Dear Editor,

RE: SUNFLOWER POPULATION

My letter (6) in response to Dr. Prunty's article on sunflower population (3) was confined to correcting an incorrect statement of fact (We did not use the head method described in his article) and correcting a misleading statement about our results (8 of our 12 experiments did not support his hypothesis). Dr. Prunty initiated more controversy in his latest article (4) to which I will respond. He now calls the head method the “100% stand” method, but continues to link our “100% stand” method and his “100% stand” method which are not the same as indicated in my letter (6): His “100% stand” method (3, 9) is potentially biased, because judgment is involved in selecting heads for harvest. Consequently, his area method is better than his “100% stand” method.

Dr. Prunty used his area method to establish and harvest plant population densities at two locations (4). Yield differences among populations were not significant in either trial, but he gave neither coefficient of variation (CV) nor least significant difference (LSD) values. Consequently, the reader is uninformed of the variability, and cannot evaluate whether or not the data were too variable to justify a population effect. However, he chose one location and calculated what the yields would have been if corrected to 100% stand, and these amounted to 190, 197, 204 from 3.8, 5.0, 6.1, and 7.3 plants m⁻², respectively. He used this calculation to support his hypothesis that the “100% stand” method is biased because yield increases with population increases. I chose the other location and from his Table 1 and Fig. 1 calculated yields of 244, 241, 248, and 252 g m⁻² from 5.0, 6.1, 7.5, and 9.1 plants m⁻², respectively. These small differences in nonsignificant data at both locations are not valid support of his hypothesis. However, these calculations are agronomically invalid because they ignore reduced plant competition! Loss of stand during the growth of the crop may be partially or fully offset by increased production from the remaining plants (2). Furthermore, the lowest population at both locations was adequate for maximum yield, so mathematically adding yields from nonexistent heads should increase calculated yields in direct proportion to the proportion of missing heads.

I do not know why our article (8) on uniformity of plant spacing was discussed. Despite its title, Dr. Prunty’s paper (4) presented no data on how either soil water or plant population influence uniformity of stand. However, the second paragraph on p. 748 starts with two sentences about our research; and the third sentence starts with, “This work shows......!” It should be corrected to, “My (Prunty’s) work shows-.....”

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