In the first paragraph (4), he inferred that potential cultivar × treatment differences have been overlooked in agronomic research on oilseed sunflower and cited our article (7) to support his inference. Although our cultivars were of oilseed and nonoilseed type, they were variables and we found that “Cultivar × population interactions were not significant…” Furthermore, the research of agronomists Miller and Fick at Dr. Prunty’s university was not cited. Their work, more extensive than Dr. Prunty’s on this subject, involved 3 years and four oilseed cultivars at three plant population densities and showed nonsignificant cultivar × plant population interactions (1).

Dr. Prunty used “USDA 894’, ‘Dahlgren 704’, and ‘Interstate 907’ cultivars at two locations (4) and USDA 894, ‘NK212’, and ‘Peredovic’ at two locations (3) in plant population trials. The locations were many kilometers apart, and one was irrigated and the other dryland. Dr. Prunty attributed the differences in yield rankings of the cultivars in irrigated and dryland locations to relative stress tolerance and indicated that USDA 894 was superior on dryland (4) and that NK 212 “responds better to irrigation than the other cultivars” (3). A potential differential response of cultivars to irrigation should be evaluated in replicated and randomized irrigated and dryland plots on the same field. A location × cultivar interaction can be calculated from locations far apart, but it does not constitute a measure of differential cultivar response to a treatment that differs at the two locations. The differential varietal response reported at the two locations each year can be attributed to differing tolerances to sunflower midge. NK 212 is extremely susceptible (a test cultivar) to midge and Dr. Prunty reported “midge damage was evident” at the dryland location, but not at the irrigated location. Yield rankings from high to low agreed with reaction to midge: NK 212, USDA 894, and Peredovic with no midge and USDA 894, Peredovic, and NK 212 with midge (3). In the other article (4), midge caused “minor” damage at one location and was not present at the other location. Again, yield rankings agreed with reaction to midge. Yield rankings were Interstate 907, USDA 894, and Dahlgren 704 without midge and USDA 894, Dahlgren 704, and Interstate 907 with midge damage. In tests at two locations in Minnesota involving 56 oilseed cultivars, Interstate 907 ranked second only to NK 212 in susceptibility to midge (5). My contention is that Dr. Prunty’s plant population trials were not designed to measure differential response of cultivars to moisture stress or irrigation and that differential tolerance to midge is as good and probably a better explanation for the difference in yield rankings at dryland and irrigated locations.

Dr. Prunty’s facetious comment at the end of his letter (6), “One thing certain is that farmers cannot harvest a 100% stand that is not really there,” may be interpreted to discredit our reporting. On the contrary, our reported numbers of plants ha⁻¹ were present through the growing season and at harvest. Dr. Prunty’s reported plants ha⁻¹ or m⁻² were all present only at the time of thinning. I conduct both planting rate (seeds ha⁻¹) and plant population density research, but I do not confuse the two in reporting results. Dr. Prunty’s plant population trials were equivalent to planting rate trials with the rates established by thinning in the seedling stage.

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REFERENCES


Reply: Pertinent points are:

1. The LSDs for the bottom line of Table 1 of 75:745-749 are 18, 0.7, and 9. For Table 3 they are 15 and 8. This information was deleted in review.
2. In context, the “100% stand” calculated yields (p. 748) are the best available estimates of “100% stand” yields.
3. The term “uniformity of stand” is an inclusive term for both stand loss, as in Fig. 1, and the distribution of seed yield per plant, as in Fig. 2 and 3.
4. The midge hypothesis is reasonable.
5. Change the word population in my papers to “planting rate with rate established by thinning in the seedling stage.”

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