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pressurizing breeders and cultivators in the way to search for methods that of great impact on crop improvement and also to develop new crop varieties which have to satisfy high potential yield and should having desired quality in most of the characters, including nutritional aspect, pest resistance, disease resistance, and environmental changes. But conventional breeding methods is incomplete to satisfy the demand of the future generation, which greatly pressurizing breeders and cultivators in the way to search for methods that of great impact on crop improvement and also to develop new crop varieties which have to satisfy high potential yield and should be having desired quality in most of the characters, including nutritional aspect, pest resistance, disease resistance, and environmental changes.

SEPARATION AND QUANTIFICATION OF VITAMIN E ISOFORMS THROUGH ION CHROMATOGRAPHY IN GROUNDNUT OIL

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Abstract

A convenient analytic method was developed for measuring major vitamins E isomeric forms (α-, β-, γ- and δ-Tocopherol) in groundnut oil. A 5 μm Polar Advantage II, 120 Å, C-18 column, with the dimensions of 4.6 × 150 mm and maintained at 25°C, is used to resolve vitamin E. The separation starts with a 5.5 min composition hold with absolute methanol as mobile phase with flow rate of 1.0 ml/min, followed by reduction in flow rate i.e. 0.4 ml/min for up to 9.0 min and 0.6 ml/min for last one minute. Detection is accomplished using UV detector at wavelength 295 nm. The elution order of tocopherols in TG-51 genotype was δ-tocopherol, (α + β)-tocopherol and γ-tocopherol with retention time of 4.87, 6.01 and 6.43 minutes respectively. The total tocopherol content in TG-51 was found to be 567 ppm with 49 ppm of δ-tocopherol, 109 ppm of α + β-tocopherol and 409 ppm of γ-tocopherol. Peaks of α-, β-, γ- and δ-Tocopherol in groundnut oil were identified by comparing their retention times with commercially available standards (Sigma-Aldrich, St. Louis, MO, USA).

IMPACT ASSESSMENT OF DIFFERENT TILLAGE AND EARTHING UP PRACTICES ON AVAILABLE NUTRIENT STATUS AND PRODUCTIVITY OF MAIZE CROP (ZEA MAYS L.) IN TARAI REGION OF UTTARAKHAND

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Abstract

In spite of favourable soil and climatic conditions for cultivation of maize, India is producing only 2.5% of the world's maize production. India's maize productivity is about half of the world's average, 1/5th of the productivity of the US and less than half of China. In order to increase the production of maize, it is very important to focus on such practices which improve the yield rather than clearing more land for cultivation. Maize being a highly sensitive crop requires careful selection of agronomic practices such as tillage and interculture operations like earthing up for its proper growth and development. So in order to assess the effects of different tillage and earthing up practices on soil available nutrient status and productivity of maize crop in tarai region of Uttarakhand, a field experiment was conducted during the kharif season, 2017 and 2019 at Pantnagar with three levels of tillage practices (T1- Conventional tillage, T2 - Minimum tillage and T3- Deep tillage) and 5 levels of earthing up practices (E1 - Earthing by Pant fertilizer band placement- cum-earthing machine, E2 - Earthing by Earther, E3- Manual Earthing, E4 - Earthing by cultivator and E5 - No earthing) in split plot design with three replications. The deep tillage being statistically at par with conventional tillage recorded significantly highest value of available NPK in the soil after harvesting of crop during both the years as compared to the minimum tillage treatment. In 2017 and 2019, the treatment earthing by machine and earthing by earther recorded statistically similar value of available nitrogen in the soil, but it was significantly higher than all other treatments. The deep tillage recorded 9% higher grain yield as compared to conventional tillage treatment and 20% higher as compared to minimum tillage. The treatment earthing by pant fertilizer band