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Life Gets Complicated

It is doubtless significant that the authors of both of our feature articles this month ("Team Research in Fertilizer Economics," page 920, and "Formulation by Electronic Computer," page 925) open their discussion with the premise that life in the fertilizer business has become immensely more complex and more competitive in recent years. It is an observation that applies equally well to virtually every facet of the agricultural industry—including farming itself.

In fertilizer manufacture, scores of technical and economic questions must be answered before deciding what products to make, where, by what processes, and from what raw materials. And even after these questions are initially answered, most of them must be continually reviewed in the light of rapidly changing influences.

Possibly even more complex are the problems faced by producers of agricultural chemicals—insecticides, herbicides, fungicides, growth regulators, to name a few—to whose manufacturing problems are added those of possible damage to desirable species, the occasional development of resistance within the pest species, and—most important—potential toxicity to warm-blooded animals.

The aim of all this complexity of endeavor might be considered greater simplicity of operation for the farmer. In one sense, this aim is achieved. The individual farmer, having determined with relative ease what his plant food requirements are, can—with the wide range of formulations available from the fertilizer industry—buy plant nutrient mixtures essentially custom-tailored (and often custom-applied) to his soil and crop needs. When his crops or livestock are attacked by pests, he need not struggle through trial and error methods, with inefficient materials, to prevent costly damage. The extensive research behind most agricultural chemicals provides him with the specific materials necessary to combat his specific pests, as well as practical instructions for their safe, effective, and economical use. More efficient and more versatile farm machinery helps him to do his work faster and better, and scientific breeding of both plants and animals strengthens his ability to cope with weather and disease.

But despite all the advances in the tools of agriculture, farming surely does not appear a simpler business today than it did a generation ago. Perhaps the appearance of greater complexity stems from the fact that while the modern farmer may *do* less (in terms of his own hand labor), he must *know* a great deal more. Sharpened competition and narrowed profit margins require him to operate more efficiently, using every piece of agricultural science he can master. The need for greater knowledge, in fact, may now be the most urgent need of the small-scale farmer.

We doubt that most farmers are employing anywhere near all of the scientific knowledge presently available. One of the main functions of AG AND FOOD is not only to provide a major medium for the publication of original research, but to interpret these advances in such a manner that new knowledge can be moved more quickly into farmers' hands for practical application. The actual transfer of information is done mainly, of course, through state experiment stations, county agents, dealers, and others who work directly with the farmer.

Recent government statistics have exploded the myth that the family farm is disappearing from the American scene. But the family farm is growing larger and more efficient, and its operator must, in order to hold his own, adapt to the complexity of his business. He can do a great deal to help himself. He is already getting much help from government, educational institutions, industry, and the scientific and farm journals. He can use all the help he can get.