

Letters

Productivity of Organic Farms

Science recently published an article (News and Comment, 5 Sept, p. 777) describing our report (1) in which we compared organic and conventional farms in the Midwest. Samuel R. Aldrich (Letters, 10 Oct., p. 96) criticizes us for presenting our crop production data on the basis of income per acre of cropland, rather than income per farm. His analysis of our data concludes that the conventional group realizes 30 percent more income, whereas we conclude that the incomes of the two groups are approximately equal. The discrepancy arises because the group of conventional farms has an average of 32 percent more cropland, although the average total size of the two kinds of farms (including permanent pasture, feedlots, woodlots, building sites, and so forth) is about equal.

Although all the farms studied produced livestock as well as crops, we were concerned only with crop production. We did not include other kinds of income from the non-cropland. Therefore, since the two groups had different amounts of cropland, there is no method for comparing them other than on the basis of income per acre of cropland, which is almost equal for the two groups.

It is possible that Aldrich's unusual way of comparing crop production incomes reflects a misunderstanding of what we mean by cropland. Since the rotation systems in use on organic farms sometimes require cropland to be in hay, temporary pasture, or soil improvement crops, one should include such land in computing income per acre of cropland. This is exactly what we did. We use "cropland" to mean all land that is ever cropped, regardless of whether or not it was actually cropped in the year we studied (1974). Aldrich, however, mistakenly uses the word "harvested" to refer to this land, overlooking the fact—made explicit on page 25 and again on page 38 of (1)—that harvested cropland is only a subset of cropland. Our use of the word "cropland" is identical to that of the Department of Agriculture's Economic Research Service in its inventory of U.S. cropland (2).

Aldrich also says that we should charge an equal amount for phosphorus and potassium against the incomes of both groups, since organic farmers are depleting the soils' reservoirs of these nutrients if they don't apply fertilizers to replenish them. However, as he then goes on to mention, the organic farmers in fact do buy phosphorus (in the form of rock phosphate), and so are not necessarily depleting their soils. The cost of this rock phosphate was included in the organic farmers' operating costs. If the organic farmers should be applying as much K as the conventional ones, this would add only \$2 per acre to their operating costs. This is just enough to cancel the slightly higher average income we found for the organic group (\$134 per acre compared to \$132 per acre for the conventional group). Actually, there is no a priori reason to expect, as Aldrich apparently does, that the amounts of either P or K needed by the two groups should be exactly equal, since the mix of crops raised on the two kinds of farms differ. Still, there could be some difference in the depletion of P or K by organic farmers compared to that by conventional farmers; however, this can only be quantified by additional research. Furthermore, research on the comparative effects of the two systems on soil fertility should not be limited just to possible depletion of macronutrients; many other substances and soil characteristics may also be affected differentially. Indeed, our report urges just such a broader investigation of how the two management systems affect soil fertility [item 5 of our list of suggested research topics (1, p. 55)].

Finally, Aldrich states that our results would have been different had the study been concerned with any of the 20 years before 1974. We agree. In fact, the study was undertaken as one component of a more general investigation of alternative production techniques that might enable farmers to adjust to the dramatic supply problems and price increases for energy and energy-intensive fertilizers and agricultural chemicals that began occurring between the 1973 and 1974 growing seasons. There seems little basis for expecting

that agriculture will ever again find itself with the abundance of low-priced energy and fertilizers that characterized the previous two decades.

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References

1. W. Lockeretz, R. Klepper, B. Commoner, M. Gertler, S. Fast, D. O'Leary, R. Blobaum, "A Comparison of the Production, Economic Returns, and Energy Intensiveness of Corn Belt Farms That Do and Do Not Use Inorganic Fertilizers and Pesticides" (Center for the Biology of Natural Systems, Washington University, St. Louis, Mo., 1975).
2. H. T. Frey and R. C. Otee, *Cropland for Today and Tomorrow* (Agricultural Economic Report No. 291, Economic Research Service, Department of Agriculture, Washington, D.C., 1975), p. iii.

Affirmative Action

The remarks concerning affirmative action by Caspar Weinberger as reported by Barbara J. Culliton (News and Comment, 22 Aug., p. 618) require comment.

It is indeed sad to contemplate the spectacle of this nation's greatest universities, with their law schools, computer science departments, and other intellectual resources, in a state of confusion and befuddlement over the question of what to do about affirmative action. One might get the impression that the campuses are reeling under the onslaught of hordes of "unqualified" minorities and women, aided and abetted by the merciless minions of the Department of Health, Education, and Welfare (HEW).

The reality of the situation is quite different. In 1968, women and Blacks made up, respectively, 19.1 percent and 2.2 percent of college faculties; by 1972, the figures were, respectively, 20 percent and 2.9 percent (1). The numbers have not changed appreciably in the last 3 years and thus would hardly constitute a mass invasion. It appears that universities like to report the number of minorities as a percentage of the total faculty of the entire institution in order to disguise the abominable records of individual divisions, such as colleges of science. The larger numbers of minorities and women traditionally found in the colleges of nursing, libraries, home economics, and ethnic studies obscure examples such as departments of chemistry, where women constituted 2.6 percent and Blacks 0.6 percent of the faculty of Ph.D.-granting institutions in 1972 (2).

Former Secretary Weinberger mentions that many people in HEW "have tended to a strict application of the rules" on this issue. In fact, the attitude of HEW has been to conciliate and compromise rather than