

Research Paper

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Analysis of post harvest total soluble solid content in *Kharif* onion

■ MALLIKARJUN DHOTRE¹ AND T. B. ALLOLLI

AUTHORS' INFO

Associated Co-author :

¹Department of Horticulture,
University of Agricultural Sciences,
DHARWAD (KARNATAKA) INDIA

Author for correspondence :

T.B. ALLOLLI

Regional Horticultural Research and
Extension Center (UHS, B),
Kumbapur, DHARWAD
(KARNATAKA) INDIA
Email : girid6@gmail.com

ABSTRACT : A research was carried to examine total soluble solid (TSS) content in onion at different storage intervals. Two separate experiments were conducted with 1) different red onion genotypes and 2) different nitrogen sources. Three contrasting patterns were noticed with respect to variations in TSS content in *viz.*, i) TSS decreased with the storage period. ii) TSS level increased initially and then started decreasing to a level higher than the initial TSS. iii) TSS content rose initially and gradually came down even below to the initial level. Among 14 onion genotypes, Arka Pragati, Bellary Red and Arka Kalyan had higher TSS levels (14.93, 14.63 and 14.13⁰ Brix, respectively) at the end of storage period. Whereas, lower TSS content recorded in Bidar Local (12.07⁰ Brix), Rampur Local (12.47⁰ Brix) and Telgi Red (12.60⁰ Brix). Among nitrogen sources, the highest TSS at the end of storage period was recorded for organic sources like, vermicompost (14.00⁰ Brix) and agrigold (14.13⁰ Brix) while, the treatment control (without any added nitrogen) resulted in the lowest TSS content all through the storage period. The study yielded some of the genotypes and nitrogen sources vital for improved post harvest TSS content and storability of onion grown during *Kharif* season.

Key Words : Onion, TSS, Storage, Genotypes, Nnitrogen

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Onion is one of the important vegetable crops that are extensively grown in India. It is grown throughout the year in many parts of the country. Onion grown during *Kharif* season experiences poor productivity and storability due to several factors *viz.*, lack of suitable variety(ies), poor nutrient management practices and improper storage techniques etc. Onion being semi-perishable crop gets deteriorated during storage, transportation and marketing. Hence, apart from concentrating on higher yield and quality in field, onion needs to be given an equal importance during its storage. The aim of onion bulb storage is to cover consumer demands and extend the availability of onions in time, keeping quality of product at the same time. Several researchers have attempted to relate bulb characteristics with storage life and reported that dry matter, total soluble solids (TSS), and pungency were associated with storage life of onions (Netrapal *et al.*, 1988; Dhotre *et al.*, 2010) and indicated that high TSS is positively correlated with storability of onion bulbs. Costly investments in storage and transport of onion bulbs make it increasingly important to identify cultivars with the best chance of long-term storage. Many commercial onions are stored before marketed, but cultivars differ in their storage capability, finding

a good indicator for selection before storage trials would improve breeding efficiency.

Although, several studies have documented onion storage losses, research to elucidate the relationship among production environment and storage attributes is lacking. TSS at harvest could be used as a preliminary selection criterion to identify good storability, and bulbs should be evaluated further after storage. Furthermore, nitrogen is an essential element to increase bulb size and yield, onion growers believed that excessive nitrogen prevented proper maturity and resulted in bulbs with poor storage quality (Sheikh *et al.*, 1987). With these perspectives, the present study was planned, aiming to understand the behavior of TSS content in onion bulbs during storage using several onion genotypes and different nitrogen sources.

RESEARCH PROCEDURE

The present study was carried out at Department of Horticulture, University of Agricultural Sciences, Dharwad, for the study, onion bulbs were obtained from two separate field experiments during *Kharif* 2008 *viz.*, 1) Fourteen red onion