erences. A main issue appears to be that, because references are kept confidential, the applicant did not have fair opportunity to rebut negative comments. The suit is still in the preliminary stages. Somewhat ironically, NAS is being sued as a private body. If the academy were another federal agency, OEEO could not take it to court.

Perhaps as a sign of the times, the academy has added a legal counsel to its staff. The new counsel is James R. Wright, who moved to the post from the CMVE, where he was staff officer and counsel. An academy spokesman said that the academy's legal work in the past—mostly dealing with the contract law—had been handled by a Washington law firm, but the decision to employ a counsel was motivated by the "litigious nature" of a lot of the issues in which the academy is now involved.

—JOHN WALSH

Boost for Credit Rating of Organic Farmers

One of the basic tenets of the modern way of agriculture—that intensive use of chemical fertilizer and pesticides is the royal road to high yields—is called into question by a study of the economics of organic farming. The study, which is arousing surprise and some consternation among conventional agriculturalists, indicates that organic farmers can produce about as much per acre, and earn as good an income, as conventional farmers using the full panoply of chemical aids to agriculture. Of relevance to national policy as well as the farmer's pocketbook is that organic farming is about one-third as prodigal of energy as is the conventional method of farming.

The study,* performed by William Lockeretz and coauthors at the Center for the Biology of Natural Systems at Washington University, St. Louis, defines organic farmers as those who nourish their soil with manure or crops grown for the purpose ("green manure"), while eschewing the use of chemical fertilizers and pesticides. The 16 organic farms examined in the study, all located in Corn Belt states and run on a profit-making basis, were each matched with conventional farms similar in size, soild properties, and location.

From an economic comparison of the two styles of farming, Lockeretz and colleagues draw the following conclusions.

- The market value per acre of the crops produced by the organic farmers was only slightly less than that of the conventionally raised crops. Most of the crops (chiefly corn, soybeans, wheat, and oats) were fed to cattle, not sold for cash. Had they been sold at prevailing prices, however, the organic farmers would have received $165 per acre for their produce, $14 less than the conventional farmers. The 8 percent difference is not statistically significant.
- The organic farmers' operating costs were, on average, $31 per acre, $16 less than those of the conventional farmers, largely because they had no chemical fertilizer bills to meet.
- Since the differences in production value and operating costs cancel each other out, the two groups of farmers enjoy essentially the same net income per acre of crop production—$134 for the organics, $132 for the conventionals—as far as direct costs are concerned. The authors of the study believe that the fixed costs are the same in both cases.
- As for energy intensiveness, measured as energy input per unit value of production, the conventional farmers used 18,400 Btu's per dollar, the organic farmers 6800 Btu's per dollar, a difference of almost threefold.

The authors of the study, who include center director Barry Commoner, do not neglect to cite the low opinion in which organic farming is held by authorities such as the Secretary of Agriculture. ("Before we go back to an organic agriculture in this country somebody must decide which 50 million Americans we are going to let starve or go hungry," Earl Butz said in a 1971 interview.) The authors do not advocate a mass return to organic agriculture, but they believe that organic and conventional farming are two points on a spectrum and that it is possible to adopt certain features of each. They stress that their study is preliminary, being based on the performance of the 1974 crop year only. One implication they draw from their results is that organic farms "will be less vulnerable than conventional ones to further disruptive effects of the energy crisis of the kind that have already been experienced in the Corn Belt"—half of the conventional farmers in the study used less fertilizer than they would have liked in 1974, because it was either too expensive or unobtainable.

Another inference is that organic farms, because of their lower operating costs, are less vulnerable to a decline in crop prices. Present agricultural methods, the authors believe, "are not necessarily the only way to produce food in sufficient quantities at a reasonable economic return to the farmer."

The study's finding of equal income among the two groups has occasioned considerable interest in the Department of Agriculture. "I was astounded that they were so close," says Earle E. Gavett of the Economic Research Service. Gavett, who serves as an unofficial devil's advocate on the National Science Foundation committee reviewing the project, believes that with a continuing rise in the cost of energy "it is entirely possible that more and more people could go this [the organic] route, and I think we should investigate this further."

Department of Agriculture officials stress that they are not hostile to organic farming—"We are working with some of those, like the Rodale people, who were most critical of us in the past," says an Agricultural Research Service (ARS) scientist. But despite concern about the energy intensiveness of American agriculture, the ARS has been unable to mount a specific study of organic farming because of lack of new funds. Asked why the Washington University study is funded by the National Science Foundation and not the Department of Agriculture, ARS energy coordinator Landy B. Altman explains that the department can only study the energy problem with funds it can get from other agencies. Also, in the present funding crisis, "We are pretty well stuck with the complement of people we have, so there is some reluctance to redirect much of our program into energy research." The Department of Agriculture estimated 2 or 3 years ago that some $10 million was being spent in projects which were "more than casually related to energy research," a figure which Altman believes has not changed much since.

Not everyone is pleased by the National Science Foundation's sponsorship of the study. Says an official of the Fertilizer Institute in Washington, D.C., "I am concerned that the NSF is putting money into a group like this which is more interested in headlines than in the facts." The Washington University group may not have produced a brew satisfactory to everyone, but it has at least stirred the pot.—N.W.

*"A Comparison of the Production, Economic Returns, and Energy Intensiveness of Corn Belt Farms That Do and Do Not Use Inorganic Fertilizers and Pesticides," William Lockeretz, Robert Klepper, Barry Commoner, Michael Gertler, Sarah Fast, Daniel O'Leary, and Roger Blobaum (Center for the Biology of Natural Systems, Washington University, St. Louis, Missouri, 20 July 1975).