

NEW HERBICIDES FOR WEEDS IN SEEDLING ALFALFA

Harold M. Kempen and Joe Voth¹

Abstract: Research suggests that "better mousetraps" for control of seedling weeds in seedling alfalfa are awaiting EPA & CDFA registrations. . . Bucril in combination with Poast has been effective in Kern County tests. Until registered, Butyrac in combination with Poast, seems a good option. Pursuit appears to offer the best program because it controls chickweed along with most winter weeds and may suppress yellow nutsedge and johnsongrass.

Keywords: Seedling alfalfa, herbicides, grass weeds, broadleaf weeds.

INTRODUCTION

Poast was recently registered for use in alfalfa. Perhaps that is an omen that something else will be registered in the near future as well. It is still possible!

When I accepted this speaking engagement, I had high hopes that Bucril would be registered by this summer. But that date has passed and the prognosis for labelling of it by next spring is poor. Yes, it is registered in the United States of America, but it isn't registered in sovereign California.

This report will focus on three promising treatments: 1. Bucril ME-4 + Poast, Fusilade 2000 or Select; 2. Butyrac Amine + Poast, Fusilade or Select; 3. Pursuit.

HERBICIDES MENTIONED IN THIS REPORT			
Trade Name	Common Name	Trade Name	Common Name
Bucril	bromoxynil	Brominal	bromoxynil
Butyrac	2,4-DB	Butoxone	2,4-DB
Poast	sethoxydim	Fusilade 2000	fluazifop-P-butyl
Assure	quizalofop	Select	clethodim
Whip	fenoxypyr-ethyl	Verdict	haloxyfop
Pursuit	imazethapyr	Gramoxone Super	paraquat
Scepter	imazaquin	-----	-----

BUCRIL + SELECTIVE GRASS HERBICIDES

In Kern County, where we grow almost 90,000 acres and are 4th in alfalfa marketing in California, we have studied bromoxynil for several years, alone and in combination with the selective grass herbicides: Poast, Fusilade, Assure, Select and Verdict. We also have looked at the combination of these grass herbicides with 2,4-DB. But our emphasis was on the Brominal ME-4 combinations because it looked so good.

Bucril ME-4 (as it is now called after the merger of Union Carbide Agricultural Company into Rhone-Poulenc), of course, is not a "new" herbicide. My first testing of it on alfalfa was in 1963. Bill Fischer in Fresno County had looked at it prior to that. It looked good, but at 2X and 3X rates, it was occasionally phytotoxic to the little plants. And, we weren't sure of the timing then, so that on the unifoliate and first trifoliate leaf stage, it was pretty tough, especially, when adding surfactant.

So the decision to register was deferred for several years, while labels were added for cereals and flax and other crops. Many years later, Union Carbide researchers expressed more willingness to register Brominal on alfalfa. Herbicides were by then more accepted by growers. Butyrac (2,4-DB) was not doing too well on resistant weeds such as fiddleneck and groundsel, so the market surveys looked better. Also, Paraquat (paraquat) was registered by then on seedling alfalfa in California and though it burns down seedling alfalfa, recovery occurs and grower acceptance was good. So, a little burn or retardation from bromoxynil seemingly could be tolerated.

¹Respectively - Farm Advisor
Staff Research Assistant - Kern County

In Kern County, we determined to check bromoxynil safety margins on 3-4 trifoliolate leaf alfalfa, then the Brominal ME-4 formulation. We also concurrently tried combinations with the grass herbicides on several occasions, with Surfel crop oil concentrate (COC) at 1 qt/A, the rate recommended for use with Poast, in order to check out safety and efficacy. We always used Brominal at 0.25 lb ai/A rate and double-sprayed half the plot to simulate swath overlap. Combinations were tank-mixed, using 0.25 ai/A rates of the grass herbicides. For Fusilade 2000, Assure, Verdect or Select, we later used 0.125 lb ai/A or twice that. Testing was done during a 5-year period from 1983 to 1987.

In the winter foggy period, we found that all worked well on weeds and grasses and with the exception of Whip, all were adequately effective on grasses. In the late-spring plantings -- when temperatures and light intensities are higher, we found more retardation, but still adequate safety.

Control was achieved on the winter grasses commonly found on our heavier soil types: canarygrass and rabbitsfootgrass and sometimes volunteer wheat. Winter broadleaf weeds controlled by the Bucril/Brominal included London Rocket, wild mustard, and lambsquarters. Control was effected in 18 days in the cool, foggy periods. In the spring we controlled barnyardgrass, black nightshade, and lambsquarters.

We know that Bucril will be poor on chickweed and that Poast, Fusilade or Select will be poor on annual bluegrass or winter fescues. (The other grass herbicides are not being evaluated on alfalfa any more.) These weeds are found in much of California, but in Kern County, they are not yet very prevalent. So, we are excited about the potential of this combination here and think that it will do well in other parts of California south of us.

BUTYRAC AMINE + SELECTIVE GRASS HERBICIDES

Less extensive testing was conducted with 2,4-DB in combination with the selectives in comparative tests with the treatments above. One season we used the amine formulation of Butoxone 1.75 Amine and a second year we used the Butoxone 2 EC ester formulation. (Now only Butyrac formulations of 2,4-DB seem to be available.) Later we used it only as a "standard" since we were much more impressed with the above combinations.

In these comparisons, we used 0.75 lb ai/A and twice that rate, alone or with the selectives. Crop Oil Concentrate (COC) was added to all combinations at 1 qt/A.

Our results were not as good with 2,4-DB as with Bucril, but the combinations with the grass herbicides certainly were commercially acceptable. Though total kill of broadleaf weeds did not occur, the suppression was so severe that commercial control was achieved. Naturally the grass control was excellent but the broadleaf control was less dramatic, but lingering in its effect, on the weeds listed above.

Butyrac + Poast could be tank-mixed by growers, but the Butyrac Amine formulation label recommends against adding surfactant. Also, 2,4-DB is a RESTRICTED HERBICIDE because of risk to adjacent crops, the ester being restricted more widely than the Amine formulation. Also, there are temperature restrictions, which some county regulators make growers adhere to. With Poast, the PHI (preharvest interval) must also be met for green or dry hay. In the winter foggy periods, we believe that Poast would work without COC. Where all these restrictions do not prevent use, the combination seems logical on seedling hay.

PURSUIT

Pursuit has been tested by American Cyanamid and U.C. Cooperative Extension farm advisors for several years on seedling and established alfalfa. It has looked exceptionally good on seedling alfalfa for most broadleafed weeds and many grasses, but does miss some weeds. An EPA Experimental Use Permit is expected so that larger scale tests can be conducted, but like Bucril, it is not registered as yet in the United States or in California.

Rates of 1/8 to 1/4 lb ai/A seem to be the ballpark rates for adequate weed control and yet limited retardation of the alfalfa. Higher rates severely shorten alfalfa internodes for a period of time, with regrowth resuming later. The same symptoms occur

on susceptible weeds with growth stopping after treatment but total demise of the weed being very slow to occur. The active ingredient is an analog of Scepter (imazaquin), registered on soybeans, from the imidazolinone family of very active herbicides.

Weeds commonly controlled early post-emergence include cheeseweed (Malva), chickweed, wild oats, mustards, miner's lettuce, yellow foxtail, rabbitsfootgrass, wheat, sand spurry, barnyardgrass, cocklebur, lambsquarters, pigweeds and velvetleaf. Pursuit may suppress nutsedges and johnsongrass.

While field efficacy testing is reasonably complete except for combinations with other herbicides, the many required toxicological and environmental studies await completion and approval by EPA and CDFA. Predicting when approval will be obtained is about as reliable as economic estimates of interest rates.

References:

- Canevari, Mick, 1988. "New Developments In Weed Control In Seedling Alfalfa," Proc. California Weed Conference, pp. 90-97.
- Colbert, D.; Whatley, H. Agamalian; Canevari, M. and Orr, J., 1987. "Pursuit Weed Control in Alfalfa In California," Proc. West. Soc. Weed Science, pp. 198-201.
- Kempen, H. M., 1987. Alfalfa Weed Management Research, Kern Co. Publ. No 8749 Bakersfield Farm Advisors Office. 13 pp.
- Kempen, H. M., 1987. "Broad-Spectrum Control of Weeds In Alfalfa Without Perceptible Injury," Abstr. Proc. West. Soc. Weed Science, p 97.
- Kempen, H. M., 1989. Growers Weed Management Guide, 2nd Edition, Thomson Publications, Fresno, 230pp.
- Lewis, W. F., 1989. California-Arizona Ag. Digest, Farm Press Publications, Clarksville, MS, pp 154-169.