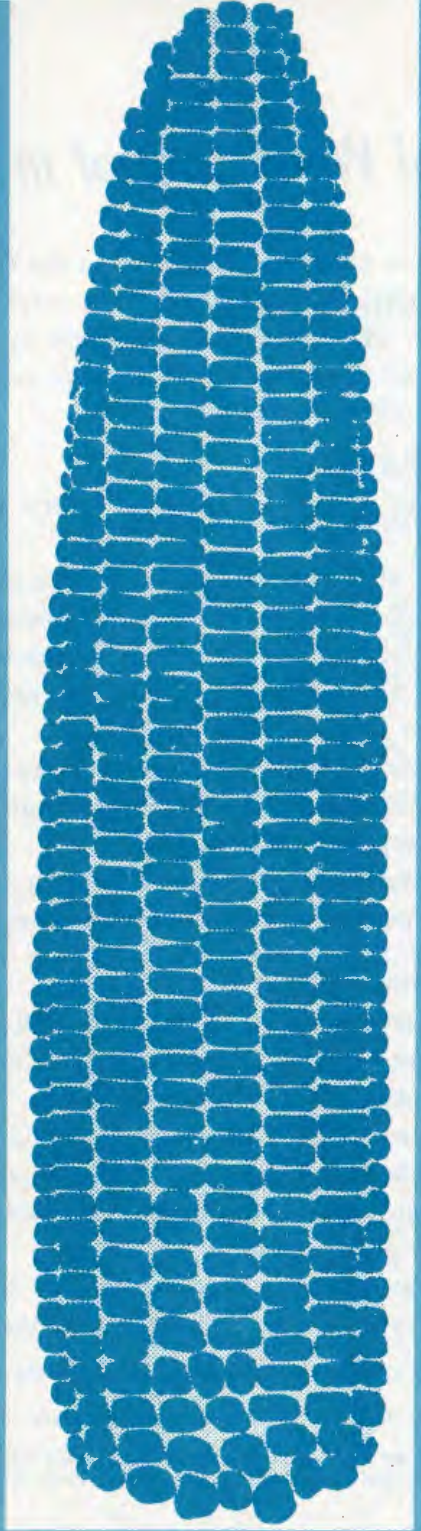

TESTS with CHEMICAL WEED CONTROL IN CORN

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EXTENSION SERVICE INSTITUTE OF AGRICULTURAL SCIENCES WASHINGTON STATE UNIVERSITY PULLMAN

Tests with Chemical Weed Control in Corn

Chemical weed control trials in corn were conducted in the Columbia Basin in 1960 at Pasco and in 1961 at Moses Lake. The results clearly indicate that, although the proper use of chemicals can result in effective weed control, *the improper use of these chemicals can cause severe crop damage.*

Results

1. Weed growth seriously reduced corn yields when no control measures were used.
2. Atrazine[1] provided excellent weed control. Simazine[2] was not as effective. Neither of these chemicals injured the corn, but wheat planted the following spring was severely injured. However, by October 1961 (18 months after the chemicals were applied) injurious amounts of atrazine and simazine were no longer present in the soil.
3. EPTC[3] provided excellent control of all annual weeds except Russian thistle. However, in some cases injury to the corn was quite severe. Wheat planted the following spring was not injured.
4. CDAA-TBC[4] was unsatisfactory in the one trial in which it was used. Weed control was only fair and injury to the corn was very serious.

Recommendations

1. Use an effective, safe weed control program. Weed growth can seriously reduce yields. However, improper use of chemicals can cause serious injury to corn or to other crops which follow corn.
2. Use atrazine *only* when corn will follow corn. Use 1 pound per acre on light soils and for broad-leaved weeds. Use up to 3 pounds on heavier soils or where barnyard grass is a problem. Atrazine should be worked into the soil before planting.
3. Use EPTC to control weeds in corn with caution and only on a trial basis. Very good weed control can be expected from the use of

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[1] Atrazine is 2-chloro-4-ethylamino-6-isopropylamino-s-triazine and is sold under the trade name Geigy Atrazine 80 W.
[2] Simazine is 2-chloro-4-6-bis(ethylamino)-s-triazine and is sold under the trade name Geigy Simazine 80 W.
[3] EPTC is ethyl N,N-di-*n*-propylthiolcarbamate and is sold under the trade name Eptam.
[4] CDAA-TBC is a mixture of 2-chloro-N,N-diallylacetamide and trichlorobenzylchloride and is sold under the trade name Randox-T.

EPTC, but corn injury is possible, especially at higher rates. Apply 2 pounds per acre for barnyard grass control. Apply up to 3 pounds if broad-leaved weeds are present. Apply as a broadcast spray before planting and immediately work the material thoroughly into the top 3 to 5 inches of soil. Rototill once or tandem disk twice in opposite directions. Tandem disking once followed by a springtooth harrow in one operation is also satisfactory. Do not use a spiketooth harrow, springtooth harrow, or rotary hoe *alone.*

Weed Control Trials

Two chemical weed control trials in corn were conducted in the Columbia Basin. The 1960 trial was in Block 1 near Pasco and the 1961 trial was in Block 42 near Moses Lake.

In each case there was an extremely heavy infestation of barnyard grass. The chemicals were sprayed as broadcast treatments before planting and immediately disked into the top 3 to 4 inches of soil. At Pasco, the treatments were applied April 28, 1960, and the corn was planted the same day. At Moses Lake, the treatments were applied April 25, 1961, and the corn was planted May 5.

Visual estimates of the degree of weed control and injury to the corn were made in early summer for both trials. In late summer, the above-ground weed growth was harvested and weighed.

In 1961, Marfed spring wheat was planted on the 1960 trial area at Pasco to measure the residual effects of the chemicals. Wheat is extremely sensitive to all three chemicals used in the 1960 trials. The wheat plots were harvested in July 1961. In October 1961, soil samples from these plots were tested in the greenhouse to determine if injurious amounts of the chemicals were still present.

Tables 1 and 2 show that weed control was an important factor in obtaining good yields of corn. In 1961, the yield was reduced by 50 per cent when weeds were not controlled.

Atrazine gave good weed control and simazine gave fair control. There was no evidence of injury to the corn. However, these chemicals can seriously injure the following crop, as shown by their effect on wheat. The greenhouse test showed that by October 1961, the soil no longer contained injurious amounts of atrazine or simazine.

In general, EPTC gave good weed control. However, there was some injury to the corn—especially at the higher rates. EPTC did not damage the following wheat crop. Previous research has also shown no carryover effect.

CDAA-TBC gave some weed control, but severely injured the corn. Early season injury reduced the plant population. This caused serious reductions in yield. The injury from CDAA-TBC was more severe than that from EPTC, as measured by yield and the number of stalks present at the time of harvest.

This circular was written by A. I. Dow, Extension Specialist in Outlying Testing, Washington State University, and J. H. Dawson, Research Agronomist, Crops Research Division, Agricultural Research Service, U.S. Department of Agriculture. Both authors are stationed at the Irrigation Experiment Station, Prosser, Washington.

Table 1. Weed Control and Crop Injury from Various Chemicals Applied to Corn at Moses Lake in 1961

Material used	Pounds active ingredient applied per acre	WEED CONTROL		CROP INJURY		Bushels per acre of corn at 15.5% moisture
		Visual estimate % control	Green wt. of weeds lbs./plot	% plants injured or killed	Stalks per plot at harvest	
EPTC	2	97	12**	9	79	116
	3	98	4**	20	72	107
	4	100	5**	35	72	93
Atrazine	0.8	88	7	0	72	128
	1.7	92	2	0	82	142
	2.5	97	2	0	77	133
CDAA-TBC	2*	67	46	8	51	80
	3*	80	22	17	51	56
	4*	88	17	48	35	52
Check	—	0	49	0	56	61
Hoed Check	—	100	1	0	68	122

* Refers only to the amount of CDAA.
** Nearly all Russian thistle. Nearly all barnyard grass on the other plots.

Table 2. Weed Control and Crop Injury from Various Chemicals Applied to Corn at Pasco in 1960

Material used	Pounds active ingredient applied per acre	WEED CONTROL		INJURY	Bushels per acre of corn at 15.5% moisture	Bushels per acre of wheat grown in 1961
		Visual estimate % control	Green wt. of weeds* lbs./plot	% plants injured or killed		
Atrazine	1	68	17	0	161	47
	2	81	6	0	168	26
	3	90	3	0	168	10
Simazine	1	45	26	0	173	40
	2	73	13	0	167	30
	3	78	8	0	158	9
EPTC	2	88	12	2	176	55
	3	93	5	5	162	48
	4	95	3	10	179	49
Check	—	0	45	0	152	45

* Nearly 100% barnyard grass.

Outlying Testing in Washington

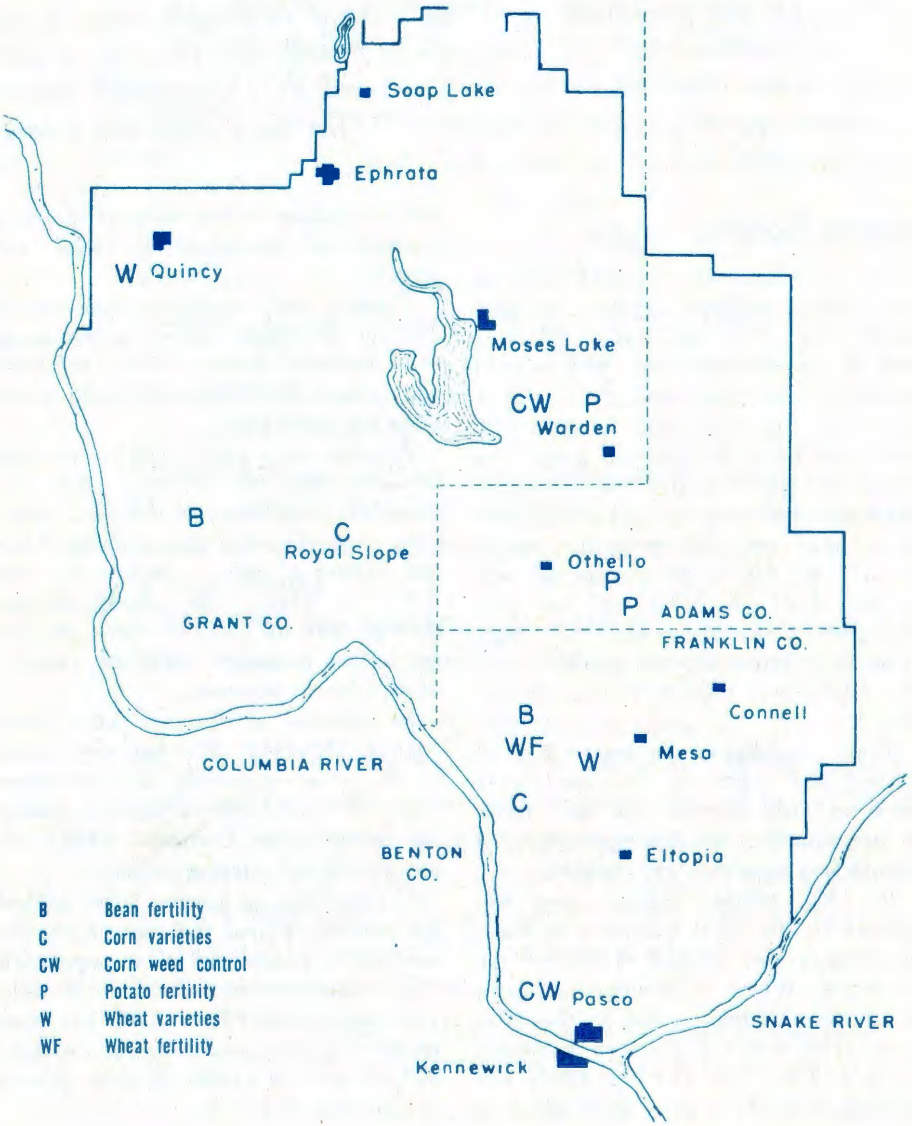
Outlying Testing is a joint project of the Experiment Stations and Extension Service of Washington State University. The program is conducted in cooperation with local farmers. In eastern Washington work is being done in Franklin, Adams, and Grant Counties. Thirteen trials were completed in 1961 involving bean fertility, potato fertility, wheat fertility, wheat varieties, corn varieties, and chemical weed control in corn. 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 demonstrate how crop varieties and fertilizers react in different areas and under somewhat different soil and climate conditions.
2. To obtain 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 University soil testing program.

Central Washington Outlying Testing Locations – 1961



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