

# Journal of Plant Development Sciences

(An International Monthly Peer Reviewed Journal)

Volume 12

Number 12

December 2020

## Contents

---

### REVIEW ARTICLE

- Essential oils: a substitute for chemicals in enhancing vase life of cut flowers  
—**Akash Kumar and H.S. Baweja**----- 697-700

### RESEARCH ARTICLES

- A study of price behaviour and market integration of onion in Gujarat  
—**Jinjala Alpesh Kumar Raghavbhai, Kiran Kumari and Ganga Devi**----- 701-711
- Effect of growing media and field conditions on nursery growth parameters of *Asparagus racemosus* Willd. under mid hill conditions  
—**Usha Thakur, Meenu Sood, Jadhav Rani and Bandna Kumari** ----- 713-717
- A study on constraints in adoption of improved Tasar silkworm rearing technology in Chhattisgarh  
—**Kedar Nath Yadav and M.L. Sharma**----- 719-724
- A study of the growth and instability in area and production of onion in Gujarat, India  
—**Jinjala Alpeshkumar Raghavbhai, Kiran Kumari and Ganga Devi** ----- 725-730
- Field performance of different cultivars of tuberose (*Polianthes tuberosa* L.) under agro-climatic conditions of Pune  
—**P. Naveen Kumar, Tarak Nath Saha, Ganesh B. Kadam, Prashant Kawar, Rahul Yadav and Sithin Mathew**----- 731-734
- Seasonal incidence and natural enemies of Lac insect (*Laccifer lacca*) in Korba  
—**Bhupendra Singh Rajpoot, P.K. Bhagat, Y.K. Meshram, G.P. Painkra and K.L. Painkra** ----- 735-738
- Comparative economic analysis of Sri (system of rice intensification) with conventional rice farming (CRF) in Karnal district of Haryana province, India  
—**Vinod Kumar, Ryuichi Yamada, Dinesh Kumar, Kautilya Chaudhary and Sanjay Kumar** ----- 739-741
- Impact of front line demonstration on Isabgol crop in Barmer district of Rajasthan  
—**L.R. Choudhary, Pradeep Pagaria and Hari Dayal Choudhary**----- 743-745
- ### SHORT COMMUNICATIONS
- Association of characters for yield and its attributes in husked barley (*Hordeum vulgare* L.)  
—**Arun Kumar Singh, Javed Ahmad Siddiqui and J. Mohan** ----- 747-748
- Gain in knowledge of fertilizers retailers through fifteen days training  
—**L.R. Choudhary, Pradeep Pagaria and Hari Dayal Choudhary**----- 749-751

## ESSENTIAL OILS: A SUBSTITUTE FOR CHEMICALS IN ENHANCING VASE LIFE OF CUT FLOWERS

Akash Kumar\* and H.S. Baweja

*Department of floriculture and landscape architecture, College of Horticulture  
Dr Y S Parmar University of Horticulture and Forestry, Nauni, Sloan (HP)  
Email: akashcool548@gmail.com*

*Received-02.12.2020, Revised-26.12.2020*

**Abstract:** Cut flowers trade increased in recent years. Freshness of flowers for longer time after its removal from the mother plant is very important in flower industry. Vase life refers to the time period for which a cut flower retains its appearance in a vase. Vase life of cut flowers is mainly affected by two main factors, namely ethylene which accelerates the senescence of many flowers and by microorganisms which cause vascular blockage and thus reduces the vase life of cut flowers through reduced water uptake. Chemicals like 8-HQS, 8-HQC, AgNO<sub>3</sub>, STS, TBZ, QAS, Al<sub>2</sub>(SO<sub>4</sub>) are very important germicides used as preservatives in floral industry. These agents act as biocides (bactericides) and also are able to increase water uptake. Silver thiosulfate is in widespread commercial use to inhibit effects of ethylene and prolong vase life in many ornamentals. However, as silver is a heavy metal, it cannot be used on food and feed, and many countries prohibit its use. Keeping in view the environmental and safety issues in relation to above chemicals forced the scientist to look for good alternative substances for preservative solution of cut flowers. Essential oils are natural products taken from plant materials that, due to their antibacterial, antifungal, antioxidant and anti-carcinogenic properties can be used as natural additives in many crops. Thyme, rosemary, geranium, coriander, Artemisia and mint account some of the aromatic and medicinal plants whose essential oils were tested and resulted in positive responses in post-harvest treatment of cut flowers. Recent studies reported usefulness of essential oils and herbal extracts for floriculture as noble alternative substitute to other silver and chemical compounds because of their antimicrobial activities and environmental friendly nature of the extracts.

**Keywords:** Cut flowers, Chemicals, Essential oil

## A STUDY OF PRICE BEHAVIOUR AND MARKET INTEGRATION OF ONION IN GUJARAT

Jinjala Alpesh Kumar Raghavbhai<sup>1</sup>, Kiran Kumari<sup>2</sup> and Ganga Devi<sup>1\*</sup>

<sup>1</sup>*Department of Agricultural Economics, B.A. College of Agriculture, AAU,  
Anand- 388 110 Gujarat (India)*

<sup>2</sup>*University of Rajasthan, Jaipur (Rajasthan)  
Email: [gangasaran1982@gmail.com](mailto:gangasaran1982@gmail.com)*

*Received-02.12.2020, Revised-25.12.2020*

**Abstract:** The present study was undertaken to analyse price behaviour and market integration of onion in Gujarat. It seeks to ascertain the optimum period for farmers to sell their produce, for the consumers to buy their goods and for the Government to take necessary policy decisions with regard to price support, procurement, storage and helping authorities to take up timely action. Thus, the analytical results of time series data related to prices and arrivals of onion in regulated markets of Gujarat is more useful as market intelligence for farmers, traders, exporters and policy makers. The compound growth rate of wholesale prices of onion in Vadodara market was found positive and significant. The onion arrival and price indices did not continuously increase or decrease uniformly over the years in all the selected markets. The negative relationship was observed between arrivals and prices of onion irrespective of the selected markets as expected. In Mahuva market, the seasonal arrival indices of onion increased gradually from February onwards and reached peak in the month of April. The highest seasonal price indices were observed in the month of May (143.11). Therefore, it was suggested that farmers can sell their produce during May because in this month prices found maximum. In Vadodara, Surat and Bharuch market the seasonal price indices of onion were above 100 from February to July. While in Rajkot market it was from January to July. Hence, it could be better if farmer's sell their produce during the period from February to July for fetching higher prices in these markets.

**Keywords:** *Allium cepa* (L.), Market integration, Price and Growth behavior

Journal of Plant Development Sciences Vol. 12(12)

## **EFFECT OF GROWING MEDIA AND FIELD CONDITIONS ON NURSERY GROWTH PARAMETERS OF ASPARAGUS RACEMOSUS WILLD. UNDER MID HILL CONDITIONS**

**Usha Thakur<sup>1</sup>, Meenu Sood<sup>2</sup>, Jadhav Rani<sup>3\*</sup> and Bandna Kumari<sup>4</sup>**

<sup>1</sup>*G B Pant National Institute of Himalayan Environment,  
Himachal Regional Centre, Mohal-Kullu, HP.*

<sup>2</sup>*Department of Forest products, Dr YS Parmar University of Horticulture and Forestry,  
Nauni, Solan, HP.*

<sup>3</sup>*PG Institute of Post Harvest Management, Killa- Roha, Dr BSKKV, Dapoli, MH.*

<sup>2,4</sup>*Department of Forest products, Dr YS Parmar University of Horticulture and  
Forestry, Nauni, Solan, HP*

*Email: [ranijadhav2009@gmail.com](mailto:ranijadhav2009@gmail.com)*

*Received-07.12.2020, Revised-28.12.2020*

**Abstract:** As a first step towards cultivation under mid hill conditions, seed germination study comparing different soil media under two field conditions especially to standardize nursery growth parameters was taken up. The study revealed Soil + Cocopeat + Vermicompost (1:1:1) media under protected condition as the best media. As vermicompost production is quite costly than easily available FYM in the country, one can have the almost similar result by switching vermicompost with FYM in the media mixture. Maximum emergence percentage, shoot length and root length recorded was 27.83 %, 22.55 cm and 12.20 cm, respectively under mid hill conditions with 312.91%, 141.18% and 72.32% increase over control.

**Keywords:** *Asparagusracemosus*, Emergence percent, Root length, Shoot length

Journal of Plant Development Sciences Vol. 12(12)

## **A STUDY ON CONSTRAINTS IN ADOPTION OF IMPROVED TASAR SILKWORM REARING TECHNOLOGY IN CHHATTISGARH**

**Kedar Nath Yadaw\* and M.L. Sharma<sup>1</sup>**

*Subject Matter Specialist (Agricultural Extension), Krishi Vigyan Kendra,  
Balod (C.G.) – 491226 (India)*

<sup>1</sup>*Department of Agricultural Extension,  
Indira Gandhi Krishi Vishwavidyalaya, Raipur (C.G.) – 492012 (India)*

*Email: [yadawkn3886@gmail.com](mailto:yadawkn3886@gmail.com)*

*Received-08.12.2020, Revised-29.12.2020*

**Abstract:** This study was undertaken to identify the major constraints faced by sericulturists in adoption tasar silkworm rearing. For this study 270 sericulturists were selected from 18 selected villages from the Raigarh and Korba districts of Chhattisgarh. The data were collected personally from sericulturists by using pre-tested and well structured interview schedule. The collected data were analyzed by using suitable statistical tools. The findings of the this study revealed that the majority of the respondents reported that lack of knowledge about vegetative propagation of host plants, plants are cut by thief, high infestation of stem borer in host plants etc. were the major constraints in host plant cultivation. As regards to silk worm rearing, frequent and high incidence of insect pest like; uzifly, ants, rates, snakes, birds, monkey etc. The majority of the respondents (98.88%) were of the opinion that there should be increase in the minimum support price of cocoon along with assured bonus, regular visit of sericulture extension personnel should be assured in the farm (87.40%), training should be provided on processing of cocoons (87.03%) were opinion that to minimize the constraints

**Keywords:** Adoption, Constraints, Tasar silkworm rearing, Chhattisgarh

## A STUDY OF THE GROWTH AND INSTABILITY IN AREA AND PRODUCTION OF ONION IN GUJARAT, INDIA

Jinjala Alpeshkumar Raghavbhai<sup>1</sup>, Kiran Kumari<sup>2</sup> and Ganga Devi<sup>1\*</sup>

<sup>1</sup>Department of Agricultural Economics, B.A. College of Agriculture, AAU, Anand- 388 110 Gujarat (India)

<sup>2</sup>University of Rajasthan, Jaipur (Rajasthan)  
Email: [gangasaran1982@gmail.com](mailto:gangasaran1982@gmail.com)

Received-04.12.2020, Revised-24.12.2020

**Abstract:** The present study was based on the secondary time series data on various aspects. Total eight regulated markets were selected purposively based on maximum arrivals of onion in the markets. The markets covered under the study were Mahuva (Station road), Ahmedabad (Chimanlal Patel market Vasana), Bhavnagar, Gondal, Vadodara (Sayajipura), Rajkot, Surat and Bharuch market. The secondary data on monthly wholesale prices and arrivals was collected from the website of [www.agmarknet.gov.in](http://www.agmarknet.gov.in) of selected regulated markets for last ten years (2007 to 2016). For analysis of data several analytical tools were used viz., Compound Growth Rate, Instability Index, Inter year and Intra year price indices, correlation coefficient and Johansen co-integration approach. The findings of the study showed that area, production and productivity of onion were decreased over the years but statistically non-significant. Further, it was observed that the growth rate of arrivals was statistically significant in Mahuva, Bhavnagar and Gondal market. Whereas, the highest growth rate of arrivals was found in Mahuva market. The compound growth rate of wholesale prices of onion in Vadodara market was found positive and significant. The onion arrival and price indices did not continuously increase or decrease uniformly over the years in all the selected markets.

**Keywords:** Onion, Growth, Instability, Market, Gujarat

## FIELD PERFORMANCE OF DIFFERENT CULTIVARS OF TUBEROSE (*POLIANTHES TUBEROSA* L.) UNDER AGRO-CLIMATIC CONDITIONS OF PUNE

P. Naveen Kumar, Tarak Nath Saha, Ganesh B. Kadam, Prashant Kavar, Rahul Yadav and Sithin Mathew\*

ICAR – Directorate of Floricultural Research, Pune – 411005  
Email: [sithin.mathew.m@gmail.com](mailto:sithin.mathew.m@gmail.com)

Received-28.10.2020, Revised-22.12.2020

**Abstract:** Adaptation and acclimatization of different tuberose cultivars under agro-climatic conditions of Pune are to be confirmed for obtaining better performance. The present investigation was conducted to evaluate the performance of tuberose cultivars during 2018- 2019. Thirteen single and eight double cultivars of tuberose were evaluated at the research farm of ICAR - DFR, Pune. Among the single cultivars evaluated highest plant height (121.33 cm), spike length (110.45 cm), plant spread (108.63 cm), number of leaves (16.52), leaf length (68.57 cm), number of spikes (6.3), number of florets per spike (41.863) and floret length (7.56 cm) was recorded in cv. Prajwal. Whereas, rachis length was found maximum in cv. Phule Rajani (37.63 cm) among single type varieties. Among the double cultivars, highest number of florets per spike (39.75), number of leaves (17.32), and floret length (7.65 cm) were recorded in cv. Suvasini. While number of spikes (6.62) and leaf length (58.32 cm) was superior in cv. Vaibhav. Plant height (121.70 cm) and spike length (110.56) was highest in cv. Swarna Rekha. Whereas cv. Hyderabad Double recorded highest rachis length (42.56 cm) and cv. Phule Rajat recorded highest plant spread (102.49 cm). Considering all the floral qualities and yield, cv. Prajwal and Phule Rajani among single types and cv. Suvasini, Vaibhav, Phule Rajat and Hyderabad double among double types could be recommended for commercial cultivation under agro-climatic conditions of Pune.

**Keywords:** Tuberose, Single, Double, Evaluation

## SEASONAL INCIDENCE AND NATURAL ENEMIES OF LAC INSECT (*LACCIFER LACCA*) IN KORBA

**Bhupendra Singh Rajpoot, P.K. Bhagat, Y.K. Meshram\*, G.P. Painkra and K.L. Painkra**

*Raj Mohini Devi College of Agriculture and Research Station,  
Ambikapur-497001 Chhattisgarh, India  
College of Agriculture and Research Station, Janjgir-champa Chhattisgarh, India*

*Received-05.12.2020, Revised-28.12.2020*

**Abstract:** The seasonal incidence of natural enemies of lac insect was carried out on Rangeeni lac during 2019-2020 at Kerajhariya Village, Pali block, Korba District of Chhattisgarh. Natural enemies of lac viz. *Eublemma amabilis* and *Pseudohypatopa pulvereana* recorded as key or major predator of lac, these was noticed a potential Predator reached peak second fortnight of April with 10.00 and 9.80 insect /30 cm lac sticks respectively, whereas *Chrysopa* sp. recorded as moderate predator, *Tachardiaephagus tachardiae* was recorded as major parasitoid these parasitoid reached peak First fortnight of April with 6.60 to 9.40 insect per 30cm of lac sticks, whereas *Eupelmus tachardiae* and *Aprostocetus purpurenu* as a minor parasitoid of baisakhi lac crop.

**Keywords:** Seasonal incidence, Lac insect, Natural enemies

## COMPARATIVE ECONOMIC ANALYSIS OF SRI (SYSTEM OF RICE INTENSIFICATION) WITH CONVENTIONAL RICE FARMING (CRF) IN KARNAL DISTRICT OF HARYANA PROVINCE, INDIA

**Vinod Kumar<sup>1</sup>, Ryuichi Yamada<sup>1</sup>, Dinesh Kumar<sup>2</sup>, Kautilya Chaudhary<sup>\*,3</sup> and Sanjay Kumar<sup>4</sup>**

*<sup>1</sup>Tokyo University of Agriculture, Tokyo, Japan, <sup>2</sup>Department of Agricultural Economics, CCS Haryana Agricultural University, Hisar, <sup>3</sup>Asst. Scientist, Department of Agronomy, CCS Haryana Agricultural University, Hisar, <sup>4</sup> STA, CCS Haryana Agricultural University, Regional Research Station, Uchani, Karnal  
Email: [kautilya@hau.ac.in](mailto:kautilya@hau.ac.in)*

*Received-01.12.2020, Revised-25.12.2020*

**Abstract:** The study was carried out to calculate the comparative economics of SRI (system of rice intensification) with conventional methods of paddy cultivation in Karnal district of Haryana province, India for the period 2018-19, on the basis of the data of costs and returns of crop. Apart from budgeting techniques, benefit-cost ratio (BCR), yield gap analysis, sustainability index and response priority index have been employed in the study. It has shown that BCR is higher for SRI (1.38) than Conventional (1.17) methods. SRI gives 14% higher yield as compared to conventional methods. Further, a decrease in seed cost significantly by 34% to that of CRF and also a decrease in water consumption significantly by 53% as compared to the Conventional method was noticed. On the basis of this study it is concluded that adoption of SRI is beneficial as compared to conventional methods for rice cultivation in Karnal district of Haryana.

**Keywords:** System of Rice Intensification, Conventional Rice Farming, Benefit cost ratio

## IMPACT OF FRONT LINE DEMONSTRATION ON ISABGOL CROP IN BARMER DISTRICT OF RAJASTHAN

**L.R. Choudhary\*, Pradeep Pagaria and Hari Dayal Choudhary**

*Received-05.12.2020, Revised-27.12.2020*

**Abstract:** The present study was conducted in Gudhamalani, Panchayat Samiti, Barmer district of Rajasthan. From Panchayat Samiti was selected maximum number (70) of front line demonstrations on Isabgol crop conducted by Krishi Vigyan Kendra, Gudamanalani, Barmer district during the last two years (2018-19 to 2019-20). The results revealed that the average yield recorded in the FLD,s field and farmer's field was 9.15 and 7.79 q/ha' during 2018-2019 and 2019-20, respectively. The result showed 13.40 to 21.90 per cent yield increase in FLDs over farmers practice during 2018- 19 to 2019-2020. Therefore, front line demonstration programme was an effective tool for increasing the productivity of isabgol and changing knowledge, attitude and skill of farmers. This created greater awareness and motivated the other farmers to adopt improved practices of isabgol.

**Keywords:** Blond psyllium, Husk, Net returns, Demonstration, Yield attributes

Journal of Plant Development Sciences Vol. 12(12)

## **ASSOCIATION OF CHARACTERS FOR YIELD AND ITS ATTRIBUTES IN HUSKED BARLEY (*HORDEUM VULGARE* L.)**

**Arun Kumar Singh, Javed Ahmad Siddiqui\* and J. Mohan**

Department of Botany, D.A.V. (P.G.) College, Kanpur, U.P.

*Received-05.12.2020, Revised-28.12.2020*

**Abstract:** The genotypic and phenotypic correlation of 12 parents used in diallel mating system between 11 characters was estimated. The results revealed that grain yield per plant had positive and significant association with number of tillers per plant, number of grains per spike, biological yield per plant, harvest index and 1000-hernel weight both at genotypic and phenotypic levels. Its association with plant height and days to reproductive phase was negative and significant at both the levels.

**Keywords:** Barely, Components, Correlation coefficient, *Hordeum vulgare*, Yield

Journal of Plant Development Sciences Vol. 12(12)

## **GAIN IN KNOWLEDGE OF FERTILIZERS RETAILERS THROUGH FIFTEEN DAYS TRAINING**

**L.R. Choudhary\*, Pradeep Pagaria and Hari Dayal Choudhary**

*Krishi Vigyan Kendra (Agriculture Univerity, Jodhpur) Barmer II*

*Email: [lr85.rca@gmail.com](mailto:lr85.rca@gmail.com)*

*Received-05.12.2020, Revised-26.12.2020*

**Abstract:** In view of recent advancement in the agricultural technologies and more and more involvement of Fertilizer retailers in agriculture, the role of Fertilizer retailers is not just to educate the Fertilizer retailers regarding agriculture technologies but they have to pay equal attention towards dissemination of agro-based technologies for the socio-economic upliftment of the rural families. For this, it is imperative that these functionaries should have through knowledge in agriculture and allied areas. Keeping this in view a 15 days training on agricultural technology for Fertilizer retailers was organized at Krishi Vigyan Kendra, Barmer-II in collaboration with Department of Agriculture, Barmer Rajasthan.

**Keywords:** Krishi Vigyan Kendra, Agriculture Technology, Fertilizers Retailers and Agriculture Department