

TECHNICAL NOTES

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EFFECT OF 2,4-D ON FORBS AND SHRUBS ASSOCIATED WITH BIG SAGEBRUSH

By

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During the summer of 1954, the authors made an effort to learn the effect of 2,4-D on forbs and shrubs commonly associated with big sagebrush in eastern Idaho. They chose for study 12 large areas of several hundred acres in extent that had been sprayed with both isopropyl and ethyl esters of 2,4-D at rates of 1-1/2 to 2 pounds acid equivalent per acre within the previous three years. Ethyl and isopropyl esters of 2,4-D were apparently equally effective in killing sagebrush and two pounds of 2,4-D was usually more effective than 1-1/2 pounds.

Effects of 2,4-D on forbs and shrubs associated with big sagebrush are indicated in Tables 1 and 2. For ease in interpretation, adjective rates were substituted for quantitative data so that degree of damage on all areas is recorded as: unharmed, light 1 to 33 percent kill, moderate 34 to 66 percent kill, and heavy 67 to 100 percent kill.

Table 1. Mortality of shrubs and trees on 12 areas in eastern Idaho sprayed with 2,4-D to control big sagebrush.

Species	Areas*												Summary
	1	2	3	4	5	6	7	8	9	10	11	12	
<i>Amelanchier alnifolia</i>		H		M									Heavy
<i>Artemisia cana</i>								M					Moderate
<i>Artemisia tripartita</i>							H						Heavy
<i>Ceanothus velutinus</i>				U								U	Unharmed**
<i>Chrysothamnus puberulus</i>	M	L		U		L	U						Light
<i>Opuntia polyacantha</i>												U	Unharmed
<i>Pinus contorta</i>								L					Light
<i>Populus tremuloides</i>								L	L				Light**
<i>Potentilla fruticosa</i>								U					Unharmed
<i>Prunus virginiana</i>				L									Light
<i>Pseudotsuga taxifolia</i>				U				U					Unharmed
<i>Purshia tridentata</i>	U	U		L			U					U	Unharmed
<i>Salix</i> spp.								L					Light**
<i>Symphoricarpos oreophilus</i>		L		L									Light**
<i>Tetradymia canescens inermis</i>	U	U					U					U	Unharmed

* Results on areas 1 to 7 based on quantitative data, those on areas 8 to 12 based on qualitative ratings.

** Severe damage to aerial portions, but few plants completely killed - almost all sprouted profusely.

Table 2. Mortality of forbs on 12 areas in eastern Idaho sprayed with 2,4-D to control big sagebrush.

Species	Areas*												Summary
	1	2	3	4	5	6	7	8	9	10	11	12	
<i>Achillea lanulosa</i>	U	U		M	U			U	U	U	U	U	Unharmed
<i>Agastache urticifolia</i>				L									Light
<i>Agoseris</i> spp.			H	H							U		Moderate
<i>Antennaria microphylla</i>	M		U					U					Light
<i>Aplopappus</i> sp.								U					Unharmed
<i>Arnica fulgens</i>	L												Light
<i>Astragalus convallarius</i>	U												Unharmed
<i>Astragalus miser</i> <i>praeteritus</i>	U	U											Unharmed
<i>Astragalus salinus</i>	U												Unharmed
<i>Astragalus stenophyllus</i>	H												Heavy
<i>Balsamorhiza sagittata</i>		H		H						H			Heavy
<i>Calochortus macrocarpus</i>								U					Unharmed
<i>Castilleje</i> spp.	H	H	H										Heavy
<i>Comandra umbellata</i>	U	M											Light
<i>Crepis acuminata</i>	U	U		U									Unharmed
<i>Delphinium depauperatum</i>								U					Unharmed
<i>Delphinium glaucescens</i>						U							Unharmed
<i>Erigeron corymbosus</i>	L			U	U								Light
<i>Eriogonum heracleoides</i>	U	L	M	M	U			M	U			U	Light
<i>Eriogonum ovalifolium</i>	U												Unharmed
<i>Geranium viscosissimum</i>				U				U	U				Unharmed
<i>Helianthella uniflora</i>		H		H					H	M			Heavy
<i>Lineum lewisii</i>								U					Unharmed
<i>Lithospermum ruderale</i>		M											Moderate
<i>Lupinus caudatus</i>		H	H	H	H	H			H	M	M	L	Heavy
<i>Lupinus leucophyllus</i>	M												Moderate
<i>Mertensia oblongifolia</i>	H												Heavy
<i>Penstemon radicosus</i>	U	L											Light
<i>Penstemon</i> spp.			H										Heavy
<i>Perideridia gairdneri</i>								U					Unharmed
<i>Phlox canescens</i>							L						Light
<i>Potentilla</i> spp.			H	H				H	H	H	U		Heavy
<i>Rumex</i> sp.					U								Unharmed
<i>Senecio integerrimus</i>	U	U	L	M							U		Light
<i>Sieversia ciliata</i>			H	H									Heavy
<i>Solidago</i> sp.								U					Unharmed
<i>Viola</i> spp.			U	L									Light
<i>Zigadenus paniculatus</i>	H								H				Heavy

* Results on areas 1 to 7 based on quantitative data, those on areas 8 to 12 on qualitative ratings.

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