TECHNICAL NOTES

U.S. DEPARTMENT OF AGRICULTURE BOISE, IDAHO SOIL CONSERVATION SERVICE

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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	
Amelanchier alnifolia		H		M									Heavy
Artemisia cana								M					Moderate
Artemisia tripartita							H						Heavy
Ceanothus velutinus				U								U	Unharmed**
Chrysothamnus puberulus	M	L		U		L	U						Light
Opuntia polyacantha												U	Unharmed
Pinus contorta								L					Light
Populus tremuloides								L	L				Light**
Potentilla fruticosa								U					Unharmed
Prunus virginiana				L									Light
Pseudotsuga taxifolia				U				U					Unharmed
Purshia tridentata	U	U		L			U					U	Unharmed
Salix spp.								L					Light**
Symphoricarpos oreophilus		L		L									Light**
Tetradymia canescens inermis	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	
Achillea lanulosa	U	U		M	U			U	U	U	U	U	Unharmed
Agastache urticifolia				L									Light
Agoseris spp.			H	H							U		Moderate
Antennaria microphylla	M		U					U					Light
Aplopappus sp.								U					Unharmed
Arnica fulgens	L												Light
Astragalus convallarius	U												Unharmed
Astragalus miser praeteritus	U	U											Unharmed
Astragalus salinus	U												Unharmed
Astragalus stenophyllus	H												Heavy
Balsamorhiza sagittata		H		H						H			Heavy
Calochortus macrocarpus								U					Unharmed
Castilleje spp.	H	H	H										Heavy
Comandra umbellata	U	M											Light
Crepis acuminata	U	U		U									Unharmed
Delphinium depauperatum								U					Unharmed
Delphinium glaucescens						U							Unharmed
Erigeron corymbosus	L			U	U								Light
Eriogonum heracleoides	U	L	M	M	U			M	U			U	Light
Eriogonum ovalifolium	U												Unharmed
Geranium viscosissimum				U				U	U				Unharmed
Helianthella uniflora		H		H					H	M			Heavy
Lineum lewisii								U					Unharmed
Lithospermum ruderale		M											Moderate
Lupinus caudatus		H	H	H	H	H			H	M	M	L	Heavy
Lupinus leucophyllus	M												Moderate
Mertensia oblongifilia	H												Heavy
Penstemon radicosus	U	L											Light
Penstemon spp.			H										Heavy
Perideridia gairdneri								U					Unharmed
Phlox canescens							L						Light
Potentilla spp.			H	H				H	H	H	U		Heavy
Rumex sp.					U								Unharmed
Senecio integerrimus	U	U	L	M							U		Light
Sieversia ciliata			H	H									Heavy
Solidago sp.								U					Unharmed
Viola spp.			U	L									Light
Zigadenus paniculatus	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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