

Yellow onion (*Allium cepa* L.) natural top fall and pre mature bolting

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ABSTRACT

The present investigation entitled, "Genetic improvement of yellow onion for late *Kharif* season" was undertaken with an object to develop new yellow onion genotypes (from parental population of cv. PHULE SUVARNA by open pollinated (OP) synthetic lines). Study revealed that lower premature bolting was noticed in selected population than parental population at various crop stages and eventually 14.58% in parental population. At last the most significant result was recorded in selected population where more than fifty per cent natural top fall was recorded as a sign of physiological maturity which otherwise meager in parental population *i.e.* 16.43%.

Key words : Onion, Genetic, Genotypes, Bolting, Topfall

Maharashtra is the leading onion growing state accounting for 25 percent total production (1661.0 thousand tones) and 16 per cent of the total area (84.48 thousand ha). India is the second largest produce of onion with an area of 454.6 thousand ha and production 6034.25 thousand MT (Anonymos, 2005). Onion is predominately a *Rabi* season crop of India but in Maharashtra it can be grown year round under wide range of climatic condition. Phule suvarna is basically a *Rabi* season variety developed by Mahatma Phule Krishi Vidyapeeth, Rahuri especially for exhorting yellow onion bulb are generally harvested in the month of March to April (Anonymous, 1997).

However, onion export initiates from December onwards, therefore, *rangda* onion cultivation can be exploited for export. However, cv. PHULE SUVARNA is a moderately susceptible to pre-mature bolting during late *Kharif* season hence it is important to manipulate the cv. PHULE SUVARNA genetically so that improved strain can be suitable for late *Kharif* season.

MATERIALS AND METHODS

The investigation was carried out at the Instructional –cum –Research Farm, Department of Horticulture, Mahatma Phula Krishi Vidyapeeth, Rahuri (M.S.) during late *Kharif* 2002-03. The plot selected for the experiment had a uniform soil depth and fertility. The soil was light medium black and well drained. Selection of promising genotypes of yellow onion was done especially suitable to late *Kharif* (*i.e.* *rangda*) season. Selection pressure was applied at two stages on desirable horticultural traits particularly for *rangda* season such as controlled vegetative growth coupled with rapid bulb development, bigger bulb size and resistance against premature bolting

and twin bulbs. Accordingly, initially on the basis of plant growth characters, 250 seed bulbs were selected from plant population of one lakh bulbs and thus, 0.25 per cent selection pressure was applied on original plant population. However, at bulb harvesting stage from 250 initial selection only 25 seed bulb were finally selected to advance bulb crop on the basis of desirable bulb character such as natural top fall, thin bulb neck, shape and size of bulb, etc. However to maintain broad genetics and heterozygosity of onion crop, random mating of initially selected 250 bulb was allowed during seed production program.

During late *Rabi* season, these seed bulb were planted on 19th January, 2003 and seed production was undertaken in isolation where random pollination or sib mating of 250 selected bulb was allowed. The seed of each mother plant was harvested separately as a synthetic selection on 5th May, 2003. However, seed of finally selected 25 genotypes were used to raise bulb crop during late *Kharif* (*rangda*) season of 2003-04. The recommended dose of 20 tons/h of farm yard manure and 50 kg K₂O in the form marinate of potash per hector was applied as a basal dose at the time of transplanting. The 50 kg/ha nitrogen in the form of urea was applied as a top dressing followed by light earthing up upon 30 DAT (days after transplanting) stage. Phule suvarna were statistically analyzed by t test for average performance and by F test for genetic variability (Panse and Sukhatme, 1987).

RESULTS AND DISCUSSION

The yellow onion cultivation in India and in Maharashtra is not regular practice at all. However, to