

<b>L 79-1002 Sugarcane</b> (Complex hybrid of <i>Saccharum officinarum</i> , <i>S. spontaneum</i> , <i>S. barberi</i> , <i>S. sinense</i> )		<b>Answer</b>	<b>Score</b>
1.01	Is the species highly domesticated?	n	0
1.02	Has the species become naturalised where grown?		
1.03	Does the species have weedy races?		
2.01	Species suited to FL climates (USDA hardiness zones; 0-low, 1-intermediate, 2-high)	2	
2.02	Quality of climate match data (0-low; 1-intermediate; 2-high)	2	
2.03	Broad climate suitability (environmental versatility)	n	0
2.04	Native or naturalized in regions with an average of 11-60 inches of annual precipitation		
2.05	Does the species have a history of repeated introductions outside its natural range?		
3.01	Naturalized beyond native range		
3.02	Garden/amenity/disturbance weed		
3.03	Weed of agriculture		
3.04	Environmental weed		
3.05	Congeneric weed	y	2
4.01	Produces spines, thorns or burrs	n	0
4.02	Allelopathic	n	0
4.03	Parasitic	n	0
4.04	Unpalatable to grazing animals	n	-1
4.05	Toxic to animals	n	0
4.06	Host for recognised pests and pathogens	n	0
4.07	Causes allergies or is otherwise toxic to humans	n	0
4.08	Creates a fire hazard in natural ecosystems	n	0
4.09	Is a shade tolerant plant at some stage of its life cycle	n	0
4.10	Grows on infertile soils (oligotrophic, limerock, or excessively draining soils). North & Central Zones: infertile soils; South Zone: shallow limerock or Histisols.	y	1
4.11	Climbing or smothering growth habit	n	0
4.12	Forms dense thickets	n	0
5.01	Aquatic	n	0
5.02	Grass	y	1
5.03	Nitrogen fixing woody plant	n	0
5.04	Geophyte	n	0
6.01	Evidence of substantial reproductive failure in native habitat		
6.02	Produces viable seed	n	-1
6.03	Hybridizes naturally	?	
6.04	Self-compatible or apomictic	n	-1
6.05	Requires specialist pollinators	n	0
6.06	Reproduction by vegetative propagation	y	1
6.07	Minimum generative time (years)	1	1
7.01	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y	1
7.02	Propagules dispersed intentionally by people	y	1
7.03	Propagules likely to disperse as a produce contaminant	n	-1
7.04	Propagules adapted to wind dispersal	n	-1
7.05	Propagules water dispersed	n	-1
7.06	Propagules bird dispersed	n	-1
7.07	Propagules dispersed by other animals (externally)	n	-1
7.08	Propagules dispersed by other animals (internally)	n	-1
8.01	Prolific seed production	n	-1

8.02	Evidence that a persistent propagule bank is formed (>1 yr)	n	-1
8.03	Well controlled by herbicides	y	-1
8.04	Tolerates, or benefits from, mutilation or cultivation	y	1
8.05	Effective natural enemies present in U.S.		
	<b>Total Score</b>		<b>-3</b>
	<b>Implemented Pacific Second Screening</b>		<b>No</b>
	<b>Risk Assessment Results</b>		<b>Accept</b>

	Reference	Source data
1.01	1. Bischoff, K.P. et al. 2008. Registration of 'L 79-1002' Sugarcane. <i>Journal of Plant Registrations</i> , 2(3): 211-217.	1. Heavily cultivated world-wide but no evidence for selection of reduced weediness, rather for disease resistance, ratooning ability, and general hardiness in commercial breeding efforts.
1.02		
1.03		
2.01	1. PERAL NAPPFAST Global Plant Hardiness ( <a href="http://www.nappfast.org/Plant_hardiness/NAPPFAST%20Global%20zones/10-year%20climate/PLANT_HARDINESS_10YR%20lgnd.tif">http://www.nappfast.org/Plant_hardiness/NAPPFAST%20Global%20zones/10-year%20climate/PLANT_HARDINESS_10YR%20lgnd.tif</a> ) & The National Arbor Day Foundation. 2006 Hardiness Zone Map ( <a href="http://www.arborday.org/media/zones.cfm">http://www.arborday.org/media/zones.cfm</a> [Accessed: 9/8/2010]).	<b>No computer analysis was performed.</b> 1. Test trials conducted in the traditional sugarcane growing area in south Louisiana (NAPPFAST hardiness zone 9; Arbor Day hardiness zone 9 [central and north Florida]) and in the colder, non-sugarcane growing regions of north Louisiana (NAPPFAST hardiness zone 8; Arbor Day hardiness zone 8 [parts of north Florida]).
2.02		<b>No computer analysis was performed.</b> Refer to 2.01 Source Data.
2.03	1. Köppen-Geiger climate map ( <a href="http://www.hydrol-earth-syst-sci.net/11/1633/2007/hess-11-1633-2007.pdf">http://www.hydrol-earth-syst-sci.net/11/1633/2007/hess-11-1633-2007.pdf</a> ).	1. Distribution in the tested sites of Louisiana occurs in 1 climatic group.
2.04		Cannot be determined at this time due to this being a recently developed hybrid with no historical data.
2.05	1.a-b. Bischoff, K.P. et al. 2008. Registration of 'L 79-1002' Sugarcane. <i>Journal of Plant Registrations</i> , 2(3): 211-217. 2. Knoll, J.E. "Field performance of potential biomass feedstocks under no inputs in south Georgia." <i>32<sup>nd</sup> Symposium of Biotechnology for Fuels and Chemicals</i> . Society for Industrial Microbiology. Hilton Clearwater Beach. Clearwater Beach, FL. 19 April 2010. 3. Prine, G. & E.C. French. 1999. New forage, grain, and energy crops for Humid Lower South, US. p. 60–65. <i>In: J. Janick (ed.), Perspectives on new crops and new uses</i> . ASHS Press, Alexandria, VA.	Cannot be determined at this time due to this being a recently developed hybrid with no historical data. 1.a. Cultivar L 79-1002 was released on April 26, 2007 by the Louisiana State University Agricultural Center in cooperation with the USDA-ARS and the American Sugarcane League, Inc. 1.b. The Louisiana Agricultural Experiment Station will make available small quantities of seed for research purposes that may be obtained from the corresponding author for at least 5 years from the date of this publication. 2. A study was initiated in fall 2005 at Tifton, GA, to assess the performance of perennial grasses under rainfed conditions with no fertilizer inputs. The test consisted of four replications in a randomized complete block design, and included two energycanes ( <i>Saccharum</i> sp.) US 01-012 and L 79-1002... 3. Average annual biomass yield of elephantgrass (eg), energycane (ec [L79-1002]), sugarcane (sc), was determined at five locations in southeastern United States (Florida - Ona, Gainesville, Quincy, Jay; Alabama - Auburn) over three growing seasons (Prine et al. 1991, 1997).
3.01		Cannot be determined at this time due to this being a recently developed hybrid with no historical data.
3.02		Cannot be determined at this time due to this being a recently developed hybrid with no historical data.
3.03		Cannot be determined at this time due to this being a recently developed hybrid with no historical data.
3.04		Cannot be determined at this time due to this being a recently developed hybrid with no historical data.
3.05	1. Tew, T.L. & R.M. Cobill. 2008. Genetic Improvement of Sugarcane ( <i>Saccharum</i> spp.) as Energy Crop. pp. 249-272. <i>In: W. Vermerris, editor. Genetic Improvement of Bioenergy Crops</i> . Springer Science+Business Media, New York. 449 p.	1. Because of its ( <i>Saccharum spontaneum</i> ) aggressive rhizomatous habit and its ability to propagate via seed dispersal, it is regarded as a noxious weed in several nations, including the U.S.A.
4.01		
4.02		
4.03		

4.04	1. Bischoff, K.P. et al. 2008. Registration of 'L 79-1002' Sugarcane. <i>Journal of Plant Registrations</i> , 2(3): 211-217.	1. It was released for an emerging biofuel industry because of its high fiber content and biomass (cane yield) potential.
4.05		
4.06	1. Bischoff, K.P. et al. 2008. Registration of 'L 79-1002' Sugarcane. <i>Journal of Plant Registrations</i> , 2(3): 211-217. 2. Comstock, J. Phone conversation. September 8, 2010.	1. Susceptible to Ratoon stunting disease and Sugarcane borer; moderately susceptible to smut; resistant to Sugarcane mosaic and Sorghum mosaic viruses. 2. Susceptible to sugarcane smut; probably too susceptible for commercial production. 3. Nothing out of the ordinary.
4.07		
4.08		
4.09		L 79-1002 is a C <sub>4</sub> plant and generally C <sub>4</sub> plants do not perform well in weak light conditions.
4.10	1.a-b. Richard, Jr., E. Sugar/Energy Canes as Biofuels Feedstocks. USDA-ARS Sugarcane Research Laboratory, Houma, LA. March 15, 2010. Online PowerPoint. <a href="http://www.worldbiofuelsmarkets.com/downloads/">http://www.worldbiofuelsmarkets.com/downloads/</a> . Accessed: 9/8/2010.	1. Low nutrient requirements. 1.b. Can be grown on less productive soils
4.11		Family <i>Poaceae</i>
4.12		
5.01		
5.02		Family <i>Poaceae</i>
5.03		Family <i>Poaceae</i>
5.04		Family <i>Poaceae</i>
6.01		Cannot be determined at this time due to this being a recently developed hybrid with no historical data.
6.02	1.a-c. Bischoff, K.P. et al. 2008. Registration of 'L 79-1002' Sugarcane. <i>Journal of Plant Registrations</i> , 2(3): 211-217. 2. Gravois, K.A. Personal phone interview. 29 September 2010.	1.a. Sugarcane rarely flowers in Louisiana's temperate climate because of cool fall temperatures, unlike many <i>S. spontaneum</i> clones, which flower readily in Louisiana before cool temperatures set in. To induce sugarcane to flower in Louisiana, breeding clones are subjected to artificial photoperiod treatments (Bischoff & Gravois 2003). Photoperiod treatments in the LSU AgCenter sugarcane breeding program begin in early June by subjecting plants to a constant photoperiod of 12.5 hours for 35d. Day-lengths are decreased by 1 minute per day until 10 September. To accomplish this, breeding clones are propagated in 38-L buckets and placed on railcars that can be pushed in and out of light-tight chambers. 1.b. The cross of L 79-1002 was made in 1974; the female parent was CP 52-68 and the male parent was Tainan (from <i>S. spontaneum</i> - phone conversation w/ Jack Comstock). The seedling of L 79-1002 was germinated from a true seed in January 1975 and transplanted to the field in April of the same year. 1.c. The Louisiana Agricultural Experiment Station will make available small quantities of seed for research purposes that may be obtained from the corresponding author for at least 5 years from the date of this publication. 2. Has been cultivated for about 20-30 years and has never seeded or established a seed bank.

6.03	1. Gravois, K.A. Personal phone interview. 29 September 2010.	1. L 79-1002 probably wouldn't hybridize naturally. It is a genetic mess and can cross, but not naturally. I don't want to say that it's impossible, but it is highly unlikely. L 79-1002 does flower freely in November, whereas common sugarcane rarely flowers, but when it does flower it flowers in mid-December.
6.04	1. Bischoff, K.P. et al. 2008. Registration of 'L 79-1002' Sugarcane. <i>Journal of Plant Registrations</i> , 2(3): 211-217.	1. Cultivated sugarcane is predominately outcrossing, highly heterozygous, and maintained by vegetative propagation.
6.05		
6.06	1. Bischoff, K.P. et al. 2008. Registration of 'L 79-1002' Sugarcane. <i>Journal of Plant Registrations</i> , 2(3): 211-217. 2. Richard, Jr., E. Sugar/Energy Canes as Biofuels Feedstocks. USDA-ARS Sugarcane Research Laboratory, Houma, LA. March 15, 2010. Online PowerPoint. <a href="http://www.worldbiofuelsmarkets.com/downloads/">http://www.worldbiofuelsmarkets.com/downloads/</a> . Accessed: 9/8/2010. 3. Gravois, K.A. Personal phone interview. 29 September 2010.	1. Cultivated sugarcane is predominately outcrossing, highly heterozygous, and maintained by vegetative propagation. 2. Sugar/Energy Cane as a dedicated biofeedstock - vegetatively propagated. 3. Vegetatively propagated; a stalk could fall on the ground and would germinate within 2-3 weeks.
6.07	1. Gravois, K.A. Personal phone interview. 29 September 2010.	1. A stalk could fall on the ground and would germinate within 2-3 weeks.
7.01	1. Gravois, K.A. Personal phone interview. 29 September 2010.	1. A stalk could fall on the ground and would germinate within 2-3 weeks.
7.02	1. Bischoff, K.P. et al. 2008. Registration of 'L 79-1002' Sugarcane. <i>Journal of Plant Registrations</i> , 2(3): 211-217.	1.a. Cultivar L 79-1002 was released on April 26, 2007 by the Louisiana State University Agricultural Center in cooperation with the USDA-ARS and the American Sugarcane League, Inc. for an emerging biofuel industry because of its high fiber content, biomass (cane yield) potential, excellent ratooning ability, and vigorous growth habit.1.b. The Louisiana Agricultural Experiment Station will make available small quantities of seed for research purposes that may be obtained from the corresponding author for at least 5 years from the date of this publication.
7.03		
7.04		
7.05		
7.06		
7.07		
7.08		
8.01	1. Gravois, K.A. Personal phone interview. 29 September 2010.	1. Has been cultivated for about 20-30 years and has never seeded or established a seed bank.
8.02	1. Gravois, K.A. Personal phone interview. 29 September 2010.	1. Has been cultivated for about 20-30 years and has never seeded or established a seed bank.
8.03	1. Gravois, K.A. Personal phone interview. 29 September 2010.	1. Volunteers can be controlled with disking and glyphosate.
8.04	1. Gravois, K.A. Personal phone interview. 29 September 2010.	1. A stalk could fall on the ground and would germinate within 2-3 weeks.
8.05	1. Bischoff, K.P. et al. 2008. Registration of 'L 79-1002' Sugarcane. <i>Journal of Plant Registrations</i> , 2(3): 211-217. 2. Comstock, J. Phone conversation. 8 September 2010.	1. Susceptible to Ratoon stunting disease and Sugarcane borer; moderately susceptible to smut; resistant to Sugarcane mosaic and Sorghum mosaic viruses. 2. Susceptible to sugarcane smut; probably too susceptible for commercial production.