

# Weed Control in Flax

## Results Are Summarized

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Flax is notoriously one of the poorest weed competitors among all the crops. Since it is normally drill planted in narrow rows, cultivation is out of the question. When heavy weed infestations are contemplated, it may be successfully planted in wide enough rows to permit cultivation, but this is not the usual practice. Consequently, the need for chemical control methods is acute.

### Two Types

Botanically and from the control standpoint, the weeds occurring in flax in Arizona are of two types; the grasses and the broadleaf weeds. Practically all are winter annuals. It is fortunate from the control standpoint that no perennials are of importance here.

In Britain, the use of selective chemicals for the weeding of small grains and flax has been standard practice for many years. In the United States, however, this method of control assumed no importance until the advent of Sinox just before the war. This chemical successfully controlled certain broadleaf weeds in flax if applied at the correct time and under the correct circumstances. Its limitations, however, have prompted the search for better, less temperamental herbicides.

About 1947, flax was found to have considerable tolerance to 2,4-D, consequently, the possibility of using this chemical has been widely investigated. The successful use of Isopropyl-N phenylcarbamate or IPC in the control of certain annual grasses has suggested its use for the control of the grass weeds which neither Sinox and related compounds nor 2,4-D will successfully control.

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Use caution when spraying with 2,4-D in flax. The flax (left picture) was sprayed in the bud stage. Note the aborted flowers and bolls.

In the other picture, the plot on the right received a 2-pound-per-acre application of IPC at the four to six true-leaf stage. The one on the left was untreated.

The first experimental work on the use of chemicals in growing flax in Arizona was begun in the fall of 1948. Both 2,4-D and IPC were applied (a) prior to the emergence of the flax and (b) at about the three-inch stage of the flax. Various rates were used, ranging from one-fourth to one pound per acre of 2,4-D and from one to six pounds per acre of IPC. In this preliminary experiment, all three commercial formulations of 2,4-D were used.

Results of this experiment indicated (a) that the sodium salt formulations of 2,4-D were not satisfactory because of low effectiveness, (b) that rates below one-half pound per acre of any of the 2,4-D formulations were ineffective in the control of even the most susceptible weeds, (c) that pre-emergence treatments were likely to damage the flax severely under certain conditions (d) that IPC showed promise for the control of wild oats and (e) that the most promising application rates for IPC were somewhere between two and three and one half pounds per acre.

In the fall of 1949, these tests were expanded, but with a reduced number of treatments. All pre-emergence applications were eliminated, and the sodium salt formulations were omitted.

### Summary

The results of the two years of experimental work may be summarized as follows:

1. 2,4-D has been most successfully applied at the three to four inch stage of the flax.
2. Ester formulations of 2,4-D are most effective on both flax and common weeds. The sodium salt formulations are least effective with the amine formulations intermediate in effectiveness.

3. The ester formulations cannot be recommended for use on Punjab flax because of the serious yield reductions obtained at all rates used.

4. The amine formulations have not seriously reduced flax yields when used at rates of one-half pound per acre or less.

### Low Rates Ineffective

5. Rates less than one-half pound per acre of any formulation of 2,4-D tested have not been effective in weed control.

6. Half pound per acre rates of the amine formulations of 2,4-D have successfully controlled, but not eliminated, such weeds as wild mustard (*Sisymbrium irio*), Nettle Leaf Goosefoot (*Chenopodium murale*) and sour clover (*Melilotus indica*).

7. Knotweed (*Polygonum argyrocolean*) has not been controlled by any rates that can safely be used in flax fields.

8. IPC is best applied at the 4 to 6 true leaf stage of the flax. Best results have been obtained when the application was made prior to the emergence of the oats. Treatments applied during the tillering stage of the oats have been less successful.

9. IPC applied at rates as low as two pounds active ingredient per acre have successfully controlled the Markton oats used as an indicator of effectiveness. There are indications, however, that the wild oat is somewhat more tolerant of IPC than is Markton.

10. Rates of IPC application up to three and one-half pounds active ingredient per acre have not significantly reduced the yields of flax in these experiments.

11. IPC works through the roots and to be effective must be carried into the soil through the action of irrigation water.

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