

# Effect of some agricultural practices on yield components and storage ability of some onion cultivars

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Five field experiments were carried out at the Experimental Farm of the Faculty of Agriculture at Moshtohor, Zagazig University Benha Branch during the seasons of 1980 - 1981 & 1981 - 1982 and 1982 - 1983. The aim of this study was to evaluate some onion cultivars under the conditions of Kalubia province & the response of Giza 20 cultivar to N, P, K, Cu, Zn and Mn fertilizations as well as GA<sub>3</sub>, NAA, Alar and Ethrel foliar spray. Moreover, the residual effect of such growth regulators on the subsequent seed yield capacity was also taken into consideration. The first experiment was conducted to study the performance of five cultivars i.e. Behairy [local strain from Kalubia province], Giza 20 [new cultivar for Delta and Middle Egypt], Giza 6 Mohassan [Improved Giza 6], Shandweel 1 [New cultivar for Upper and Middle Egypt] and Texas Yellow Grano 50 s [American cultivar] with respect to yield components and its quality, chemical constituents and keeping quality of onion bulbs. The second experiment included 12 treatments i.e., 30, 60 and 90 kg N/fed. in combination with 30 and 60 Kg P<sub>2</sub>O<sub>5</sub>/fed. and 48 kg K<sub>2</sub>O/fed. It was conducted to study the effect of such treatments on yield and quality as well as storageability of onion bulbs of Giza 20 cultivar. The third experiment was conducted to study the effect of some micronutrients i.e. copper, zinc and manganese foliar spray each at two concentrations either as single or in combinations with each other on the previously mentioned characteristics of onion bulbs of Giza 20 cultivar. The effect of foliar spray of each of GA<sub>3</sub>, Alar, NAA or Ethrel (each at two concentrations) on yield, quality and storageability of Giza 20 onion bulbs was the aim of the fourth experiment. The fifth experiment was conducted to study the residual effect of the different used growth regulators treatments of the fourth experiment on the seed yield capacity of the mother bulbs. The most important results obtained from these experiments are as follows: 1. The highest percentage of bolters was accompanied with the variety Texas Yellow Grano while that of doubles was in the varieties Behairy and Shandweel 1. With regard to firmness, Giza 20 and Shandweel 1 cvs, showed the highest values, followed by Behairy and Giza 6 Mohassan. Texas Yellow Grano came last in this respect. Highest bulb yield productivity was obtained by Texas Yellow Grano, followed by Giza 20 and then Behairy. 2. Bulbs of cvs Giza 20 and Behairy contained the highest percentages of T.S.S, dry matter, N and total carbohydrates. Texas Yellow Grano ranked last in this regard. 3. It is advisable to cultivate Giza 20 cultivar under similar conditions of Kalubia to overcome the problem of lacking onion on markets, thus bulbs of Giza 20 cv proved to be of the best keeping quality followed by Behairy & Giza 6, Shandweel 1, meanwhile Texas Yellow Grano was the worst in storageability. 4. Fertilization treatments had no significant effects on percentages of either bolters or doubles of Giza 20 cultivar. 5. Application of 60 + 30 + 48 kg/fed. of N + P<sub>2</sub>O<sub>5</sub> + K<sub>2</sub>O respectively may be recommended to produce highest bulb yield with the best physical and chemical characters as well as highest storageability. It is not advisable to spray onion plant of Giza 20 cultivar with used microelements i.e. Cu, Zn and Mn. Thus it did not increase either bulb yield or improve bulb quality or storageability. 6. Repeating foliar spray of onion plants of Giza 20 cultivar for four times with either GA<sub>3</sub>, Alar, NAA or Ethrel decreased percentages of bolters, increased N and P percentages and improved marketable and total yield than control. 100 - 200 ppm NAA or 100 ppm Ethrel

proved to be the best treatments in this respect. However it increased percentage of doubles and had no effect on T.S.S • dry weight, K and total carbohydrates percentages • 8. It is advisable to spray onion plants during growth season with 50 – 100 ppm Etherel as a mean of decreasing the weight loss during storage, which may lead to improving storageability of stored bulbs. 9. With regard to the residual effect of growth regulators used on the produced mother bulbs, it has been found to improve the scaps formation and consequently increased seed yield productivity. Using ei-GA, Alar, NAA or Etherel at concentrations of 100 • 500, 200 or 100 t respectively as foliar spray on onion plants proved to be among the best treatments in this respect •