



PRODUCTIVITY, QUALITY AND STORABILITY OF ONION (*ALLIUM CEPA*) AS INFLUENCED BY DIFFERENT LEVELS OF NITROGEN AND SULPHUR

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ABSTRACT: A field experiment was conducted during *Rabi* season of 2013-14 and 2014-15 at medium black soil of Chhindwara district of Madhya Pradesh to study the Productivity, quality and storability of onion (*Allium cepa* L.) as influenced by different levels of nitrogen and sulphur. The experiment was conducted with five levels of nitrogen (0, 80, 100, 120 and 140 kg/ha) and four levels of sulphur (0, 15, 30 and 45 kg/ha) and their all possible combinations in Factorial Randomized Block Design with three replications in onion variety 'Agrifound Light Red'. Among different levels of nitrogen, the highest level under consideration (N_4 : 140 kg N/ha) recorded significantly highest bulb yield (313.69 kg/ha) besides the significantly superior quality and storability parameters over remains. In case of sulphur levels the second highest level under consideration (S_2 : 30 kg S/ha) proved superior over S_3 : 45 kg S/ha in terms of productivity (313.97 kg/ha) and quality (TSS 11.20%). However storability parameters recorded significantly superior with control (S_0 : 0 kg S/ha) which recorded minimum physiological weight loss (4.57 and 5.98 % at 30 and 60 DAH respectively) and lowest rotting percent (3.60 and 10.66 at 30 and 60 DAH respectively).

Keywords: Onion, productivity, nitrogen, storability, sulphur, quality

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Onion is the valuable foreign exchange crop ranked first (1482499 MT and Rs. 316961 lakh) in the country during 2013-14 (NHB 2013-14). It is exported from India to other countries like, Malaysia, Kuwait, Sri Lanka, Singapore, Germany and U.K. India is next to china in area, production and productivity of onion. Among the different states Maharashtra is leading state in terms of area and production. Other major onion states are Gujrat, Karnataka, Odisha, Uttar Pradesh, Andhra Pradesh, Tamil Nadu and Rajasthan. The area of onion in Madhya Pradesh is 117.3 thousand hectare, total production is 2826.0 thousand million tonnes and productivity is about 24.10 tonnes per hectare (NHB 2013-14). The foremost challenge to the existence of mankind has always been to produce adequate quantity of food from the available acreage to meet the requirements of ever expending world population. The rate of yield gain in crop improvement programme must match the rate of population growth so, as to avoid malnutrition and hunger. India has three growing seasons, out of which *kharif* and late *kharif* season accounts of 40% of total onion production, while

the *rabi* season accounts of the 60% onion. Generally onion is cultivated in *Rabi* season. The production of *rabi* season is stored for consumption in summer and *kharif*, but due to lack of proper storage conditions and losses due to spoilage in the monsoon season, the prices goes up. Hence, productivity and storability of onion required to improve to fill up the gap of demand and supply. Onion productivity, quality and storability greatly affected by fertilization particularly by nitrogen and sulphur. Nitrogen is a constituent of proteins, enzymes, hormones, vitamins, alkaloids, chlorophyll and photosynthesis which lead to an increment in plant metabolism and vegetative growth expressed as height, number of leaves per plant, both length and diameter of bulb, leaf area and crop growth rate as well as dry weight of plant (El-Tantawy and El-Beik, 2009). Sulphur not only increase the bulb yield but also improve its quality especially pungency and flavors. Sulphur deficient plants had poor utilization of nitrogen, phosphorus and potash and a significant reduction of catalyses activities at all age. Severe Sulphur deficiency during bulb development has detrimental effect on yield and quality of onion (Nasreen et al., 2003). In view of above aspects the present has been carried out to study