

Plant spacing research in onions and its commercial significance

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Following a number of enquiries from processors of pickling onions, a study was undertaken to determine the effects of plant density and rectangularity on the yield, size and shape of pickling onions. Processors require pickling onions to be spherical and sized between 25 and 45 mm diameter before peeling. Currently processors obtain their pickling onions from packing sheds who are mainly concerned in supplying ware onions to the fresh market. As a consequence of this, the onions supplied for pickling are the leftover small grades which often are composed of all shapes and sizes below 45 mm, and require costly sorting and grading.

The first part of the study examined the effect of plant density at a constant rectangularity of 1:1. Seed cv. White Spanish was hand sown at densities of 178, 400, 625, 816, 1111 and 1600 plants m^{-2} . Results showed pickling grade yield followed a parabolic relationship with density and the highest yield was obtained at 625 plants m^{-2} (figure 1). Mean bulb size decreased as density increased but bulb shape was not significantly affected by density.

The second part of the study examined the effect of plant rectangularity at a constant density. Seed cv White Spanish was hand sown at densities of 178, 400, 625 and 816 plants m^{-2} and rectangularities of 1:1, 2:1,

1:2, 4:1, 1:4 and 16:1. Results showed rectangularity had no significant effect on total bulb yield or mean bulb size over the range tested, but significantly altered bulb shape and hence, pickling grade yield. Round bulb yield and pickling grade yield decreased as rectangularity increased and were significantly reduced ($P=0.05$) at 4:1 or greater.

On the basis of this work it is recommended that pickling onions (25-45 mm) could be produced as a main crop in a loamy sand at a density of 625 plants m^{-2} and rectangularity of 3:1. In practical terms this would mean growing pickling onions at an inter-row spacing of 70 mm and intra-row spacing of 23 mm, and modifying seed drills to sow at this spacing. At present, growers are more interested in producing ware onions as a main crop. However, adoption of these results by processors and growers may see the production of pickling onions as a main crop in the future.

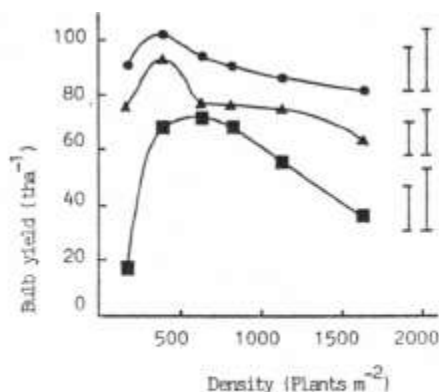


Figure 1
Effect of plant density on total (●), round (▲) and pickling (■) yields of onion. Vertical bars (left to right) show LSD at $P=0.05$ and 0.01 respectively.