

PURSLANE

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Purslane (*Portulaca oleraceae*) has become a very real problem to growers of commercial fall lettuce in Arizona. During the past five years there has been a tremendous increase in the acreage infested and in the degree of infestation. Because of this, more and more growers are being faced with the possibility of prohibitive costs for weed control.

In the larger commercial lettuce areas in Arizona fall lettuce is planted during the last half of August and early September. During these months relatively high day and night temperatures prevail, with an average daily maximum of approximately 101 degrees F. and average night temperature of 68 degrees F. The rapid emergence and growth of purslane during these months indicates that this temperature range appears optimum for its germination, emergence and development.

Gets A Head Start

Frequently the purslane emerges prior to the lettuce seedlings. Thus it causes immediate competition as the lettuce begins to emerge. The early growth of purslane is more rapid than with lettuce seedlings and within two to three weeks the weed may completely cover the crop plants.

If not allowed to become too well established purslane and other weed seedlings can be removed from the seed row at the same time the crop is thinned. However, to prevent the purslane from becoming a serious problem in the seed rows, thinning may be required at an earlier stage than is normally desirable. If the purslane is allowed to become large and well established subsequent cultivations will be relatively ineffective because the purslane will clog the cultivator equipment and make close, precision cultivation impossible.

To assist growers in overcoming this weed control problem, preliminary screening tests of herbicides were started in the spring of 1956. That fall further tests of eight of the more promising chemical materials were continued. Of these treatments two, known as CIPC and CDEC, proved effective in controlling purslane.

Heavier Rate Hurt Lettuce

Although CIPC at 10 pounds per acre effectively killed purslane there was a slight reduction in lettuce emergence and a noticeable reduction in plant vigor. When the rate was reduced to five pounds per acre, emergence appeared normal and early development of lettuce seedlings was only slightly retarded. At this rate the temporary inhibiting effect of CIPC on lettuce seedlings did not delay maturity nor did it reduce the quantity or quality of lettuce harvested.

In these tests the most effective chemical for purslane control in lettuce was CDEC. Applications of 5 or 10 pounds per acre of this material did not prevent germination and emergence of purslane. The killing action occurs shortly after the purslane emerges. In this case the weed seedlings usually emerged and persisted for approximately three days and then died shortly after.

Neither the emergence nor development of the lettuce seedlings was adversely affected by either rate of application. In fact, in some of the experiments, lettuce which was given a pre-emergence application of CDEC appeared more vigorous than the lettuce on areas not treated. This difference in stimulation most likely was the result of eliminating the competition from the purslane.

Effect Was Prolonged

In our tests CDEC maintained almost complete control of purslane until the lettuce was thinned, which normally takes place three to four weeks after emergence. During thinning there is considerable disturbance and movement of the soil in the seed row. Such soil dis-

turbance would normally be expected to reduce the residual toxicity of the weedicide, yet good purslane control continued for several weeks and never became a problem on the treated areas up to the time the lettuce was harvested.

It is noteworthy that control of purslane was not complete in that portion of the furrow covered by irrigation water. Residual toxicity is reduced in this area either because the CDEC is diluted and/or carried down the furrow in the water or because of leaching action of the water. However, purslane in the furrow is easily controlled by mechanical cultivation.

Experimental applications of CDEC have also been made with spring lettuce. At that time of year purslane is no longer a problem but such weeds as lambs-quarters (*Chenopodium sp.*) and mustard (*Sisymbrium irio*) occasionally become troublesome. Although application at 5 and 10 pounds per acre considerably reduced the weed population, the degree of effectiveness was much less than was noted for purslane in fall plantings.

Results reported here are preliminary and more work will be necessary before final and detailed recommendations can be made.

BELOW—Note weed-choked row of lettuce in the background compared with purslane-free (CDEC treated) row in foreground.

