae having a significant place in the Indian vegetable market and export market. Cucurbitaceae is the largest family of vegetable crops consisting of about 800 species in around 130 genera with dominance in production and consumption among Indian people. In both of the above vegetable families several hybrids have been developed which played a major role in increasing the area and production of these crops. Heterosis or hybrid vigour has been exploited in its full potential in several vegetables of these two vegetable families. Presence of Genetic male sterility (GMS) in okra and gynoecey, monoecy and dioecy in cucurbits has been provided a convenient and cost-effective method of mass hybrid seed production in those crops. Here we have discussed several hybrids developed and their method of development in okra and major cucurbits like cucumber, bitter gourd, bottle gourd, musk melon, pumpkin, sponge gourd, squashes and water melon.

**Keywords:** Cucurbits, Hybrid, Male sterility, Okra, Vegetable

## STUDIES ON INDIGENOUS COW (*BOSINDICUS*) BASED BIO-ORGANIC FORMULATIONS (BOFS) IN TOMATO CULTIVATION FOR INCREASING SOIL HEALTH STIPULATION

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**Abstract:** India harvests a large variety of food crops including vegetables, cereals, pulses, oilseeds etc. In the name of increased productivity, unselective application of vast quantity of chemical fertilizers is being encouraged which is health deathtrap. Hence, an organic method of farming is of vital need which could satisfy the increased demand of food production as well as can provide a security against any possible health problem. In present study, a single transplanted plant per pot was elevated with manual and natural irrigation in environmental condition. The result showed that the plant enactment with respect to biomass components such as number of fruits, fruits weight, fresh shoot and root weight, dry shoot and root weight, shoot length and plant height were expressively influenced by used bio-organic formulations. The total plant biomass was found to be higher with application of Dasha Parni Extract (DPE, 45 ml/plant), Leaf Extract of *Azadirachta indica* (LEAI, 50ml/plant) and *Azadirachta Capsicum Alliums* Extract (ACAE, 55 ml/plant) as compared to combination of aforesaid bio-organic formulations. Similar trend was noticed with respect to fruit weight and plant height which were found to be significantly higher 83gm and 50cm respectively when plant treated with 55ml/plant dosage, 65gm and 35cm respectively with 50 ml/plant dosage and 91gm and 43cm respectively when treated with 45 ml/plant dosage. Thus, based on this study, it may be concluded that method used for the production of tomato with the help of Bio-organic formulations (BOFs) as organic supplements, when implemented, can be effective, economical and eco-friendly method for production of various agriculture crops by farmers.

**Keywords:** *Bos indicus*, Bio-organic Formulations, Tomato, Soil health stipulation

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## PHYSIOLOGICAL PLASTICITY OF 60 CULTIVARS OF *ARACHIS HYPOGAEA* UNDER NATURAL DROUGHT CONDITIONS OF SEMIARID REGION IN INDIA

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**Abstract:** Physiological plasticity of sixty peanut cultivars, belonging to four botanical groups, were evaluated during *Kharif* season under well-watered (with protective irrigation; P) and natural drought (under rain-fed; RF) conditions and compared for physiological and yield attributes to identify the promising ones. The days required for 50% flowering varied from 24.5-34.0 days and 26.0-37.7 days with an average of 28 and 30 days in P and RF crops, respectively. The natural drought under RF condition delayed crop maturity (112-132 days) as against 113-119 maturity days in P. Interestingly, 30 cultivars matured within 113 days at 2130 °C degree days under both the condition indicating their adaptability and plasticity to drought. Though the mean pod yield of peanut cultivars were 1260 kg ha<sup>-1</sup> under P and 1130 kg ha<sup>-1</sup> under RF conditions, cultivars ICGS 5, JGN 23, AK 265, GG 5, GG 11, GG 16, Gimar 1, AK 159, SBX showed > 1300 kg ha<sup>-1</sup> pod yield under both the conditions. The cultivars with early flowering, high SCMR, low SLA, high yield and HI, and early maturity showed the escape mechanism and were considered as most promising for rain-fed cultivation, where there is greater likelihood of drought situation. Our study showed, Spanish bunch (VUL) group was more suitable compared to Virginia bunch (HYP), Virginia runner (HIR) and Valencia (FST) peanut group for desirable traits in rain-fed condition. The cultivars JGN 23, SB XI, and Gimar 1 showed most of the desirable characters with high physiological plasticity and hence, can be of immense use for rain-fed conditions.

**Keywords:** Degree days, Flower initiation, Natural drought, Peanut, Physiological Plasticity

## **SUCKER TYPE, HARVESTING PERIOD AND AGRO-MORPHOLOGICAL PARAMETERS FOR FASTER MULTIPLICATION OF *ALOE VERA* L.**

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**Abstract:** *Aloe barbadensis* Miller has been used traditionally for healing as a natural medicine. This crop attracting global market especially for cosmetic, pharmaceutical and food industry, therefore, greater demand for produce. It can be met out only through large scale cultivation. For this we need sufficient quality planting material of particular elites rich in bioactive chemicals, true to type and having short gestation period. Suckers are the primary and suitable source as propagating material. Agro-morphological parameters were observed maximum at four pair leaves from nine months harvest and minimum at one pair leaf from seven-month harvest. Maximum leaf and sucker were also observed in three and four pairs leaves at nine months after transplanting under well managed condition. The bacterial soft rot disease causes significant losses to the crop was also observed in the field. The leaf and sucker yield were increased with increase the sucker sizes.

**Keywords:** Aloe vera, Harvesting stage, Leaf yield, Soft rot, Sucker

## **EVALUATION OF THIAMETHOXAM 25% WG AGAINST JASSID, APHID AND WHITEFLY ON OKRA**

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**Abstract:** Okra, *Abelmoschus esculentus* (L) Moench is an important vegetable crop, grown in tropical and sub tropical parts of the world. India is the world's second largest producer of vegetables next to China. The experiment was conducted at Entomological Experimental Field, JNKVV, Jabalpur, using RBD, during the summer season of 2016. The Plot size was 3x5 m., crop was sown in the second week of April. It can be concluded that comparing the Thiamethoxam 25% WG @ 200 gm/ ha can be recommended for reducing the infestation due to jassids, aphids and whiteflies on okra. Perusal of the healthy fruit yield data revealed that significantly highest among all the treatments was registered by Thiamethoxam 25% WG @ 200 gm/ ha. (42.71 q/ ha). All the insecticidal treatments were significantly superior then untreated control, which registered the lowest healthy fruit yield of 23. 45 q/ ha.

**Keywords:** Aphids, Jassids, Okra, Thiamethoxam, Whiteflies

## **CORRELATION AND PATH ANALYSIS IN POTATO UNDER TEMPERATE CONDITIONS**

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**Abstract:** Understanding interrelationships among various agronomic traits is vital to plan an effective breeding program in potato (*Solanum Tuberosum* L.). This study was undertaken in SKUAST-K to determine associations among yield and yield related traits in the crop plant so as to identify the major traits of importance. A replicated field experiment was carried out using thirty eight potato genotypes selected at random from the germplasm collection of diverse origin. Observations were made on five characters. The highest phenotypic and genotypic coefficients of variability were observed for tuber yield on per plot, hectare and plant basis followed by specific gravity, number of stems per hill, number of tubers per plant and plant height. In general the phenotypic coefficients of variation were slight higher than genotypic coefficients of variation for most of the yield contributing characters which indicates the minor role of environment in the expression of these traits. Correlation coefficients revealed that the tuber yield per plant exhibited significant positive association with number of tubers per plant, average tuber weight, plant height, leaf area, plant spread, number of stems per hill, tuber yield per plot /hectare, specific gravity and dry matter. Path coefficient analysis revealed high direct positive effect on tuber yield via number of tubers per plant, tuber yield per plot, average tuber weight, plant height, leaf area and number of stems per hill revealing their importance in the improvement of this crop.

**Keywords:** Correlation, *Solanum tuberosum*, Yield

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## **EFFECT ON GROWTH PARAMETERS AND OIL CONTENT OF LEMONGRASS WITH RESPECT TO IRON PYRITE UNDER AND CONTINUOUS USE OF RSC RICH IRRIGATION WATER**

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**Abstract.** An experiment was conducted at, School of Chemical Sciences Department of Chemistry, St. John's College Agra, in factorial randomized block design by using different concentrations of RSC rich irrigation water (viz, 0, 5, 10 and 15 meq/l) with an aim to know the "oil content and growth characters of lemongrass with respect to iron Pyrite and RSC rich irrigation water". The chemical ameliorant pyrite in lemongrass was applied through basal application @ 0, 5 and 10 t/ha at the time of the transplanting. The results showed that the oil content and growth characters of lemongrass decreased significantly with increasing levels of RSC on the other hand enhancing levels of pyrite significantly increased all the above characters but Pyrite did not show appreciable performance in case of plant height. The P<sub>2</sub> (10 t/ha) level of pyrite proved more beneficial with regards to herbage yield of lemongrass.

**Keywords:** RSC, Pyrite, Lemongrass, Growth parameters, Oil

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## **LIQUID BIO-FERTILIZER FORMULATED FROM COCONUT AND ITS EFFECT ON GROWTH AND ROOT CHARACTERISTICS OF ROBUSTA COFFEE SEEDLINGS UNDER DROUGHT CONDITIONS**

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**Abstract:** A nursery trial was carried out at Regional Coffee Research Station, Chundale, Wayanad district, Kerala during 2018 to study the effects of concentration levels of liquid organic nutrient mixture (20 ml, 30 ml and 40 ml dissolved in 4.5 lit of water square meter of nursery area of area) prepared from coconut, cow byproducts and naturally available organic materials against standard nursery nutrient management practices like application of inorganic fertilizer (20g of urea dissolved in 4.5 lit of water for square meter of nursery area) and supernatant solution of fermented cow dung slurry on growth and root characteristics of robusta coffee seedling. There were significant differences ( $p>0.05$ ) in growth parameters (plant height and numbers of leaves) and root parameters (root length and average root diameter) due to the different nutrient management options. Significant differences were observed in organic treatment resulted in tallest plant height (48.25 cm) and maximum numbers of leaves (16.50) where seedlings received Coconut mixture nutrient spray @ 40 ml and which is on par with the treatment received Coconut mixture nutrient spray @ 30 ml and shortest plant height (31.85 cm) and lesser numbers of leaves (9.15) were noticed in the control without nutrient spray. Similar trend were observed in root parameters and resulted in lengthiest root (39.50 cm) and maximum root diameter (2.45 mm) in the treatment received Coconut mixture nutrient spray @ 40 ml. This preliminary result indicate that liquid organic nutrient mixture prepared from coconut, cow byproducts and naturally available organic materials is an effective bio-fertilizer and are most effective at high levels compared to conventional methods followed by the planters under the moisture stress condition.

**Keywords:** *Coffea robusta*, Coconut milk extract, Groundnut cake, Organic nutrient mixture