

# Integrated Pest & Crop Management

## Missouri State Approved Soil Testing Labs for 2015

by Manjula Nathan

The Missouri Soil Testing Association (MSTA) Approval Program is designed to assure that results provided by participating public and private labs serving the citizens of Missouri agree with allowable statistical limits. This is accomplished by evaluating the soil testing laboratories in their performance through inter-laboratory sample exchanges and a statistical evaluation of the analytical data. Based on this premise, soil test results from MSTA approved labs will be accepted by the U.S. Department of Agriculture, Farm Service Agency (FSA) and Department of Natural Resources and Conservation Services (NRCS) in federally assisted cost share programs and nutrient management plans in the state of Missouri.



<http://soilplantlab.missouri.edu/soil/>

In order to be approved by the Missouri State program, the participating labs should participate in all four quarter exchanges of the NAPT program and submit the MO State data release form each year to the NAPT coordinator. The NAPT coordinator in return sends soil test data from quarterly sample exchanges of the labs participating in MSTA program to the Missouri state coordinator. The MU Soil Testing Lab director serves as the state program coordinator and performs statistical analysis of the data as specified in the MSTA program. If a lab's results fall within the allowable limits, the lab will be placed on the Farm Service Agency's (FSA) list of approved labs. A lab that is not approved may re-apply after a year. An updated listing of Missouri State Approved Soil Testing lab list can be found at: <http://soilplantlab.missouri.edu>.

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## Missouri State Approved Soil Testing Labs for 2015 continued.

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### List of Missouri State Approved Soil Testing Labs, 2015

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**MU Soil and Plant Testing Lab**

University of Missouri  
23 Mumford Hall  
Columbia, MO 65211  
Telephone: 573-882-3250  
Fax: 573-884-4288

**A&L Analytical Laboratories**

2790 Whitten Road  
Memphis, TN 38133  
Telephone: 901-213-2400  
Fax: 901-213-2440

**SGS-Toulon Labs**

117 East Main St.  
Toulon, IL 61483-0518  
Telephone: 309-286-2761  
Fax: 309-286-625

**Delta Soil Testing Lab**

University of Missouri  
PO Box 160  
Portageville, MO 63873  
Telephone: 573-379-5431  
Fax: 573-379-3383

**A&L Great Lakes Laboratory**

3505 Conestoga Drive  
Fort Wayne, IN 46808  
Telephone: 260-483-4759  
Fax: 260-483-5274

**MVTL Laboratories-New Ulm**

1126 North Front St.  
New Ulm, MN 56073-0249  
Telephone: 507-354-8517  
Fax: 507-359-289

**Custom Laboratory**

204 C St.  
Golden City, MO 64748  
Telephone: 417-537-8337  
Fax: 417-537-8337

**A&L Heartland Laboratory**

111 Linn St.  
PO Box 455  
Atlantic, IA 50022  
Telephone: 901-213-2400  
Fax: 901-213-2440

**Spectrum Analytical**

1087 Jamison Road  
PO Box 639  
Washington Court House, OH 43160  
Telephone: 740-335-1562  
Fax: 740-335-110

**Perry Agricultural Lab**

PO Box 418  
State Highway 54 East  
Bowling Green, MO 63334  
Telephone: 573-324-2931  
Fax: 573-324-5558

**A&L Laboratories-Canada**

2136 Jet Stream Road  
London, ON N5V 3P5  
Canada

**Solum Labs Inc. The Climate Corp.**

615 Bell Avenue  
Ames, IA 50010  
Tel: 515-661-5500

**Ag Source Cooperative Services**

106 N. Cecil Street  
PO Box 7  
Bonduel, WI 54107  
Telephone: 715-758-2178  
Fax: 715-758-2620

**American Agricultural Laboratory**

210 East First St.  
PO Box 370  
McCook, NE 69001  
Telephone: 308.345.3670  
Fax: 308-345-7880

**Ward Laboratories**

4007 Cherry Ave.  
PO Box 788  
Kearney, NE 68848  
Telephone: 308-234-2418  
Fax: 308-234-1940

**Ag Source Harris Laboratories**

300 Speedway Circle #2  
Lincoln NE 68502  
Tel: 402-476-0300  
Fax: 402-476-0302

**Brookside Lab Inc.**

200 White Mountain Drive,  
New Bremen OH 45869  
Telephone: 419-977-2766  
Fax: 419-977-276

**Waters Agricultural Laboratories**

257 Newton Highway  
PO Box 382  
Camilla, GA 31730  
Telephone: 229-336-7216  
Fax: 229-336-097

**Ag Source Laboratories**

1532 Dewitt  
Ellsworth, IA 50075  
Tel: 515-836-4444  
Fax: 515-836-4541

**Ingram's Soil Testing Center**

13343 Fitschen Road  
Athens, IL 62613  
Tel: 217-636-7500  
Fax: 217-636-7500

**Waters Agricultural Laboratories**

2101 Old Calhoun Road  
Owensboro, KY 42301  
Telephone: 270-685-4039  
Fax: 270-685-3989

**Midwest Laboratories, Inc.**

13611 B St.  
Omaha, NE 68144-3693  
Telephone: 402-334-7770  
Fax: 402-334-9121

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Note: Approval of soil analysis does not imply approval of fertilizer and limestone recommendations by the individual labs. The approval allows the clients to use the University of Missouri soil fertility recommendations as required by the federal and state agencies for cost share and nutrient management planning programs. In order to use the University of Missouri soil fertility recommendations and get meaningful results, it is recommended that the labs use the soil test procedures required by the MSTA program.

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# Weed of the Month: Curly Dock (*Rumex crispus*)

by Kevin Bradley and Mandy Bish

Curly dock (*Rumex crispus*), also known as sour dock, yellow dock, narrowleaf dock, or curled dock, is a perennial weed native to Europe, Asia, and parts of Africa. Curly dock was introduced into the U.S., possibly arriving as a seed contaminant in the early 1600's when the British brought crops and cattle to New England<sup>1</sup>. The weed has spread to every U.S. state and Canadian province, and is now considered one of the most widely distributed weeds in the world<sup>2</sup>.



Figure 2: Curly dock cotyledons are round at the apex and narrow at the base. The young leaves are spatula shaped and may have red patches.



Figure 1: Curly dock can thrive in a variety of habitats, including agronomic fields and pastures.

Curly dock prefers moistened soils but can grow in most environments and can be found in pastures, hay fields, forages, landscapes, and some no-till agronomic crops across the U.S. (Figure 1). However, it is rarely a problem in tilled soils.



Figure 3: The initial leaves on Curly dock emerge to form a rosette.

As the plant matures, the thick and unbranched stem bolts, reaching up to 5 feet in height and usually having a reddish tint (Figure 4). Leaves along the stem are arranged alternately, are glabrous, and have a membranous sheath that encircles the stem (an ochrea). The stem leaves become progressively smaller up the flowering stalk.

Curly dock is capable of flowering twice a year; the flowers are approximately 1/8th of an inch in length and form clusters on the upper portion of the stem (Figure 4). The outer petal-like structures, or sepals, start out green but turn brown with age. Each plant can produce 100's to 1000's of seed, and the seed can easily be moved by wind or water due to the wings on the fruit. Curly dock can also reproduce vegetatively through sprouts that regenerate from buds that form on the taproot.



Figure 4: Curly dock flowers start out green but will brown as the plant matures.

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## Weed of the Month: Curly Dock (*Rumex crispus*) continued.

Grazing and mowing can help reduce populations of curly dock. However, the weed has been shown to be toxic when consumed in large amounts. Curly dock seedlings can be controlled effectively with spring herbicide applications. However once the weed becomes established, fall applications may prove more effective.

For selective control of curly dock in grass pastures and hayfields, metsulfuron products (Cimarron, Cimarron Max, Chaparral, etc.), 2,4-D and dicamba combinations (Weedmaster, etc.), or combinations of GrazonNext or Grazon P+D with tripropyl (Remedy, PastureGard, etc.) are effective foliar sprays (Table I).

In established legumes such as alfalfa, curly dock is one of the most common and problematic weed species. Few chemical treatment options exist for control of curly dock in non-Roundup Ready alfalfa stands. Researchers at Penn State have found that Gramoxone Inteon can be applied at 2 to 3 pt/A to established, dormant alfalfa stands in the spring PRIOR TO 2 INCHES OF REGROWTH. Raptor can be applied at a rate of 4 to 6 fl oz/A on seedlings or established alfalfa stands if application is made prior to significant alfalfa growth or regrowth to 3 inches. Pursuit is labeled at a rate of 1.08 to 2.16 oz/A for use in established

alfalfa and alfalfa-grass mixtures and can be effective when applied on curly dock seedlings. Glyphosate is an effective foliar spot-spray option; however, it is non-selective and will injure any portion of the crop that it contacts.

Curly dock can also become a problem weed of no-till corn or soybean systems and must be dealt with prior to planting in the spring. While it is difficult to achieve complete control of the rootstocks with any treatment, there are a number of herbicide combinations that will provide adequate desiccation of the above-ground foliage such that this weed will not be a problem in the subsequent corn or soybean crop. Higher rates of glyphosate in combination with 2,4-D or dicamba will provide good control of curly dock, but keep in mind the plant back restrictions that are required after application of 2,4-D and dicamba. Paraquat (Gramoxone) plus 2,4-D or dicamba can also provide acceptable control of curly dock prior to planting, but as mentioned previously plants will likely re-emerge from the stout taproots in the following year.

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## MU IPM Pest Monitoring Network

*Taking an Environmentally Sensitive Approach to Pest Management*



Receive pest alerts by e-mail at  
<http://ipm.missouri.edu/pestmonitoring/subscribe.htm>  
or follow us on **Twitter** ([www.twitter.com/mizzouipm](http://www.twitter.com/mizzouipm))  
or **Facebook** ([www.facebook.com/MUipm](http://www.facebook.com/MUipm))!

<http://ipm.missouri.edu/pestmonitoring>

## Weed of the Month: Curly Dock (*Rumex crispus*) continued.

**Table 1: Curly dock response to herbicides for grass pastures\*\*\*\***

Herbicide*	Rate of Material/Acre	Curly dock response***
2,4-D*	2 to 4 pt	F
Dicamba**	0.5 to 2 gal	F
2,4-D + Dicamba**	1.25 to 2.75 qt	G-E
Chaparral	1.5 to 3.3 oz	G-E
Cimarron Max	1.25 to 2.5 pt	G-E
Crossbow	2 to 4 qt	G
Glyphosate**	2 to 3.3 qt	G
GrazonNext HL	1.2 to 2.1 pt	G
Grazon P+D	1 to 4 pt	G-E
Metsulfuron**	0.1 to 0.4 oz	G
Milestone	3 to 7 fl oz	G
Pasturegard	2 to 8 pt	G
Redeem R&P	2 pt	G
Remedy Ultra	0.5 to 4 pt	G
Stinger/Transline	0.25 to 1.33 pt	G
Surmont	3 to 6 pt	G
Tordon 22k	0.5 to 4 pt	G-E

\*See herbicide labels for grazing and foraging restrictions

\*\*A variety of trade names exist.

\*\*\*Key:

E = Excellent, >90% control

G = Good, 80 to 90% control

F = Fair, 60 to 80% control

P = Poor, <60% control

\*\*\*\*Data taken from the 2015 University of Missouri Extension Publication IPM1031

“Weed and Brush Control For Forages, Pastures, and Non-cropland”

To see more images of curly dock, visit [weedid.missouri.edu](http://weedid.missouri.edu).

To learn more about weed and brush control in pasture and non-crop settings, purchase a copy of extension publication IPM1031 at: <http://extension.missouri.edu/p/ipm1031>

<sup>1</sup>Mack RN and M Erneberg (2002) The United States Naturalized Flora: Largely the Product of Deliberate Introductions. *Annals of the Missouri Botanical Garden* 89(2): 176-189.

<sup>2</sup>Hujerova R, Pavlu V, Hejcman M, Pavlu L, and J Gaisler (2013) Effect of cutting frequency on above- and below-ground biomass production of *Rumex alpinus*, *R. crispus*, *R. obtusifolius*, and the *Rumex* hybrid (*R. patient* x *R. tianschanicus*) in the seeding year. *Weed Research* 53:378-386.

<sup>3</sup>Kivilaan A and RS Bandurski (1973) The Ninety-Year Period for Dr. Beal's Seed Viability Experiment. *American Journal of Botany* 60(2): 140-145.

# Weather Data for the Week Ending April 29, 2015

Station	County	Weekly Temperature (°F)						Monthly Precipitation (in.)		Growing Degree Days‡	
		Avg. Max.	Avg. Min.	Extreme High	Extreme Low	Mean	Departure from long term avg.	April 1-29	Departure from long term avg.	Accumulated Since Apr 1	Departure from long term avg.
Coming	Atchison	68	44	75	35	56	0	3.21	+0.16	182	+96
St. Joseph	Buchanan	65	45	71	37	56	-1	2.77	-0.72	176	+77
Brunswick	Carroll	68	44	74	37	56	-2	2.97	-0.42	226	+113
Albany	Gentry	66	41	72	31	54	-2	1.82	-1.82	166	+86
Auxvasse	Audrain	67	44	73	36	55	-3	3.08	-0.65	227	+109
Vandalia	Audrain	66	40	73	31	54	-3	1.82	-1.94	211	+117
Columbia-Bradford Research and Extension Center	Boone	67	43	73	36	55	-4	3.20	-0.98	216	+76
Columbia-Capen Park	Boone	71	39	76	31	55	-4	2.71	-1.56	220	+66
Columbia-Jefferson Farm and Gardens	Boone	68	43	74	35	56	-3	2.83	-1.34	233	+92
Columbia-Sanborn Field	Boone	68	45	73	36	57	-2	3.18	-1.01	260	+105
Columbia-South Farms	Boone	67	43	73	34	55	-4	2.85	-1.39	229	+88
Williamsburg	Callaway	68	42	74	36	55	-3	5.65	+1.74	225	+109
Novelty	Knox	65	41	71	31	54	-3	2.81	-0.67	180	+81
Linneus	Linn	65	43	72	33	55	-2	3.16	-0.18	192	+96
Monroe City	Monroe	66	41	73	32	54	-4	2.25	-1.23	203	+85
Versailles	Morgan	69	44	76	38	57	-2	2.75	-1.51	251	+78
Green Ridge	Pettis	68	44	74	37	56	-1	3.30	-0.66	213	+95
Lamar	Barton	66	46	74	41	56	-3	3.20	-1.24	237	+63
Cook Station	Crawford	68	40	74	33	54	-5	1.84	-2.47	242	+65
Round Spring	Shannon	69	40	79	35	55	-4	2.95	-1.43	239	+78
Mountain Grove	Wright	64	43	73	39	54	-4	2.41	-2.03	207	+72
Delta	Cape Girardeau	67	45	79	41	56	-5	3.33	-1.25	268	+46
Cardwell	Dunklin	67	49	80	44	58	-5	4.96	+0.36	331	+50
Clarkton	Dunklin	67	48	80	44	57	-6	5.67	+1.32	306	+38
Glennonville	Dunklin	67	48	80	44	58	-5	5.99	+1.75	316	+44
Charleston	Mississippi	68	48	78	44	57	-4	5.33	+0.87	315	+92
Portageville-Delta Center	Pemiscot	68	49	79	45	58	-5	5.64	+1.21	337	+60
Portageville-Lee Farm	Pemiscot	68	49	79	46	58	-5	5.36	+0.92	342	+69
Steele	Pemiscot	67	47	80	43	57	-6	5.58	+1.00	325	+49

‡Growing degree days are calculated by subtracting a 50 degree (Fahrenheit) base temperature from the average daily temperature. Thus, if the average temperature for the day is 75 degrees, then 25 growing degree days will have been accumulated.

*Weather Data provided by Pat Guinan  
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