

31. Where Do We Go From Here?

A brief summary of weed control, some of the principles and applications, has been presented. Perhaps it is pertinent to inquire, what is next? This no one can answer with any degree of assurance. It is perhaps possible to observe, however, that the continued success and expansion of agriculture will be closely linked with the commensurate development of adequate weed control practices. The population of the United States is rapidly increasing. True, we presently seem to have overabundance — surpluses. But all prophesies indicate that this will only be a temporary condition. Future demands upon agriculture, if we are to continue to be the best fed and clothed nation in the world, will be increasingly stringent.

The following brief discussion of needs and problems makes no pretense of even partial completeness. It is presented only with the thought of stimulating further ideas.

SOME NEEDS

Among present weed control practices, pre-emergence weed control — the maintenance of weed-free conditions during at least the first part of the growing season — would seem to have the greatest potentialities. We need weed treatment chemicals which are dependable and do not present a hazard to crops. We have made much progress in this direction in the last five years; the outlook can be said to be optimistic. Also, herbicides are becoming cheaper — a necessity if widespread utilization is to be justified.

Because of the limitations of any pre-emergence treatment — which must possess selectivity between crop and weed seeds — perhaps the further exploration of preplanting herbicides will be fruitful. Such substances might possess some of the characteristics of short-lived sterilants, killing all seeds but not otherwise upsetting the biological and physical nature of the soil.

Another possible fruitful area concerns improved formulation of weed control chemicals (for example the new granular herbicides) to facilitate more efficient and effective application, and to reduce dangerous handling problems.

Various combinations of herbicidal ingredients, compatible in their activity but broadening the weed-killing potentialities of the final product are being explored in several directions. The new Radox-T represents essentially a double herbicide, the older CDAA (Radox) formulated with another chemical (TCBC). This preparation is active against not only grassy weeds, to which Radox was essentially limited, but broad-leaved ones as well.

It is difficult to eliminate persistent perennial weeds, either by chemical or other means, without interfering with ordinary land utilization. Highly toxic (to plants) chemicals are needed which can rapidly kill perennials, but which will quickly disappear from the soil.

Concomitant with the increased attention to herbicides, there has perhaps been a de-emphasis upon the biology and ecology of the plants involved, both weeds and crops. We could learn more about the life cycles of weeds, their food reserve capacities, geographical and ecological tolerances, and infra-specific physiological variability. Furthermore, with respect to an understanding of the dynamics of competition, the surface has only been scratched. All of this should substantially further our efforts to integrate total agricultural practices with weed control requirements.

SOME PROBLEMS

As stated above, better herbicide chemicals are needed. The screening, herbicidal testing, and experimental formulation of chemicals is an expensive process. Promising substances must be field tested for a succession of years under a variety of conditions. It is necessary to assay their possible toxicity to animals in careful detail. All of this may require up to a million dollars before a single pound of a new chemical goes on the market. Obviously, only a few large firms are able to undertake such programs, and they must necessarily emphasize herbicides for those crops or purposes offering the largest potential markets. Manufacturing processes, as well as research and development, may be expensive. To what extent will herbicides be able to become cheaper? This will be decisive if the swing towards their increased utilization is to continue.

As indicated above, more dependable selective pre-emergence herbicides are needed; a more precise line of selectivity is highly desirable. This latter suggests increasing specificity of action. But how can this be accomplished? Numerous kinds of crops, physiologically variable within themselves, are grown under a wide variety of soil, climatic, and agricultural conditions. There are many kinds of weeds and most of them are diverse ecologically and physiologically. This would seem to suggest that a broadly useful herbicide should possess a considerable degree of plasticity of action. But the need for increasingly specialized and specific herbicides was above indicated. How can any herbicide or combinations of herbicides meet these

requirements — and on an economic basis? In what direction should future work be conducted? Should we consider alternative means of solving weed problems?

And last, in common with other phases of agriculture, developments in the field of weed control require more know-how on the part of the farmer. He must be an expert in this as well as other fields both in production and marketing. Further investments in equipment and supplies are necessary and will probably continue. These circumstances, then, favor those farmers who are fortunate enough to possess considerable working capital, and who have scientific training and can apply it. Those not having the above prerequisites, financial or otherwise, can be expected to have an increasingly difficult time of it.

All of this seems to enhance the trend towards corporation farming, away from the traditional family farming unit. It is not for this writer to say whether this is good or bad. But weed control seems to be playing its part.