

Table 6. History of 57 products from 30 NAC companies including 22 herbicides, 20 insecticides, and 7 fungicides.

	Averaged Elapsed Time (Months)
From first screening to decision to develop	33
From decision to develop to first registration submission	19
From first registration submission to approval	11
Average R & D man/years From Screening Thru Approval	49 yrs

is that the companies plan to screen some 2800 fewer chemical compounds this year than a year earlier. Likewise, they will synthesize 1400 fewer compounds in seeking to identify pesticidal activity.

More R & D personnel in recent years have been added with advanced degrees. Number on company R & D staffs with doctoral

degrees was up 23%, with masters and bachelor degrees being up somewhat less. Again, a minor decline is anticipated.

Pesticide development requirements in this survey are based on a summary of opinion rather than factual data. Companies in the survey put the cost of discovery and development of a pesticide at \$5.5

Table 7. Registrations cancelled or suspended for 33 participating companies.

	1968	1969	1970
Products Removed Entirely From Market	25	18	123
Restrictions Placed On Existing Registrations Which Cancel or Suspend:			
Certain Crop Applications	497	354	331
Certain Product Formulations	(D)	34	37
Use in Certain Geographical Areas	(D)	34	8
Total restrictions	717	388	376

(D) Insufficient Data

million in 1970, up 60% in three years. They estimate some 77 months or almost 6½ years to take a compound from discovery to marketing — an increase of 28% in time over '67. The estimate of the average number of compounds which have to be screened for each marketable product is 7430 — up 37% over '67.

Key points in a summation of this industry study would seem to be that: (1) R & D costs grew faster than sales, now amounting to about 10% of total sales; (2) R & D activity has increased in recent years but a downturn is indicated; (3) Registration costs are the fastest growing segment of R & D; (4) Effort applied to R & D work to monitor current products has more than doubled since '67; (5) There is a dramatic increase in the number of products removed from market; and finally, (6) Time required for registration has increased substantially.

Golf Course Architect Offers Construction Article

The firm of Robert Muir Graves Golf Course Architect is offering an article published as result of a presentation by the firm to anyone associated with the golf industry.

Mr. Ronald W. Fream of the firm has announced that the article, "Build It Right the First Time," is available by contacting the firm at 3186 Old Tunnel Rd., Lafayette, Calif. 94549. There is no charge.

The original text was first presented to the 1970 Southern California Institute.



- GOLF COURSES
- RIGHT-OF-WAYS
- INDUSTRIAL GROUNDS
- COLLEGES & SCHOOLS
- PARKS & CEMETERIES
- RECREATION AREAS
- PUBLIC WORKS

fmc **side winder** CORPORATION P. O. BOX 818
MINDEN, LOUISIANA 71055

Send details and specifications on the new MODEL FM-72, 6-foot flail mower.

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____