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PRACTICES OF FARMERS GROWING DRY BEANS

Central New York, 1963

R. C. d'Arge

B. F. Stanton

Department of Agricultural Economics
New York State College of Agriculture
A Contract College of the State University
Cornell University, Ithaca, New York

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During the summer months of 1963 a study was made in an area surrounding Auburn, New York to determine the physical potential of that region for the production of sugar beets. To get some indication of the management ability of farmers and the productive capacity of their cropland, detailed questions were asked about the practices followed in growing row crops on a random sample of 195 farms. The study area was limited to a region within a 20 mile radius of the northern end of Cayuga Lake and included parts of six counties -- Cayuga, Seneca, Ontario, Yates, Wayne and Onondaga. A detailed statement of the sampling procedures and methods of selecting farms is presented in A. E. Res. 134, "Sugar Beets in Central New York"1/.

Farms Growing Beans

On the 195 farms studied approximately one-third had 10 or more acres of dry beans in 1963. For the study area as a whole eight percent of the cropland was used for dry beans in 1963. It was the second most important row crop after corn (Table 1).

Table 1. USE OF CROPLAND
195 Farms, Cayuga Study Area, New York, 1963

Crop	Number of acres	Percent of total
Forage crops*	16,717	37
Small grains	11,137	25
Row crops:		
(a) Field crops		
Corn**	6,660	15
Dry beans	3,490	8
(b) Vegetables		
Snap beans	733	2
Other vegetables	1,524	3
(c) Fruit	278	1
Idle land, government programs	4,016	9
Total	44,555	100

* Includes hay, grass silage, and cropland pasture
** Includes corn for grain and corn silage

1/ Stanton, B. F. and d'Arge, R. C., "Sugar Beets in Central New York", A. E. Res. 134, Department of Agricultural Economics, Cornell University, November 1963.

Dairying was the single most important enterprise on farms in the study area. All of the 195 farms were classified as commercial or non-commercial in character. Of the group 170 were considered to have commercial enterprises where the operator spent at least two months farming as a minimum and where substantial quantities of agricultural products were sold. The other 25 farms were primarily part-time units or residences, institutional farms, or had been placed in the soil bank or conservation reserve. Dry beans were primarily grown on commercial farms designated either as dairy-crop or crop farms.

Table 2. AVERAGE SIZE OF FARM BY TYPE
170 Farms, Cayuga Study Area, New York, 1963

Type	Number of farms	Average acres of cropland
Dairy	61	206
Dairy-crop	40	295
Crop	57	274
Beef	6	243
Other	6	178

Size of Enterprise

The dry bean enterprise was quite variable in size. It averaged 55 acres for this group of farms. The range was from 12 to 200 acres. A large number of growers had between 30 and 70 acres. All but one of the growers planted red kidney beans. Certified seed was used by 59 out of the 61 growers.

Planting Date

All producers were asked to indicate the dates when they planted dry beans in 1963. Date of planting is not as critical for dry beans as for many other row crops. It was a fairly common practice for farmers to plant dry beans after field corn. A summary of planting dates in 1963 is shown in table 3. Most farmers were through planting by the middle of June. A large proportion of the acreage was planted between June 1 and June 15, 1963.

Table 3. DATE WHEN PLANTING OF DRY BEANS WAS COMPLETED
61 Farms, Cayuga Study Area, 1963

Date of planting	Number of farmers
May 11-15	2
May 16-20	0
May 21-25	0
May 26-30	1
May 31-June 5	6
June 6-10	12
June 11-15	23
June 16-20	11
June 21-25	5
June 26-30	1
Total	61

Tillage

Minimum tillage has been widely discussed in recent years for both corn and other row crops. All farmers were asked to indicate the average number of times they went over the field in fitting the land before planting. Results are shown in table 4. Most commonly farmers went over the fields three, four or five times. Minimum tillage was not a common practice in 1963.

Table 4. NUMBER OF TIMES OVER FITTING LAND FOR DRY BEANS
61 Farmers, Cayuga Study Area, 1963

Number of times over field	Number of farmers
1	1
2	3
3	20
4	18
5	10
6	6
7 or over	3
Total	61

Row Width

A check was made on row spacing. Most of the farmers planted in 32 or 36 inch rows. Row width is largely determined by the harvester used (Table 5).

Table 5. ROW SPACING ON DRY BEANS
61 Farmers, Cayuga Study Area, 1963

Row spacing	Number of farmers
inches	
28	1
30	4
32	20
34	9
36	25
38	1
Total	61

Seeding Rates

Procedures for seeding with precision planters have become more important in the last 10 or 15 years. All of the farmers were asked to indicate if they knew how many seeds per foot they had planted. Of the 61 growers only 13 were able to give an answer in terms of plants per foot. Since the size of seed may be quite variable, recommendations are usually made in terms of seeds per foot rather than pounds of seed per acre (Table 6).

Table 6. SEEDING RATES: PLANTS PER FOOT
13 Farmers, Cayuga Study Area, 1963

Plants per foot	Number of farmers
4	2
5	2
6	4
7	0
8	5
Total	13

All but one of the growers answered the question how many pounds of seed per acre did you use in planting dry beans. There was a wide range in the replies. Most of the growers used between a bushel and a quarter and a bushel and a half of seed. The range in responses indicates something of differences in size of seed and ability to recall seeding rate (Table 7).

Table 7. SEED PLANTED PER ACRE FOR DRY BEANS
60 Farmers, Cayuga Study Area, 1963

Pounds of seed per acre	Number of farmers
55-60	7
61-65	2
66-70	13
71-75	9
76-80	12
81-85	7
86-90	8
91-95	1
96-100	1
Total	60

Stand in Row

Farmers were asked if they had checked their stand of beans in the row during the growing season. One-third of the group indicated they had followed this practice. The common stand was four plants per foot, somewhat short of the recommended rate of six plants per foot (Table 8).

Table 8. ESTIMATED PLANTS PER FOOT BY FARMERS CHECKING STAND IN ROW
21 Farmers, Cayuga Study Area, 1963

Plants per foot	Number of farmers
3	1
4	10
5	4
6	3
7	1
8	1
9	1
Total	21

Planter Used

Since the dry bean plant is very easily burned by fertilizer at germination, use of the split-boot planter has been strongly discouraged for the last 15 or more years. Side placement of fertilizer is the common method used at planting time. Among the 61 growers, eight used some other method of planting besides side placement of fertilizer.

Table 9. FERTILIZER PLACEMENT FOR DRY BEANS
61 Farmers, Cayuga Study Area, 1963

Type of planter for fertilizer placement	Number of farmers
Side placement	53
Split-boot	6
Grain drill	2
Total	61

Seed Treatment

Farmers typically purchased certified, treated seed. To determine how much each of the growers knew about practices followed in seed treatment, all of the growers were asked what method of treating seed was used. Only 13 of the 59 growers who purchased treated, certified seed indicated the chemical compound used. Some of the materials reported by the 13 are not among those commonly used for seed treatment. There were 18 among the 61 farmers who knew the soil pH of the bean fields on the basis of a recent soil test. However, more than half the farmers were able to give an estimate of soil pH. The range fell between 5.8 and 7.0.

Rate of Fertilization

Fertilization rates varied widely depending on soil type, previous crop and seeding rate. Most farmers applied nitrogen, phosphate and potassium in a 1-2-2 ratio. The single most common rate of application was 200 pounds of 5-10-10 per acre. A summary of the amounts of N, P_2O_5, and K_2O are shown in table 10.

The average amount of actual nitrogen used was approximately 25 pounds per acre associated with 50 pounds of P_2O_5 and K_2O. All but one of the growers applied their fertilizer at planting time. One man plowed down his application of commercial fertilizer.

Table 10. COMMERCIAL FERTILIZER APPLIED PER ACRE ON DRY BEANS
61 Farmers, Cayuga Study Area, 1963

Amount of fertilizer applied per acre	Number of farmers		
	N	P_2O_5	K_2O
pounds			
0-10	2	0	1
11-20	23	1	4
21-30	17	5	6
31-40	15	14	14
41-50	3	7	8
51-60	1	15	13
61-70	0	11	9
71-80	0	3	2
81-90	0	0	0
91-100	0	3	3
101-110	0	0	0
111-120	0	2	1
Total	61	61	61

Weed Control

Methods of weed control were discussed with each farmer. Somewhat less than half of the growers used a chemical means of weed control. Twenty-five of the men used one of the common pre-emergence materials. Seventeen banded their application in the row, while eight used complete coverage. All of the farmers were asked to indicate the average number of cultivations used on the dry bean enterprise. Commonly two cultivations were required if a weed spray was used. More often three cultivations were used by those who had not used chemical weed control programs (Table 11).

Table 11. NUMBER OF CULTIVATIONS WITH AND WITHOUT CHEMICAL WEED CONTROL
55 Farmers[1], Cayuga Study Area, 1963

Times cultivated	Number of farmers	
	With spray	Without spray
1	4	4
2	16	11
3	3	14
4	2	1
Total	25	30

1/ Six farmers did not answer the question.

Insects and Diseases

All but six of the farmers did not feel it necessary to use chemicals for insect or disease control on their beans in 1963. Six of the men used the material, sevin, for insect control of leaf hoppers and Mexican bean beetles. Only six farmers reported any evidence of blight, anthracnose or root rot. Undoubtedly more root rot occurred than was reported by growers.

Use of Defoliants

Growers were asked if they had ever used a chemical defoliant before harvest. Of the 61 growers nine indicated actual experience with a defoliant. Of the nine only six had actually applied the defoliant themselves. The other three had hired the job done. Five of the nine commented on the critical importance of temperature in the application of defoliants.

A copy of the questions asked about dry beans in this study of farmers' experience with row crops and cropping practices is appended to this report.

EXPERIENCE WITH DRY BEANS

1. Years out of last five harvesting dry beans _____
   Average acreage _____
   Years out of last five harvesting snap beans _____
   Average acreage _____

2.

Variety planted	Acres

3. Certified seed ____ Yes ____ No

4.

Dates planted	Acres

5. Average number times over field in fitting _____
6. Row spacing _____ inches
7. Seeding rate _____ plants per foot
   _____ pounds per acre
8. Have you checked stand in row? ____ Yes ____ No
   Stand in rows, 1963 _____ plants per foot
9. Fertilizer placement: With seed or above (split-boot) _____
   Beside seed or below (side placement) _____
   Other _____
10. Seed treatment:
    Untreated _____
    Purchased treated _____ with _____
    Treated on farm _____ with _____
11. pH of fields (best estimate) _____
    Actual test _____
12. Fertilization (average or most common)

Acres	Analysis	How applied	Pounds per acre

_____ N
_____ P_2O_5 Applied per acre
_____ K_2O

(Continued)

13. Weed control:

(a) Material	Banded or complete	When applied	Rate

(b) Proportion of acreage sprayed _____

(c) Number of cultivations after weed spray _____

(d) Average number cultivations (no spray) _____

14. Insect control:

(a) Material	Rate	Number applications

(b) Were insects a problem? ____ Yes ____ No

Which ones _____

(c) Was there evidence of blight, anthracnose or root rot?
____ Yes ____ No

15. Defoliation for harvest

(a) Have you ever used a defoliant at harvest? ____ Yes ____ No

(b) Material used _____

(c) How critical is temperature? _____

_____