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# 1957 Tests With Beans

*Outlying Testing Report 13*



Extension Service  
Institute of Agricultural Sciences  
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# 1957 Tests With Beans

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Yields of Red Mexican beans under different fertilizer treatment were tested at five locations in the Basin.

## Results:

- Nitrogen - Response at one location. Some signs of response at all but one of the other locations.
- Phosphorus - Response at two locations.
- Potassium - Response on a heavily cut area.
- Zinc - Response at two locations.

Soil Tests and crop responses generally supported one another in showing needs for phosphorus and potassium.

## Recommendations

On new land, apply about 120 pounds of nitrogen per acre. On more fertile soils following sugar beets, potatoes, etc., apply 80 pounds. On beans following beans, 40 pounds will usually be enough. For phosphorus and potassium, have your soil tested. Apply 10 pounds per acre of zinc every 4 or 5 years. Other minor elements are not recommended.

Be sure all fertilizers are plowed under or placed several inches below the surface. If the beans are side-dressed, be sure to fertilize before the first irrigation.

Follow instructions carefully for proper inoculation of the seed before planting. Mix the inoculum with the beans in small batches and plant immediately.

## 1957 BEAN FERTILIZER TRIALS

Fertilizer trials on Red Mexican beans were conducted at five locations. Information on the soil at each location is given in Table 1. At each location there were five rates of nitrogen. In addition, phosphorus, potassium, and zinc were tested.

At the Royal Slope location the land was heavily cut in the process of leveling. The cuts averaged between 1 and 2 feet deep. For this reason more rates of phosphorus and potassium were tried.

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\* This work was done in cooperation with the following County Extension Agents: Franklin County, Roy K. Deming; Adams County, Charles E. Voss; and Grant County, Gus W. Hokanson. Other Extension Service workers and staff members of the Irrigation Experiment Station also helped with the work.

The yields of beans under various fertilizer treatments are shown in Table 2. The phosphorus, potassium, and zinc results on Royal Slope are shown in Table 3. Each figure is an average of four plots with the same fertilizer treatment. For each trial, the plot yields were statistically analyzed. This was to find out if the yield differences were due to fertilizer treatment.

Nitrogen gave a substantial yield increase at Othello - about 12 bags more at 160 pounds of nitrogen per acre. There were signs of response to nitrogen at Moses Lake, Quincy, and Mesa. However, at these three locations the statistical analysis showed that the differences could have been caused by things beside fertilizers. There was no response to nitrogen on the cut area on Royal Slope. There was a drop in yield when high rates of nitrogen were applied at Moses Lake and on Royal Slope. Also, there were signs of a drop in yield at Mesa. A drop in yield with high rates of nitrogen has been associated with an observed delay in maturity of beans in former years.

Phosphorus increased the yield at Othello and on the Royal Slope cut area. On Royal Slope (Table 3), there was a large yield increase with each 50-pound increase in  $P_2O_5$ . Probably the peak yield was not reached at 200 pounds of  $P_2O_5$  per acre. Phosphorus did not increase yields at Quincy although the soil test showed "low". However, some of the "no-phosphorus" plots had low yields (not shown in the table).

Potassium increased the yield substantially on the Royal Slope cut area. There were signs of yield increases at Othello and Quincy where the soil tested low potassium.

Zinc caused large yield increases at Moses Lake and on Royal Slope.

Table 2. Yield (bu. per acre) of Beans Resulting from Various Fertilizer Treatments

Table 1. Soil and Crop History of Bean Trial Locations

Location	Cooperator	Soil Type	Crop and Fertilizer History	Soil Test	
				P	K
Mesa Block 12	Jim Person	Ephrata sandy loam	New land (dry land wheat)	High	High
Othello Block 45	Ervin Bahlkey	Warden silt loam	New land (dry land wheat)	Low	Low
Royal Slope Block 87	Jerry Paradise	Corfu silt loam	New land (1 to 2 ft. cut)	Very low	Very low
Moses Lake Block 42	A. M. Goodrich	Warden fine sandy loam	New land (dry land wheat)	Medium high	High
Quincy Block 76	Allen Kehl	Timmerman sandy loam	1955 beans, zinc - 10* 1956 wheat, N - 80* P - 40*	Low	Low

\* Pounds per acre of actual zinc, nitrogen, or phosphorus (P<sub>2</sub>O<sub>5</sub>).

Table 2. Yield (lbs. per acre) of Beans Resulting from Various Fertilizer Treatments.\*

Treatment, lbs. /acre				Mesa	Othello	Royal Slope	Moses Lake	Quincy
N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O**	Zinc					
0	100	0	10	3450	2454	1372	3377	2998
40	100	0	10	3688	3239	1190	3664	2869
80	100	0	10	3867	3476	1385	3104	3031
120	100	0	10	3695	3552	1318	3211	3032
160	100	0	10	3348	3641	926	2645	3299
120	100	0	10	3695	3552	--	3211	3032
120	0	0	10	3632	3200	--	3301	3074
120	100	0	0	3468	3690	--	2394	3172
120	100	100	10	3567	3846	--	2660	3207

\* The table is divided into 2 sections. In the upper section nitrogen comparisons can be made. In the lower section phosphorus, potassium, and zinc comparisons can be made. The 120-100-0-10 treatment appears in both sections. The P, K, and Zn results for Royal Slope appear in Table 3.

\*\* At Royal Slope the Standard potash treatment was 100 pounds per acre rather than 0. This does not interfere with the comparisons among N rates.

Table 3. Results at Royal Slope for Phosphorus, Potassium and Zinc.

Treatment	Yield (lbs. /acre)
<u>P<sub>2</sub>O<sub>5</sub></u> (N, K, Zn included)*	
0	259
50	817
100	1318
200	1802
<u>K<sub>2</sub>O</u> (N, P, Zn included)	
0	936
50	849
100	1318
200	1238
<u>Zinc</u> (N, P, K included)	
0	973
10	1318

\*Standard treatments were: nitrogen, 120 lbs. /acre; P<sub>2</sub>O<sub>5</sub>, 100; K<sub>2</sub>O, 100; zinc, 10. The 120-100-100-10 treatment, which resulted in a 1318 lb. yield, appears in all 3 sections of the table.

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## Outlying Testing in Washington

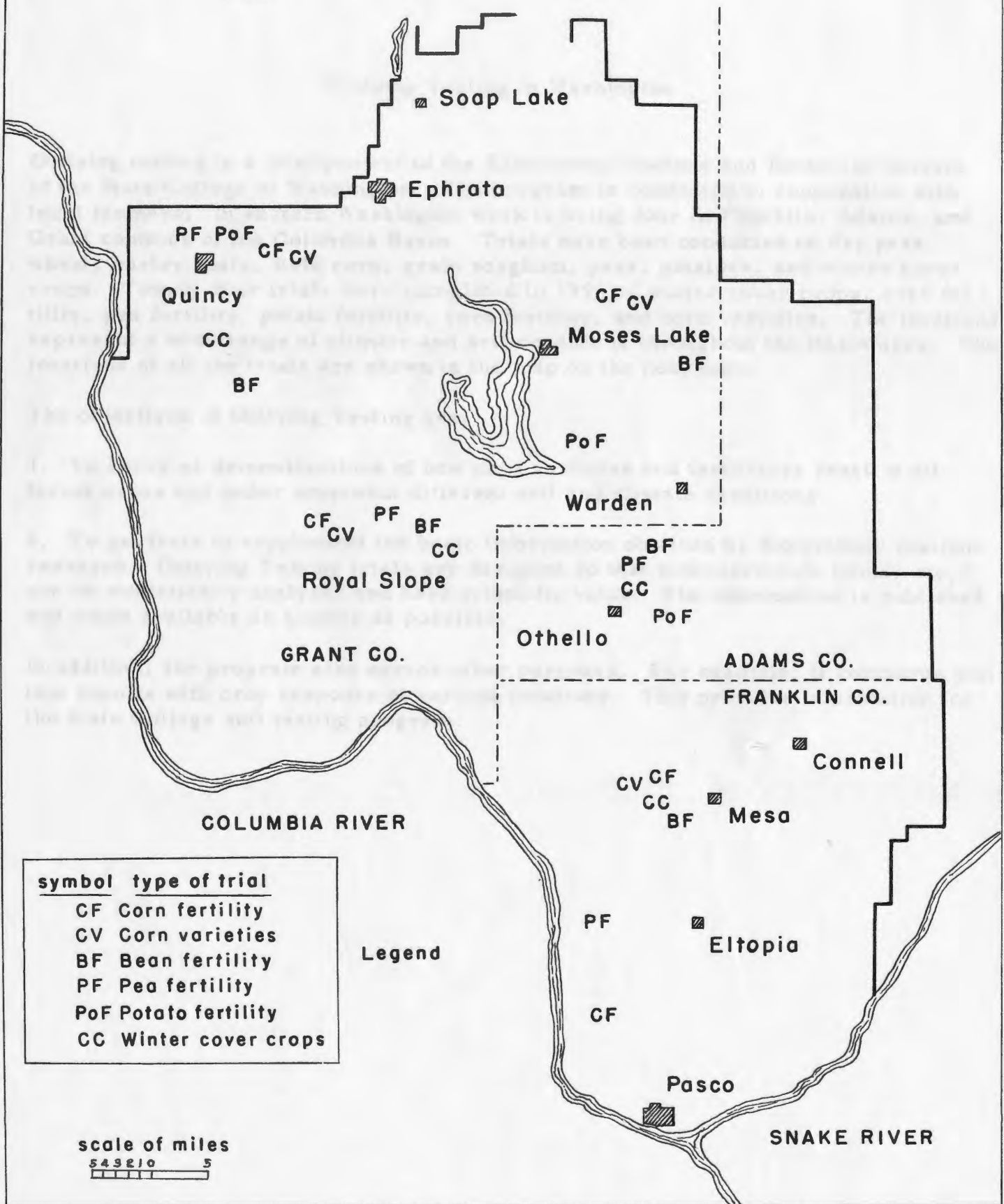
Outlying testing is a joint project of the Experiment Stations and Extension Service of the State College of Washington. The program is conducted in cooperation with local farmers. In eastern Washington work is being done in Franklin, Adams, and Grant counties of the Columbia Basin. Trials have been conducted on dry peas, wheat, barley, oats, field corn, grain sorghum, peas, potatoes, and winter cover crops. Twenty-four trials were completed in 1957 on winter cover crops, bean fertility, pea fertility, potato fertility, corn fertility, and corn varieties. The locations represent a wide range of climate and soil conditions throughout the Basin area. The locations of all the trials are shown in the map on the next page.

The objectives of Outlying Testing are:

1. To serve as demonstrations of how crop varieties and fertilizers react in different areas and under somewhat different soil and climate conditions.
2. To get facts to supplement the basic information obtained by Experiment Stations research. Outlying Testing trials are designed so that measurements (yield, etc.) can be statistically analyzed and have scientific value. The information is published and made available as quickly as possible.

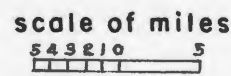
In addition, the program also serves other purposes. For example, it compares soil test results with crop response at various locations. This provides information for the State College soil testing program.

# COLUMBIA BASIN OUTLYING TESTING LOCATIONS 1957



symbol	type of trial
CF	Corn fertility
CV	Corn varieties
BF	Bean fertility
PF	Pea fertility
PoF	Potato fertility
CC	Winter cover crops

Legend





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