Pesticide Development Costs

CHARLES O. BARNARD, Executive Secretary, Western Agricultural Chemicals Association, San Jose, Calif.

With the cost of developing a new pesticide ranging from $750,000 all the way up to $3.25 million, only large organizations with many specialists and large financial resources appear able to do the job

WHAT DOES IT COST to put a new pesticide on the market? This question has been asked with increasing frequency in recent years, particularly since passage of the Miller Amendment.

There are as many answers to the question as there are new chemicals under development. But for many reasons, it is desirable to have some yardsticks against which specific development costs can be compared. With such yardsticks available, prospects of financial success for a new chemical may be more realistically evaluated, permitting better management decisions.

On a basis of anonymity, several of the major producers of pesticide chemicals have graciously provided information on the development costs of a group of compounds representative of current commercial products. Their cooperation has made possible the determination of a development cost pattern.

Many Factors Involved

Many factors influence the expense involved in "discovering" and developing a chemical compound that is patentable and subject to proprietary control. There is not, nor can there be, a "standard" cost, because each such compound almost certainly will vary from all others in capacity to generate developmental problems. One compound may be of rather simple chemical construction but prove to be extremely difficult and costly so far as the accumulation of vital toxicological data is concerned. One that is chemically complex may present relatively few problems related to the compilation of scientific data necessary for its registration as a commercial product, but be a troublemaker from the standpoint of commercial production at a cost low enough to assure a competitive position in the market.

Such factors (they are many and diverse) were responsible for the wide variation in the costs of developing, up to the point of commercial introduction, the products involved in this investigation.

(Continued on the next page)

Group A: Cost Range $40,000 to $150,000

1. Market analysis.
2. Synthesis of 100 to 600 chemical compounds.
3. Preliminary screening of those compounds.

Group B: Cost Range $50,000 to $135,000

4. Selection of 10 to 20 most promising compounds.
5. Synthesis and purification of 50 to 500 grams of each compound.
6. Intensive and extensive screening of the group.
7. Acute toxicological studies of each compound.
8. Preliminary phytotoxicity studies.
9. Patent activities.
10. Preliminary process and cost studies.

Group C: Cost Range $75,000 to $275,000

11. Selection of one to three compounds and synthesis of 25 to 500 lb. of each.
12. Development of analytical methods.
13. Field testing for biological and other performance (including grants-in-aid for testing outside the company).
14. Initiation of long-range subacute toxicity tests.
15. Initiation of flavor and quality studies of treated crops.
16. Collection and analysis of hundreds of residue samples.
17. Registration for experimental use.
18. Formulation studies.

Group D: Cost Range $100,000 to $440,000

19. Choice of single compound to be fully developed.
20. Construction of pilot plant facilities and production of two to five tons of the compound.
21. Finalization of process study.
22. Design of commercial production plant.
23. Accelerated field testing.
24. Comparative testing with competitive products.
25. Residue analyses.
26. Additional toxicology studies.
27. Petitions for tolerance establishment.
28. Development of labels.
29. Registrations (federal and state).
30. Pharmacological studies.

Group E: Cost Range $485,000 to $2,250,000

31. Construction of commercial production facilities.
32. Development of packaging and pricing.
33. Determination of use recommendations, and preparation of sales literature.
34. Research for best application methods.
35. Research for expansion of markets for the product.
36. Continuing product intelligence studies.

The reported minimum cost was $500,000 for a pesticide chemical that apparently encountered no serious roadblocks on its way to certification of usefulness by USDA, and the establishment of official tolerances by FDA under Public Law 518 (Miller Amendment). Another compound, however, created for its owner a frustrating variety of obstacles to commercial registration, and its development cost rocketed to nearly $3.75 million.

Ranges up to $3.25 Million

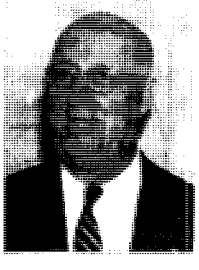
Neither the lowest cost nor the highest is quite representative. The probable range confronting developers of new pesticide chemicals appears to be $750,000 to $3.25 million—but the trend is constantly upward.

The principal purpose of the study was not to pinpoint a range of costs; it was to establish a breakdown of cost into categories. The table on the facing page may serve as the pattern even though each pesticidal chemical creates its own family of cost factors.

One cooperator supplied ranges of costs for several proprietaries in five groups of categories. It has been practical to allocate into those categories the cost figures supplied by other cooperators. Further refinement into more categories would serve only to extend the principle of cost range.

Magnitude of Pesticide Development

The development of a modern pesticide is a project of such magnitude that it appears to be feasible only for an organization that includes specialists in many areas of scientific research, backed by large financial resources.



C. O. BARNARD, who "retired" in 1954, after more than 25 years with American Cyanamid, is now executive secretary of Western Agricultural Chemicals Association. He describes himself as "just a country boy who started working at an early age and kept at it, doing my best without benefit of formal education." At Cyanamid, his jobs ranged from insecticide salesman to western sales manager of the insecticide department to chief of technical surveys. While with Cyanamid, he was especially interested in the fumigation of citrus (an interest that took him to Egypt for a year) and grains with calcium cyanide. He also worked on the fumigation of flour mills with hydrocyanic acid.

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