PRINCIPLES OF WEED CONTROL IN BEANS AND POTATOES

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Crop plants and weeds are very similar in many respects. Both require water and mineral nutrients from the soil, CO_2 and oxygen from the air, and light energy from the sun to grow and develop. At any one time, only limited amounts of these essential factors are available on an acre of ground. When a portion of any of these is used by weeds, it is not available to the crop plants, and the usual result is suppressed growth of the crop plants and reduced yields. Maximum crop production demands that the yield reducing competition from weeds be eliminated, and profitable crop production requires that it be done as inexpensively as possible.

Research has shown that season-long weed control in beans is a two-stage process. The first stage, lasting for 5 to 7 weeks after planting, must be provided by the farmer. The second stage, which occupies the rest of the growing season, is provided by the beans themselves through competition. Field observations have indicated that season-long weed control in potatoes is similarly a two-stage process.

The first stage of weed control in crops such as beans and potatoes can be provided very effectively by hand labor. The cost of this method is excessive, however, so we look to selective herbicidal chemicals for more efficient means of weed control.

Several years' research at the Irrigation Experiment Station at Prosser, Washington, and in other states, showed that annual weeds in field beans can be controlled safely, effectively, and at reasonable cost with the herbicide ethyl N,N-di-n-propylthiol-carbamate (EPTC) 1/. EPTC is applied to the soil and incorporated to a depth of 3 to 5 inches just before the beans are planted. As used for weed control in beans, EPTC at 3 lb/A persists in the soil for about 6 to 8 weeks and kills the weeds which germinate during this period. Thus, EPTC provides the first stage of weed control, and weeds which emerge after the EPTC has dissipated are suppressed by competition from the beans during the second stage of weed control. For details of using EPTC for weed control in beans, see Washington State University Extension Circular 328 entitled "Chemical Weed Control in Field Beans." published in April, 1962.

EPTC can also be used safely for weed control in potatoes. In general, the same procedures for using EPTC in beans apply to its use in potatoes.

1/ EPTC is presently sold under the trade name Eptam.