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Weed Identification and Control in vineyards

Why control weeds?

- Compete for water, nutrients, and light with grapevines
- Interference is especially problematic during establishment years
- Can affect crop management, irrigation, and harvest operations
- Impacts on other pest problems
- Crop quality concerns

Definition of a "difficult" weed

- "Weeds" are the ones your neighbor has
  - "Difficult weeds" are the ones you have!
- In reality, difficult weeds are species that withstand, tolerate, or are resistant to the control measures used in a particular system and have an economic impact
  - Varies according to the crop, crop stage, control options, economic situation, etc

Understand the problem

- The first step in understanding any problem is to correctly identify it

Dandelion

sowthistle

Weed identification

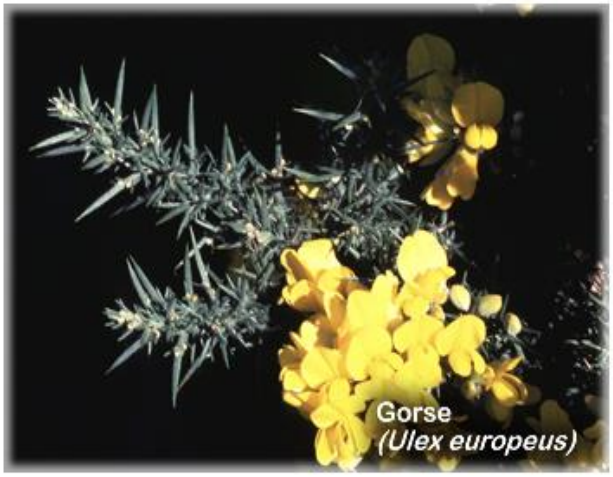
- Unknown weeds cannot be properly managed
  - No technique controls all weed species
  - Species respond differently to control strategies
    - Even variants within a species (ie. herbicide resistant biotypes)

Weed Research and Info Center
http://wric.ucdavis.edu

Online weed ID tool

Weed Research & Information Center

UNIVERSITY OF CALIFORNIA • COOPERATIVE EXTENSION & AGRICULTURAL EXPERIMENT STATION



The Weed Research and Information Center is an interdisciplinary collaboration that fosters research in weed management and facilitates distribution of associated knowledge for the benefit of agriculture and for the preservation of natural resources.

What's New

- Job opening :: Weed Scientist :: Philippines (RP10310)
- Job opening :: Weed Scientist :: Philippines (RP10311)
- Job opening :: Associate Director for Urban and Community IPM and Area IPM Advisor :: UC ANR , Davis, CA
- Job opening ::Rice Breeding Research Associate :: Biggs, CA
- Job opening :: Extension Weed Science Specialist :: Virginia Tech
-
- Aquatic Weed School 2014**approved for CONTINUING EDUCATION CREDIT**
- Weed Day 2014 **approved for CONTINUING EDUCATION CREDIT**
-
- UCD Plant Sciences members receive multiple weed science awards
- Weed Pest ID and Monitoring Cards **NEW PUBLICATION**
- Invasive Plants in Southern California blog
- Weed control information for weeds in natural areas (western U.S.)

Quick Links

HERBICIDE SUSCEPTIBILITY

Learn more

WEED BIOLOGY & MANAGEMENT

Learn more

WEED ID TOOL

Learn more

ONLINE EDUCATION PROGRAMS

Learn more

WEED SCIENCE BLOG

Who am I?

Field Bindweed

Field Bindweed

- Vigorous perennial that either grows from seed, which can survive for up to 30 years in the soil, or from extensive roots.
- Because of the seed's longevity in the soil, it is critical to destroy plants before they can produce seed.
- The plants may spread from stem or root sections that are cut during cultivations, however cultivation controls seedlings.
- Use pre emergent for preventing seedlings. Spot treat mature plants with glyphosate or other post emergent herbicide .

Who am I?

Fluvellin

Fluvellin

- Summer annual weed common to drainage ditches, roadsides, fencerows, orchards, vineyards and disturbed sites.
- Looks similar to field bindweed, but is not a vine and does not climb.
- Stems and leaves are very hairy, flowers are very small, 2-lipped, with one lip being purple and the other white to pale yellow. Flowers have a noticeable spur protruding from the back of the flower.
- Forms a dense mat 2-4 feet wide originating from a single root base
- Pre emergent and/or post emergent herbicides work well, as does hand pulling

Who am I?

Turkey mullein or doveweed

- Summer annual that grows in open, dry areas.
- California native
- Generally considered a desirable member of natural vegetation communities. Birds and small mammals depend on its seeds for food.
- Covered with stiff dense hairs that can cause contact dermatitis in some individuals
- Mechanical equipment including hand pulling and hoes work well.
- Most pre emergent herbicides provide good control. Most post emergent don't work well because of the dense hairs on foliage.

Who am I?

Common mullein

Common mullein

- Found along roadsides, fields, streamsides, gardens, forest openings and disturbed areas.
- Mullein is usually recognized by its tall flower spikes, which can be 6-10 feet tall.
- A biennial (lives for two years). First year consists of just leaves. Second year it flowers and dies.
- In vineyards, the plant can interfere with cultural practices as the plant can grow up into the vine and canopy.
- To control use preemergent herbicide. Most post emergent don't work well because of the dense hairs on foliage. Mechanical equipment including handpulling and hoes also work well on small plants.

Who am I?

Puncture vine

Puncture vine

- Found along roadsides, fields, new plantings, and disturbed areas.
- Puncture vine is most commonly identified by its sharp, woody burs that stick in tires, shoes and equipment
- Summer annual that grows prostrate, forming dense mats 2-5 ft in diameter.
- Hand removal or hoeing works well. Shallow tilling just after emergence is effective. Preemergent and post emergent herbicides are effective.
- Biocontrol is also effective.

Who am I?

Horseweed

Horseweed or Mare's tail

- Summer annual or biennial.
- Inhabits agricultural land, disturbed sites, and landscaped areas.
- Mature plant can grow 6-10 feet high
- Can impede cultural practices in vineyards
- Horseweed hosts the glassy-winged sharpshooter (a carrier of Pierce's Disease).
- Frequent mechanical tillage offers good control as long as the plants are young and small. Mowing does not provide adequate control. Pre emergent herbicides provide good control. Glufosinate and 2, 4-D provide the best control on emerged plants from the seedling to rosette stage. Control with glyphosate is variable as resistance populations are present.

Who am I?

Skeleton weed

Skeleton weed

- Herbaceous biennial or perennial.
- Inhabits roadsides, agricultural land, disturbed sites, and rangeland.
- Mature plant can grow 3-4 feet high
- Can impede cultural practices in vineyards
- Deep tap root competes for water and nutrients
- Can spread by seed and root fragments
- Mechanical tillage offers poor control as root fragments can start new plants.
- Mowing does not provide adequate control. Limited data on chemical control. Pre emergent herbicides should provide good control. Post emergent herbicides work best in spring from the seedling to rosette stage.

Who am I?

Stinkwort

Stinkwort

- Summer annual
- Inhabits roadsides, agricultural land, disturbed sites, and rangeland.
- Forms a shrubby, pyramid or sphere shaped plant which resembles Russian thistle
- Very sticky and aromatic
- Can cause contact dermatitis in some individuals
- Mature plant can grow 3-4 feet high, which can impede cultural practices in vineyards.
- Hand removal or hoeing works well on small plants. Shallow tilling just after emergence is effective. Preemergent and post emergent herbicides are effective.

Weed management tactics

- Sanitation/ prevention
- Biological
- Cultural
- Mechanical
- Chemical

Tools in the toolbox

Control Fluvellin before it spreads!

Fluvellin Trial Plot Details

- January 27 2016

Each plot is 180 sq.ft.; 3ft wide on each side (6 ft. total) by 30 ft. long

Application made with a CO_2 backpack using 2 AIXR 11003 nozzles at 40 psi - 32 gpa

- Plots were clean at application(some fluvellin skeletons and few small willowherb to 1.5 inches high).
- Grape leaves and debris were blown off vine row and plot area treated with 2qt/acre Roundup PowerMax on December 15, 2015

Treatment #	Treatment	Rate/Acre	Rating		
			June 30 (155 DAT)	August 4 (190 DAT)	September 22 (239 DAT)
1	ROUNDUP PowerMax	1qt	5.5	5.00	5.50
	CHATEAU	10 oz			
2	ALION	5 fl oz	7	5.88	6.63
	CHATEAU	6 oz			
3	ALION	5 fl oz	9.25	7.38	7.63
	MATRIX	2 oz			
4	ALION	5 fl oz	9.63	9.63	9.00
	MISSION	2.14 oz			
5	TRELLIS SC	23 fl oz	8	6.00	5.75
	CHATEAU	6 oz			
6	TRELLIS SC	23 fl oz	9.98	8.75	7.75
	MATRIX	4 oz			
7	TRELLIS SC	23 fl oz	10	9.63	9.38
	MISSION	2.14 oz			
8	CHATEAU	10 oz	9.25	8.13	7.75
	PROWL H2O	6 qt			
9	PROWL H2O	6 qt	9.63	8.50	7.50
	MATRIX	4 oz			
10	CHATEAU	10 oz	9.73	8.75	8.38
	MATRIX	4 oz			

Untreated Control

Treatment #	Treatment	Rate/Acre	Control Rating			Regrowth Control
			June 30 (155 DAT)	August 4 (190 DAT)	September 22 (239 DAT)	November 29 (307 DAT)
1	ROUNDUP PowerMax	1qt	5.5	5.00	5.50	7.38
	CHATEAU	10 oz				
2	ALION	5 fl oz	7	5.88	6.63	9.25
	CHATEAU	6 oz				
3	ALION	5 fl oz	9.25	7.38	7.63	7.75
	MATRIX	2 oz				
4	ALION	5 fl oz	9.63	9.63	9.00	9.73
	MISSION	2.14 oz				
5	TRELLIS SC	23 fl oz	8	6.00	5.75	7.88
	CHATEAU	6 oz				
6	TRELLIS SC	23 fl oz	9.98	8.75	7.75	7.13
	MATRIX	4 oz				
7	TRELLIS SC	23 fl oz	10	9.63	9.38	9.13
	MISSION	2.14 oz				
8	CHATEAU	10 oz	9.25	8.13	7.75	7.63
	PROWL H2O	6 qt				
9	PROWL H2O	6 qt	9.63	8.50	7.50	7.63
	MATRIX	4 oz				
10	CHATEAU	10 oz	9.73	8.75	8.38	7.25
	MATRIX	4 oz				

4	ALION	5 fl oz
	MISSION	2.14 oz


7
TRELLIS SC
23 fl oz
MISSION
2.14 oz

Horseweed


Large Horseweed treated with glyphosate

2014 Herbicide Trial Results

- Plots treated Feb 5, 2014
- All plots treated with glyphosate and carfentrazone {Shark} December
- All plots swept and then back through with rakes before treatment to remove leaves
- No weeds were present at time of treatment
- All treatments except UTC contain 1 qt Roundup weather Max and 0.25% v/v AMSPro
- Treatments made at 30GPA

Overal Visual Rating 1=no control; 10=total control							
	DAT=days after treatment		90 DAT	120 DAT	160 DAT	270 DAT
			Average	Average	Average	Average
1	UTC		3.50	2.50	3.75	4.75
2	ROUNDUP	1 qt	4.75	3.63	3.25	4.00
3	MATRIX	4 oz	8.63	9.60	9.63	7.63
4	CHATEAU	12 oz	9.00	9.50	8.88	7.63
5	TRELLIS	1 lb	8.35	8.10	8.00	7.88
6	GOALTENDER	2 qt	9.85	9.38	8.88	7.50
7	ZEUS	12 oz	6.25	6.25	5.75	5.00
8	PROWL	6 QT	5.50	3.50	4.25	5.75
9	ALION	3.5 OZ	9.25	9.00	9.63	8.75
10	ALION	5.0 OZ	10.0	9.98	9.75	9.13
11	ALION	5.0 OZ	9.75	10.0	10.0	9.13
	CHATEAU	4 OZ				
12	ALION	5.0 OZ	9.75	10.0	10.0	8.85
	MATRIX	2 OZ				
13	ALION	5.0 OZ	10.0	10.0	9.75	9.00
	GOALTENDER	1 QT				
14	ALION	5.0 OZ	10.0	10.0	10.0	8.88
	ZEUS	10 OZ				
15	ALION	5.0 OZ	9.88	10.0	9.98	9.38
	PROWL	6 QT				
16	MATRIX	4 OZ	10.0	10.0	9.88	8.75
	ALION	2.5 OZ				


ALION
5.0 OZ
10


MATRIX 4 OZ
ALION 2.5 OZ
16


ALION 5 OZ
MATRIX 2 OZ
12

T&V herbicide registrations

Herbicide Registration on Horticultural Tree and Vine Crops -(updated December 2012 - UC Weed Science)

	Herbicide-Common Name *(example trade name)*	Site of Action Group[1]	Almond	Pecan	Pistachio	Walnut	Apple	Pear	Apricot	Cherry	Nectarine	Peach	Plum / Prune	Avocado	Citrus	Date	Fig	Grape	Kiwi	Olive	Pomegranate
			----- tree nut -------				- pome -		--------stone fruit ---------												
Preemergence	dichlobenil *(Casoron)*	L / 20	N	N	N	N	R	R	N	R	N	N	N	N	N	N	N	R	N	N	N
	diuron *(Karmex,Diurex)*	C2 / 7	N	R	N	R	R	R	N	N	N	R	N	N	R	N	N	R	N	R	N
	EPTC *(Eptam)*	N / 8	R	N	N	R	N	N	N	N	N	N	N	N	R	N	N	N	N	N	N
	flazasulfuron (Mission)	B / 2	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	R	N	N	N
	flumioxazin (Chateau)	E / 14	R	R	R	R	R	R	R	R	R	R	R	NB	NB	N	NB	R	N	NB	NB
	indaziflam (Alion)	L / 29	R	R	R	R	R	R	R	R	R	R	R	N	R	N	N	N	N	R	N
	isoxaben *(Trellis)*	L / 21	R	R	R	R	NB	NB	NB	NB	NB	NB	NB	NB	NB	N	NB	R	NB	NB	NB
	napropamide *(Devrinol)*	K3 / 15	R	N	N	N	N	N	N	N	N	N	N	N	N	N	N	R	R	N	N
	norflurazon *(Solicam)*	F1 / 12	R	R	N	R	R	R	R	R	R	R	R	R	R	N	N	R	N	N	N
	oryzalin *(Surflan, Farm Saver)*	K1 / 3	R	R	R	R	R	R	R	R	R	R	R	R	R	N	R	R	R	R	R
	oxyfluorfen *(Goal, GoalTender)*	E / 14	R	R	R	R	R	R	R	R	R	R	R	R	NB	R	R	R	R	R	R
	pendimethalin *(Prowl H_2O)*	K1 / 3	R	R	R	R	R	R	R	R	R	R	R	N	R	N	N	R	N	R	R
	penoxsulam *(Pindar GT)*	B / 2	R	R	R	R	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	pronamide *(Kerb)*	K1 / 3	N	N	N	N	R	R	R	R	R	R	R	N	N	N	N	R	N	N	N
	rimsulfuron *(Matrix, Mana)*	B / 2	R	R	R	R	R	R	R	R	R	R	R	N	R	N	N	R	N	N	N
	simazine *(Princep,Caliber 90)*	C1 / 5	R	R	N	R	R	R	N	R*	R	R	N	R	R	N	N	R	N	R	N
	thiazopyr *(Visor)*	K1 / 3	NB	N	NB	NB	N	N	NB	NB	NB	NB	NB	N	R**	N	N	NB	N	N	N
Postemergence	carfentrazone (Shark, Rage)	E / 14	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
	clethodim *(Prism)*	A / 1	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	N	R	N	N	NB	N	NB	N
	clove oil *(Matratec)*	NC[3]	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
	2,4-D *(Clean-crop, Orchard Master)*	O / 4	R	R	R	R	R	R	R	R	R	R	R	N	N	N	N	R	N	N	N
	diquat *(Diquat)*	D / 22	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB
	d-limonene *(GreenMatch)*	NC[3]	R	R	R	R	R	R	R	R	R	R	R	N	R	N	R	R	R	N	N
	fluazifop-p-butyl *(Fusilade)*	A / 1	NB	R	NB	NB	NB	NB	R	R	R	R	R	NB	NB	NB	NB	R	N	NB	NB
	glyphosate *(Roundup)*	G / 9	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
	glufosinate *(Rely 280)*	H / 10	R	R	R	R	R	N	N	N	N	N	N	N	N	N	N	R	N	N	N
	halosulfuron *(Sandea)*	B / 2	N	R	R	R	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	paraquat *(Gramoxone Inteon)*	D / 22	R	R	R	R	R	R	R	R	R	R	R	R	R	N	R	R	R	R	N
	pelargonic acid *(Scythe)*	NC[3]	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	N
	pyraflufen *(Venue)*	E / 14	R	R	R	R	R	R	R	R	R	R	R	N	N	R	R	R	R	R	R
	saflufenacil *(Treevix)*	E / 14	R	N	R	R	R	R	N	N	N	N	N	N	R	N	N	N	N	N	N
	sethoxydim *(Poast)*	A / 1	R	R	R	R	R	R	R	R	R	R	NB	NB	R	NB	NB	R	N	NB	NB

Updated annually.

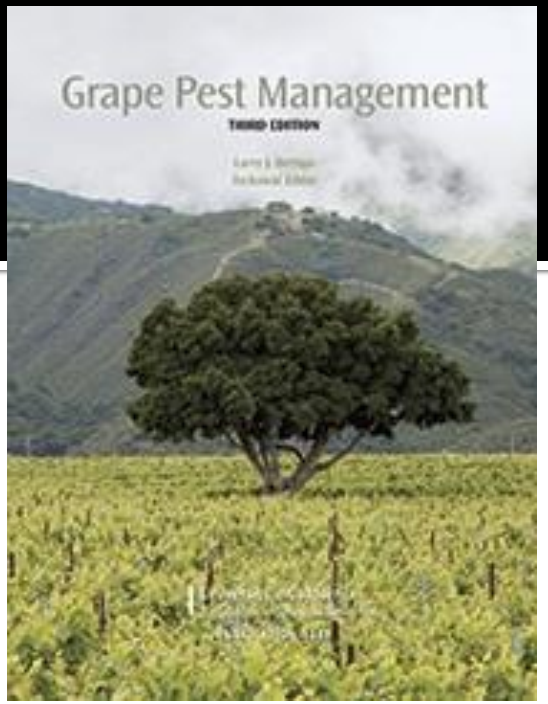
Available online - easiest way is to find it is on the UC Weed Science blog

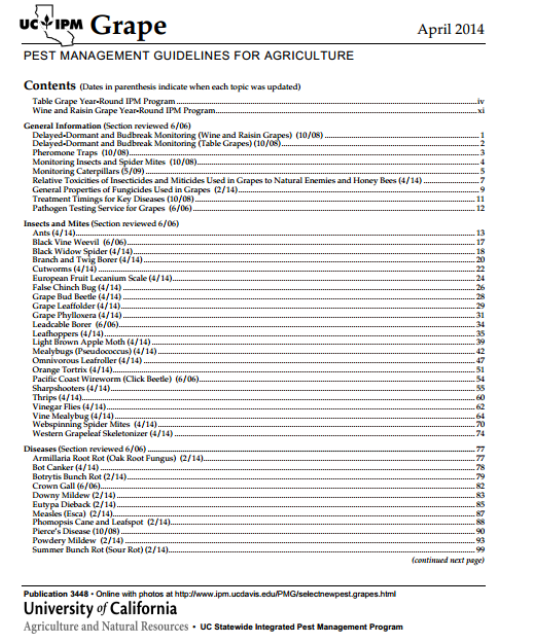
Resources

- Grape Pest Management (ANR 3343)
  - New version
- UC IPM guide: Grapes (ANR 3448)
  - New version

Both available online at:

http://ucanrcatalog.ucdavis.edu





UC IPM Grape April 2014

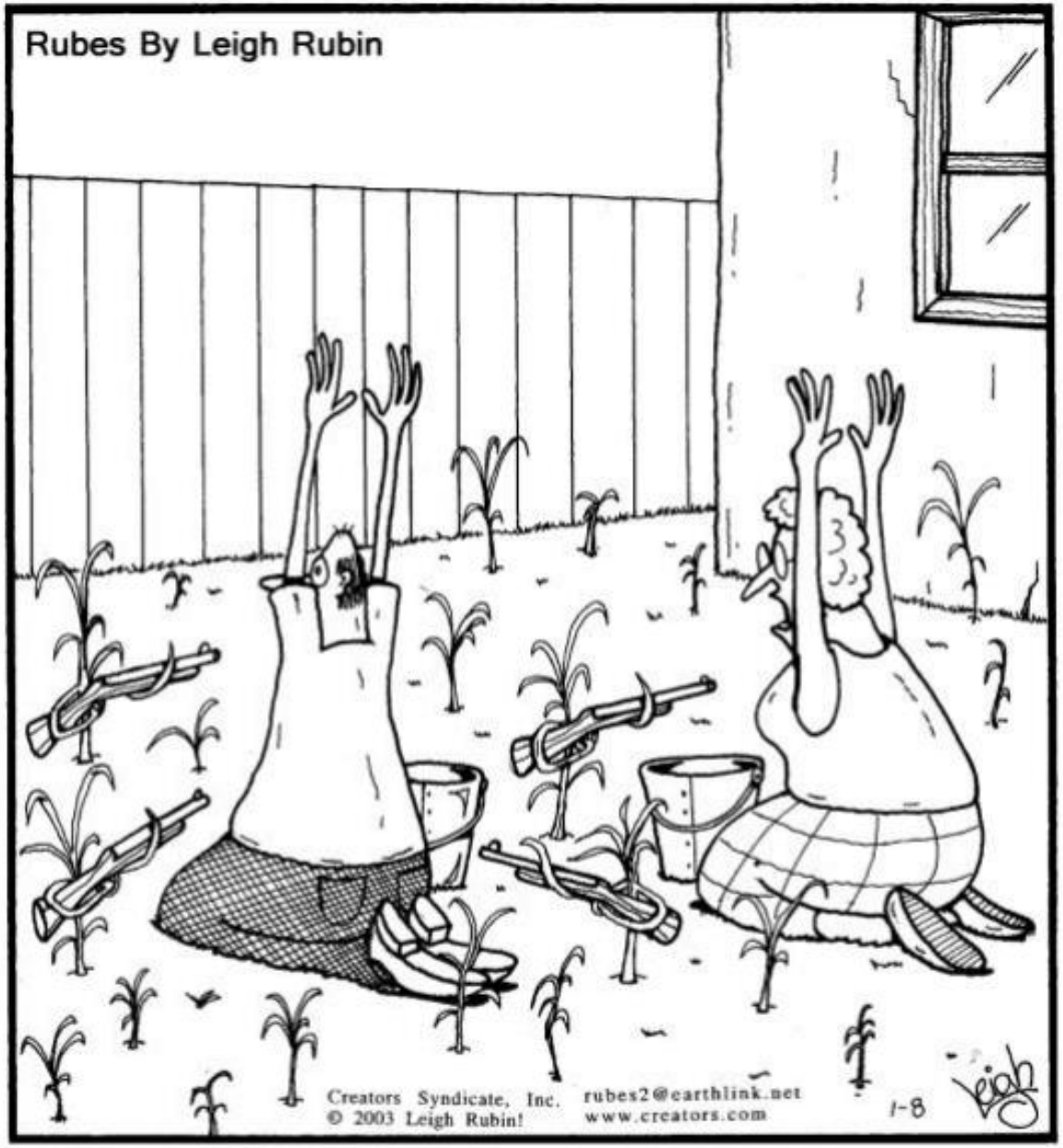
PEST MANAGEMENT GUIDELINES FOR AGRICULTURE

Contents (Dates in parenthesis indicate when each topic was updated)

(continued next page)

Publication 3448 • Online with photos at http://www.ipm.ucdavis.edu/PMG/selectnewpest.grapes.html
University of California
Agriculture and Natural Resources • UC Statewide Integrated Pest Management Program


Thanks



"We never should have waited this long ...
Now the weeds have *completely*
taken over."