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MORPHOPHYSIOLOGICAL STUDIES IN MUNGBEAN [*VIGNA RADIATA* (L.) WILCZEK]

A.K. Sharma, Priyanka Adlan and Gopi Krishan Gaur

Department of Genetics and Plant Breeding College of Agriculture, SKRAU, Bikaner

Abstract

Morphophysiological studies on seed and seedling characteristics were carried out with 25 genotypes of mungbean during Kharif-2018. The analysis of variance revealed significance differences among genotypes for all 21 characters studied. This study indicated the existence of ample amount of genetic diversity in the material and therefore, signifying the scope of selection for genetic improvement of mungbean. The high degree of genetic variability along with high heritability and high genetic advance as per cent of mean were recorded for seedling dry weight, seedling fresh weight, seed yield per plant, biological yield per plant, seedling vigour index, water absorption index, water absorption capacity, seedling length, harvest index, true density, bulk density, 100-seed weight, seed volume, number of branches per plant and plant height, which indicates that these characters were under the control of additive gene action and therefore, form the basis of selection for mungbean improvement programme. Days to maturity, plant height, number of branches per plant, number of seeds per pod, biological yield per plant, harvest index, true density, bulk density, porosity, water absorption capacity, water absorption index and seedling dry weight had significant positive correlation with seed yield and also directly contributed towards seed yield. In addition to these traits, biological yield per plant and harvest index also had direct effect on seed yield. Therefore, selection based on these traits would results improvement in seed yield of mungbean. Genotypes/ varieties exhibited higher seed yield along with other desirable traits Keshwanand Mung-1, SML-832, ML-683, RMG-268, MH-421, GM-4, RMG-344, SML-668, Sweta, RMG-492, therefore, all above mentioned genotypes could directly be used for cultivation under irrigated normal soil and water situation of arid zone as well as in future breeding programme to develop superior varieties.

SELF HELP GROUPS (SHGS) : VEHICLE OF RURAL WOMEN EMPOWERMENT

Akshita Chadda, Y.S. Jadoun and Jaswinder Singh

Department of Veterinary and Animal Husbandry Extension Education

Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana-141004 (Punjab)

Corresponding author Email : ysvet1203@gmail.com

Abstract

Empowerment of women is the need for the hour. Efficient transfer of innovations in livestock farming and their practical application to field situation is a key to development of livestock sector. Self Help Groups (SHGs) play a key role towards women empowerment by providing basic education, training for self-employment and self-awareness programs. The present study was carried out in Ludhiana district of Punjab to assess the empowerment status of rural women of livestock based Self Help Groups. A total 120 SHG beneficiaries were subjected to structured interview schedule for the study. The study revealed that regarding overall adoption about Scientific Livestock Farming Practices (SLFPs), majority of the beneficiaries (38.33%) were in medium category followed by 37.50 per cent and 24.17 per cent in high and low category, respectively. Majority of the beneficiaries (53.33%) had medium level of adoption regarding breeding practices. In case of feeding practices, most of the members (65.00%) were found under medium level of adoption. As far as health care practices were concerned, about 50.83 per cent of the beneficiaries possessed medium level of adoption. Regarding management practices, 40.83 per cent of the beneficiaries were observed in high category of adoption. Information empowerment of SHG beneficiaries through group activities like trainings, meetings, and contacts with change agents of SHGs helped them in adopting scientific livestock farming practices (SLFPs) and improving their socioeconomic status.

ENHANCEMENT OF RESISTANT STARCH AND IRON CONTENT WITH REDUCTION IN PHYTIC ACID CONTENT IN GROUNDNUT—A STUDY WITH TECHNOLOGICAL SOLUTION

Aman Verma, M.K. Mahatma, Sushmita Singh, A.L. Singh and Lokesh K. Thawait

ICAR-Directorate of Groundnut Research, Junagadh-362001, Gujarat, India

Abstract

Groundnut is a rich and affordable source of edible oil, dietary protein, carbohydrates and minerals. Its components are highly



digestible with 94% digestibility and 0.70 score of protein digestibility-corrected amino acid score (PDCAAS) value. Starch, being the major carbohydrate (11.5%) in groundnut, is found in digestible and non-digestible form (resistant starch). Like dietary fibers, resistant starch (RS) is not digested in the small intestine and thus, is fermented by habitat microflora of the colon to produce short chain fatty acids. Benefits of RS include reduction of the glycemic index, hypocholesterolemic and protective against colorectal cancer. Moreover, groundnut also possesses a chelating mineral inhibitor, phytic acid, which remains as a concern for the mineral bioavailability. So, in the present study, the effect of various processing methods like roasting, soaking (8 h and 16 h) and microwave irradiation on resistant starch, Iron and phytic acid content in popular groundnut varieties was assessed to enhance groundnut quality and consumption. Results showed that all the processing methods except for 16 h water soaking significantly increased the RS content. Further, results of phytic acid content demonstrated that seed soaking for 8 h caused a significant reduction in phytic acid (23-68%) content followed by MW irradiation and roasting as compared to raw samples. The estimated bioavailability of iron (Phy:Fe) was low due to the molar ratios being higher than the critical values and thus, is mainly affected by the phytate content. Soaking for 8 h improved the estimated bioavailability of iron which may be due to decrease in phytic acid content in the samples. During the soaking (8 h) process, the endogenous dietary enzyme, phytase, may have been activated, resulting in lower phytate content; thereby improving the Phy:Fe ratio. Hence, water soaking has enhanced resistant starch and iron content with concomitant reduction in phytic acid content and would significantly improve estimated iron bioavailability in groundnut.

VL BHAT 202: AN IMPROVED NUTRITIONALLY SUPERIOR BLACK SOYBEAN (*BHAT*) VARIETY FOR UTTARAKHAND HIMALAYAS

Anuradha Bhartiya, G. Singh, Vinay Mahajan, J.P. Aditya, Sher Singh, S.K. Jain and R.S. Pal

Crop Improvement Division, ICAR-Vivekananda Parvatiya Krishi Anusandhan Sansthan, Almora -263 601 Uttarakhand

Corresponding author E-mail: anuradha.bhartiya@icar.gov.in

Abstract

Black soybean (*Bhat*) variety, VL Bhat 202 was developed by ICAR-Vivekananda Parvatiya Krishi Anusandhan Sansthan (VPKAS), Almora, Uttarakhand for cultivation during *Kharif* season under rainfed organic conditions of Uttarakhand hills. This variety was notified and released in 2020 by the Central Sub-Committee on Crop Standards Notification and Release of Variety for Agricultural Crops. VL *Bhat* is derived from the cross VL Soya 1/ EC 361362. VL Bhat 202 has excellent phenotypic acceptability, white flower, pointed ovate leaves and determinate plant type with good standing ability which protect the crop from lodging during rains as well as enable this variety to be grown as a sole crop in contrary to the traditional black soybean varieties. This variety has exhibited an average yield of 1,596 kg/ha and shown significant yield advantage of 35.95% over black seeded soybean check VL Soya 65 (1,174 kg/ha) in three years of testing under organic with 115-120 days maturity duration. This variety is nutritionally rich as it has 39.19% protein and 16.55% oil content with appreciable amount of polyphenols (3.06mg/100g) in its seed which impart strong antioxidant activity. VL Bhat 202 showed highly resistant reaction against frog eye leaf spot and moderately resistant against pod blight, the important diseases of black soybean in the hills as well as found resistant to aphids, soybean beetles and moderate resistance to white flies and defoliators. This variety has potential to revive the interest of farmers for the profitable cultivation of black soybean in the hills.

EFFECT OF VARIOUS STRATEGIES TO MITIGATE SOIL CRUST FORMATION IN COTTON IN NORTH INDIA

Amarpreet Singh¹, Rishi Kumar¹, S.K. Sain¹, S.K. Verma², O.P. Tuteja¹, D. Paul¹ and K. Sankara Narayanan²

¹ICAR-Central Institute for Cotton Research, Regional Station, Sirsa, Haryana 125 055, India

²ICAR-Central Institute for Cotton Research, Regional Station, Coimbatore, Tamil Nadu, 641 003, India

Corresponding Email : amarpreet225@gmail.com

Abstract

Crop-stand establishment is adversely affected by poor emergence of seedlings due to soil crusts. The problem of soil crusting or capping is worldwide; it occurs under a wide range of climatic conditions. Rainfall occurrence within a few days after sowing, but before seedling emergence is one of the several factors that cause compacted or crusted surfaces. The magnitude