Developing a Handbook Summarizing the Use of Livestock as a Tool in Noxious Weed Management Programs in the Western United States

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Introduction

Researchers and grazing practitioners have long known that livestock grazing can be used as a tool to manage some noxious weeds. This knowledge however, has not been collected, summarized and shared in a useful format with other interested parties. In response, University of Nevada Cooperative Extension specialists and a University of Idaho weed scientist, developed a handbook and



Web site concerning prescribed livestock grazing to control noxious weeds.

Objective

The project objective was to "assemble, summarize, and distribute state-ofthe-art knowledge concerning livestock grazing as a noxious weed control tool in the western United States."

Approach

Develop a list of noxious weed species for California, Colorado, Idaho, Montana, Nevada, Oregon, Washington, Wyoming, and Utah.

Conduct literature review; survey researchers, weed district managers, and grazing practitioners; and formulate grazing for weed control guidelines plants that occur on at least two western states noxious weed lists.

Distribute livestock grazing guidelines to Cooperative Extension educators, Natural Resource Conservation Service personnel, and others via a published handbook, CD, and Web site.

Plants Which Occur on at Least Two Western State Noxious Weed Lists

Species	Shale	CA	00	0	set	NW.	CR	527	WK	WY	Total Stories
Offuse trupweed (Certains offuse)		18	×	100	8	EXI	X	- X	×	DE	- 9
Leafy apurge (Euphorbia would)		100	×	100	×	100	X.	130	X	100	. 9
Spoted knapweed (Centaures traculties)		100	. ж	X	. X	200	X.	X	X	DX:	- 3
Delmation toxoffor (Linux) periolitoxic		DO:	×	DX.	Х.	100	.X		X.	100	. 0
Music thatis (Carbus rutino)		DX.	∴×	DK:		1000	ж.	200	X.	100	
Russian knapweed (Auroption repent)			×	DX:	.X.	DX:	ж.	(X)	X.	100	. 1
Books thatis (Chopordum acanthum)		100	×	DX.		[80]	X.	200		100	7.
Canada thatie (Ciroum arvense)			-: X	1X.	×		X.	1380		100	. 4
Dyer's woed (faate fruitung)	_			IX.		100	X.	280	X	EX.	- 4
History creek (Lapathum (Fatha)			×	DX.	×		. X.	13E		E30.	
Houndstorgue (Cynoplesum officniet)			- 8		×	100			X	(X)	- 4
Perernial peoperweed (Lepidum latitulum)	-		X	(X)			X	X	X.	EX.	- 6
Purple bosestife (Lythorn saloans)				30		1251	-X-	100	-X.	180	- 6
St. Johnswort (Hyperture perforature)			X		.X.	100	X.		X	100	- 6
Yoksw toedflan (Linuxia sulpare)	-		X	20	×	180	X.			100	- 6
Field bindweed (Consolvulus arvense)				×	:X		×	(X)	-	100	- 5
Rush switchwood (Chondrife; Junces)		180	×	30	_	100	.X.		LX.		. 5
Sufur originator of beardist rectal.	-		×		.8.	136	. 8		.X.		. 1
Yallow starthetic (Centaurea sossificate)	-			3.		130	×	3	×		- 1
Contract crupma (Crupma sulgarity)	-		×	30	_	X	X		X		4
Guasian externitiol (Myrophyllum spouture)	-			7		(80)	Ž.	-	×.		- 1
Johnsongrass (Singhum halsperse)	-				-			28			1
Mostor haviseed (Herschutt Np.)	-			8.	×		х.		X		4
Cheye daily (Chrysanthenum leucarthenum)	-		×	×	- 5				X	X	1
Personial sowhistie (Sonohus anvensis)	-	X	*	e#G	-		-		HŽ-	優	
Purview thate (Carbus acarboxies)	-	46			-		-	12	10.		
Quadigram (Elythpia report) Satordar (Tartiatis ramossamos	-		×		-		Ž.	edi.	1	120	- 1
	-				-		2		- ^	100	3
Biddy-biddy (Assens novier-infendag) Certelfhorn (Ahay) mauricum)	-	18			-	100	-	X.	×		3
Contract (Army (Tanacatum sudgeme)		183	- 8			100				190	3
Hydrite (Hydrite verticitate)	-	100	-0		-2-	191	-		×	-00	3
	-					100			ŵ		3
Senior starthetic (Centaures denta) Wealthy snapheast (Centaures represent)	-	180	-	×		101	×		Hŵ:		- 5
Mediananan sage (Salva aethops)	-		-	-	-	ter	100		HŶ.		1.5
Wednesday (Toenstheum pand medical)	-				-	憶	2	2	-		3
Orange frankweed (Heractum aurantiasum)	-		×	*		-66	-	100	v		3
Puncturevine (Tribulus terrestins)			- ^	令	-		×		1 û		- 3
Soutin broom (Cytraus scoperus)	-	100		⑫			1				3
Squerose knapkeed (Centeures vigata)	-	憶		100		100	-	780	-		3
Syrian bean caper (Zypostyture fabago)	-	101		*	-	190			-		3
Tarray regivent (Sencio Jacobee)	_	-		金		-	×		×		- 2
Yellow rubsettje (Cyperus exculentus)	-		×		-		101		12		3
Austrian provinced (Spharmphysia saleuta)						190	121				- 3
Stack ferbane (Hydrocyamus riger)	-	2		100		100	-				- 2
Bufactor (Science relative)	_			兌					×		+
Busines, common (Anchuse officinate)							× .		Hŵ:		2
that theire (Circum vulgare)			X				1		10		2
Cutterf tensel (Digwarus laprostus)	_		×				X.				2
Garlic mustant (Alitaria peliotata)	_						2		×		2
Goetenur (Garego officerains)						100			18		2
Gorse (Cler myspensis)	-						×		×		- 2
Helogeton (Hacopetor planeratual		100					*				2
Italian thelle (Carbus pychoxechalus)							2		×		3
Jorded posturees (Aepliga (vinshop)				100			2				- 2
Knotweet (Philippoum spp.)							A		X		2
Kochia (Kochia sogowne)							×		×		2
Mayweed chemomie (Anthema colum)			×			100					2
Mrk thelle (Silvburt mananum)							X		X		2
Please Particol (Consun masulatum)				100			12		-		7
Purple starthydie (Certaves catolings)						100			X		- 3
Silveresif night/hade (Sistenum eleksgnifullum)				×					1 2		- 2
Siender Rovered Healin/Cerduse Ierusforus)							ж.		1 ×		: 2
Sperior troom (Sperium procum)							12		1 8		- 3
Texas (Autwent) (Helianibus citians)		190							Hŵ-		- 3
									Ŷ		2

Summary of Prescribed Grazing of Western Noxious Weeds by Animal Type and Information Source

		Anim	Source of Information			
Noxious Weed Common Name (Scientific Name)	Sheep	Coats	age O	Horses	Number of Surveys	Uterature
Canada thistle (Cinsum avense)	1	1	1	NR	5	Yes
Common tarsey (Tanapetum sulparel)	-	-	á	NR	1	Yes
Delmation toedflex (Lineria genistfolia sep. dalmatica)	-	-	NR	NR	2	Yes
Diffuse knapweed (Centaurea diffusa)	1	1	1	NR	5	Yes
Over's wood (Isatis tinctoria)	1	1	NR	NR	1	Yes
Gorse (Ulex europaeus)	1	1	NR	NR	0	Yes
Hoary cress (Lepidium draba)	NR	NR	NR	NR	2	Yes
Japanese knotweed (Polygonum cuspidatum) and Himalayan knotweed (Polygonum polystachyum)	NR	1	NR	NR	1	No
Kochia (Kochia scoparia)	1	1	1	NR	0	Yes
Leafy spurge (Euphorbia esula)	-	1	2	2	14	Yes
Medusahead (Taeniatherum caput-medusae)	-	1	1	NR	1	Yes
Musik thistile (Caroluus nutans)	1	1	1	NR	1	Yes
Perennial pepperweed (Lepidium latifolium)	1	1	1	NR	5	Yes
Poison hemlock (Conium maculatum)	₽	₽	₽	₽	1	Yes
Purple loosestrife (Lythrum salicaria)	NR	NR	1	NR	0	Yes
Purple starthistie (Centaurea calcitrapa)	NR	1	NR	NR	0	Yes
Quackgrass (Elytrigia repens)	1	1	1	1	0	Yes
Rush skeletonweed (Chondrilla juncea)	-	NR	1	~	2	Yes
Russian knapweed (Acroption repens)	1	1	NR	₽	5	Yes
Scotch broom (Cytisus scoparius)	1	1	NR	NR	0	Yes
Scotch thistie (Onopordum acanthium)	1	1	1	NR	4	Yes
Spanish broom (Spartium junceum)	NR	1	NR	NR	0	Yes
Spotted knapweed (Centaurea maculosa)	1	1	NR	NR	9	Yes
Tanky ragwort (Senecio jacobaea)	1	NR	2	£	1	Yes
Yellow starthistie (Centaurea soistitialis)	-	1	1	2	9	Yes
Yellow toadflax (Linaria vulgaris)	NR	1	NR	NR	1	Yes

Results to Date

66 species occur on noxious weed lists for at least two western states.

80 surveys (28% return rate) were received, of which 70% were from grazing practitioners. Survey respondents reported experience with livestock grazing of noxious weeds for 21 species.

Of the species that occur on noxious weed lists for at least two western states, there was sufficient information to develop grazing guidelines for 28.

The draft handbook has been assembled and is in the peer review process. It will

Example of a grazing guideline



Animal type	Sheep.	Goets	Cattle			
Animal class		All classes				
Growth stage for treatment	All-growth stages. Ploants sid					
Palabathy	Sheep and g consume ye	Cattle will not consume the plant beyond but stage				
Effectiveness of gracing treatment		ive if often enough to pre- proputations. Wust tightly i damage to desirable spe-				
Plant response	Orsang reduces plant vigor, size, and flower production.					
Gracing objective	Crade heavily at least twice each year to prevent flowering and enough years to reduce populations.					
Palatability	Two or three treatments are needed if grazed in the rosette or botting stage. Grazing during or post flowering with grate may need only one treatment per year.					
Number of treatment years	Three to five years is thely needed to reduce populations and deplete the seed bank.					
Practiculty of method	Grading is consi	dered very practical as a	control method			
Recommendation as a control method	Sheep and goat grazing	is storgly recommends	cl, but less so for cettle.			
Potential integration with other control methods	Cracing is most effect	ive when combined with I	herbicide heatments.			
Source of information	Bunkya (II), Literature (II).					
Comments	Goals are the most effective investoric to use for prescribed grazing.					
Summary	Yellow startinativ is readily grazed by sheep, goets, and cattle through the late ooting stage. Pleastability is reduced as the plant ages, expecually to cattle it and the political sea spotded inspection. Control deposits on the presentation of flower and used production. Must be applied at seat twice paragraphs on the presentation of flower and used production. Must be applied at seat twice paragraphs on the desired of the seat twice paragraphs of the definition.					

Acknowledgements

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Evaluate the program using telephone surveys, number of hits on the Web site. and information requests.