

Family: *Poaceae*

Taxon: *Setaria italica*

Synonym: *Chaetochloa italica* (L.) Scribn.
Chaetochloa viridis (L.) Scribn.
Chamaeraphis viridis (L.) Millsp.
Panicum italicum L.
Setaria viridis (L.) P. Beauv.

Common Name foxtail bristlegrass
foxtail millet

Questionnaire :	current 20090513	Assessor:	Chuck Chimera	Designation: H(HPWRA)
Status:	Assessor Approved	Data Entry Person:	Chuck Chimera	WRA Score 9
101	Is the species highly domesticated?		y=-3, n=0	y
102	Has the species become naturalized where grown?		y=1, n=-1	y
103	Does the species have weedy races?		y=1, n=-1	y
201	Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"		(0-low; 1-intermediate; 2-high) (See Appendix 2)	High
202	Quality of climate match data		(0-low; 1-intermediate; 2-high) (See Appendix 2)	High
203	Broad climate suitability (environmental versatility)		y=1, n=0	y
204	Native or naturalized in regions with tropical or subtropical climates		y=1, n=0	y
205	Does the species have a history of repeated introductions outside its natural range?		y=-2, ?=-1, n=0	y
301	Naturalized beyond native range		y = 1*multiplier (see Appendix 2), n= question 205	y
302	Garden/amenity/disturbance weed		n=0, y = 1*multiplier (see Appendix 2)	
303	Agricultural/forestry/horticultural weed		n=0, y = 2*multiplier (see Appendix 2)	
304	Environmental weed		n=0, y = 2*multiplier (see Appendix 2)	
305	Congeneric weed		n=0, y = 1*multiplier (see Appendix 2)	y
401	Produces spines, thorns or burrs		y=1, n=0	n
402	Allelopathic		y=1, n=0	n
403	Parasitic		y=1, n=0	n
404	Unpalatable to grazing animals		y=1, n=-1	n
405	Toxic to animals		y=1, n=0	
406	Host for recognized pests and pathogens		y=1, n=0	y
407	Causes allergies or is otherwise toxic to humans		y=1, n=0	n
408	Creates a fire hazard in natural ecosystems		y=1, n=0	n
409	Is a shade tolerant plant at some stage of its life cycle		y=1, n=0	n

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y=1, n=0	y
411	Climbing or smothering growth habit	y=1, n=0	n
412	Forms dense thickets	y=1, n=0	n
501	Aquatic	y=5, n=0	n
502	Grass	y=1, n=0	y
503	Nitrogen fixing woody plant	y=1, n=0	n
504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	y=1, n=0	n
601	Evidence of substantial reproductive failure in native habitat	y=1, n=0	n
602	Produces viable seed	y=1, n=-1	y
603	Hybridizes naturally	y=1, n=-1	y
604	Self-compatible or apomictic	y=1, n=-1	y
605	Requires specialist pollinators	y=-1, n=0	n
606	Reproduction by vegetative fragmentation	y=1, n=-1	n
607	Minimum generative time (years)	1 year = 1, 2 or 3 years = 0, 4+ years = -1	1
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y=1, n=-1	y
702	Propagules dispersed intentionally by people	y=1, n=-1	y
703	Propagules likely to disperse as a produce contaminant	y=1, n=-1	n
704	Propagules adapted to wind dispersal	y=1, n=-1	n
705	Propagules water dispersed	y=1, n=-1	n
706	Propagules bird dispersed	y=1, n=-1	
707	Propagules dispersed by other animals (externally)	y=1, n=-1	n
708	Propagules survive passage through the gut	y=1, n=-1	y
801	Prolific seed production (>1000/m2)	y=1, n=-1	y
802	Evidence that a persistent propagule bank is formed (>1 yr)	y=1, n=-1	y
803	Well controlled by herbicides	y=-1, n=1	y
804	Tolerates, or benefits from, mutilation, cultivation, or fire	y=1, n=-1	n
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	y=-1, n=1	

Designation: H(HPWRA)

WRA Score 9

Supporting Data:

101	1995. Wang, R.-I./Wendel, J.F./Dekker, J.H.. Weedy Adaptation in <i>Setaria</i> spp. I. Isozyme Analysis of Genetic Diversity and Population Genetic Structure in <i>Setaria viridis</i> . American Journal of Botany. 82(3): 308-317.	" <i>Setaria viridis</i> is an important self pollinating, cosmopolitan weed of temperate regions worldwide. Allozyme markers were used to investigate genetic diversity and structure in 168 accessions (including four <i>S. italica</i>) collected mainly from North America and Eurasia. Genetic diversity in green foxtail, and its population genetic structure, provided important clues about this weed's evolutionary history. Genetic diversity was low, with marked population differentiation: the percentage of polymorphic loci was 25% (0.95 criterion); mean number of alleles per locus was 1.86; mean panmictic heterozygosity was 0.07; and the coefficient of population genetic differentiation was 0.65. A common genotype occurred in 25 accessions distributed in six countries from both the Old World and New World, in a wide variety of ecological situations. Relatively little genetic divergence occurred between Eurasia and North America, with Nei's unbiased genetic identity between the two regions equaling 1.0. Populations from these two continents also had equivalent genetic diversity. Within North America, regional differentiation was indicated by northern and southern groups separated at 43.5° N latitude. No geographic pattern in genetic diversity was found within Eurasia. The size of the geographic range from which populations were sampled was not an accurate indicator of the extent of genetic diversity found among populations from that region. These results suggest that present patterning among green foxtail populations in North America is the consequence of multiple introductions into the New World followed by local adaptation and regional differentiation. Finally, <i>S. italica</i> and several green foxtail varieties did not differ isozymatically from typical forms of green foxtail. This supports the view that <i>S. italica</i> and <i>S. viridis</i> are conspecific, that the former (foxtail millet) is a domesticated form of the latter, and also questions the taxonomic validity of formally recognizing morphological varieties within green foxtail."
101	2005. Darmency, H.. Incestuous relations of foxtail millet (<i>Setaria italica</i>) with its parents and cousins. Pp 81-96 in Crop ferality and volunteerism. CRC Press, Boca Raton, FL	Foxtail millet is one of the most ancient crops in the world...It is generally assumed that it originated from <i>S. viridis</i> through domestication.
101	2010. Food and Agriculture Organization of the United Nations. Grassland Species Profiles - <i>Setaria italica</i> . FAO, http://www.fao.org/ag/AGP/AGPC/doc/gbase/data/pf000314.htm	Regarded as a native of China, it is one of the world's oldest cultivated crops. Cultivated extensively in the USSR, China and India but also widely elsewhere...One of the oldest cultivated crops. It was used in India, China and Egypt before there were written records. Millet is still used in eastern Europe for porridge and bread and for making alcoholic beverages. About 85 percent is used as foodgrain for humans and 6 percent for poultry. In the United States it is grown chiefly for hay.
101	2010. Wang, T./Shi, Y./Li, Y./Song, Y./Darmency, H.. Population growth rate of <i>Setaria viridis</i> in the absence of herbicide: resulting yield loss in foxtail millet <i>Setaria italica</i> . Weed Research. 50: 228-234.	" <i>Setaria italica</i> (L.) Beauv., the foxtail millet, alongside rice, is the most ancient domesticated crop of China (Gu, 1982; Nasu et al., 2007), but its production area has decreased dramatically in recent years."
102	2003. Darbyshire, S.J.. Inventory of Canadian Agricultural Weeds. Agriculture and Agri-Food Canada, Research Branch,, Ottawa, Canada	Annual; cultivated as a forage and cereal grass in warm temperate regions, rarely naturalized in disturbed areas; uncommon.
102	2005. Darmency, H.. Incestuous relations of foxtail millet (<i>Setaria italica</i>) with its parents and cousins. Pp 81-96 in Crop ferality and volunteerism. CRC Press, Boca Raton, FL	"In this chapter, <i>S. italica</i> refers to the crop form, never to wild or weedy forms. Indeed, there is no published report indicating the presence of <i>S. italica</i> as a wild or weedy species. Floras often indicate that it can be found as naturalized, but there is a strong possibility of misidentification and use of synonymous binomials also covering giant forms of <i>S. viridis</i> ."
102	2010. Grasses of Iowa. Weedy and Invasive Grasses Found in Iowa - <i>Setaria italica</i> . Iowa State University, http://www.eeob.iastate.edu/research/iowagrasses/speciespages/SetarItali/SetarItali.html	foxtail millet, Hungarian millet (<i>Setaria italica</i>) escaped cultivation
103	2006. Brink, M./Belay, G.. Plant Resources of Tropical Africa 1. Cereals and pulses. PROTA Foundation,	" <i>Setaria italica</i> is a 'crop-weed complex', i.e. with wild and cultivated types."
103	2009. Tennessee Exotic Pest Plant Council. Invasive Exotic Pest Plants in Tennessee. TN-EPPC, http://www.tneppc.org/invasive_plants	<i>Setaria italica</i> listed as a "Significant Threat: possess invasive characteristics; not presently considered to spread as easily into native plant communities as Severe Threat"

103	2010. Wang, T./Shi, Y./Li, Y./Song, Y./Darmency, H.. Population growth rate of <i>Setaria viridis</i> in the absence of herbicide: resulting yield loss in foxtail millet <i>Setaria italica</i> . <i>Weed Research</i> . 50: 228–234.	The purported ancestor of foxtail millet, <i>Setaria viridis</i> (L.) Beauv., the green foxtail, is the most closely related species to foxtail millet (Benabdelmouna et al., 2001). It is a widespread weed worldwide, causing important yield losses in many crops (Dekker, 2003).
201	2006. Brink, M./Belay, G.. <i>Plant Resources of Tropical Africa 1. Cereals and pulses</i> . PROTA Foundation,	"Foxtail millet is primarily a crop of subtropical and temperate regions..."
201	2010. <i>Plants for a Future Database</i> . <i>Setaria italica</i> . PFAF, http://www.pfaf.org/user/Plant.aspx?LatinName=Setaria+italica	Often cultivated for its edible seed in tropical and warm temperate areas, there are many named varieties[183].
201	2010. USDA, ARS, National Genetic Resources Program. <i>Setaria italica</i> - Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?33	Native:* AFRICA. Northern Africa: Algeria; Egypt; Libya; Morocco; Tunisia. * ASIA-TEMPERATE Western Asia: Afghanistan; Cyprus; Iran; Iraq; Lebanon; Turkey Caucasus: Armenia; Azerbaijan; Georgia; Russian Federation - Ciscaucasia, Dagestan Siberia: Russian Federation - Eastern Siberia, Western Siberia. Middle Asia: Kazakhstan; Kyrgyzstan; Tajikistan; Turkmenistan; Uzbekistan. Russian Far East: Russian Federation - Far East. Mongolia: Mongolia China: China. Eastern Asia: Japan; Taiwan. * ASIA-TROPICAL. Indian Subcontinent: India [n.e.]; Nepal; Pakistan. * EUROPE. Northern Europe: United Kingdom. Middle Europe: Austria; Belgium; Czechoslovakia; Germany; Hungary; Netherlands; Poland; Switzerland. East Europe: Belarus; Estonia; Latvia; Lithuania; Russian Federation - European part; Ukraine [incl. Krym]. Southeastern Europe: Albania; Bulgaria; Former Yugoslavia; Greece [incl. Crete]; Italy [incl. Sardinia, Sicily]; Romania. Southwestern Europe: France [incl. Corsica]; Portugal; Spain [incl. Balears] [broad climatic range]
203	2006. Brink, M./Belay, G.. <i>Plant Resources of Tropical Africa 1. Cereals and pulses</i> . PROTA Foundation,	"in the tropics, it is grown up to 2000(-3300) m altitude." [broad elevational range demonstrates environmental versatility]
203	2010. Food and Agriculture Organization of the United Nations. <i>Grassland Species Profiles - Setaria italica</i> . FAO, http://www.fao.org/ag/AGP/AGPC/doc/gbase/data/pf000314.htm	Altitude range: Sea-level to 2 000 m. Rainfall requirements: It is generally grown in the 500-700 mm rainfall areas with a summer maximum. Millets require less rainfall than sorghum and maize but success depends on strategic falls of rain. Drought tolerance: It is fairly tolerant of drought; it can escape some droughts because of early maturity. [elevation range >1000 m demonstrates environmental versatility]..Main attributes: Its quick growth, which enables it to be grown as a short-term catch crop. Its adaptability to a wide range of elevations, soils and temperatures.
204	2010. USDA, ARS, National Genetic Resources Program. <i>Setaria italica</i> - Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?33	ASIA-TROPICAL Indian Subcontinent: India
205	2006. Quattrocchi, U.. <i>CRC World Dictionary of Grasses: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology</i> . Volume I. CRC Press, Boca Raton, FL	Origin unknown...widely cultivated, grown as a crop...
301	2000. Edgar, E./Connor, H.. <i>Flora of New Zealand</i> , vol. V: Gramineae. Manaaki Whenua Press, Lincoln, New Zealand	N.; S.: scattered. Stony waste land, gardens - from discarded cage-bird seed and seed spillages [New Zealand]
301	2002. Mohlenbrock, R.H.. <i>Vascular flora of Illinois</i> . SIU Press, Carbondale, IL	"adventive in disturbed soil; scattered in Illinois"
301	2004. Wu, S.-H./Hsieh, C.-F./Rejmánek, M.. <i>Catalogue of the Naturalized Flora of Taiwan</i> . <i>Taiwania</i> . 49(1): 16-31.	Table 2. List of possibly naturalized species. [For Taiwan. Includes <i>Setaria italica</i>]
301	2010. PlantNET. <i>New South Wales Flora Online - Setaria italica</i> (L.) P.Beauv.. Royal Botanic Gardens & Domain Trust., Sydney http://plantnet.rbgsyd.nsw.gov.au/cgi-bin/NSWfl.pl?page=nswfl&lvl=sp&name=Setaria~italica	Cultivated and occasionally naturalized throughout the State [New South Wales, Australia]

302	2008. Adair, R./Cheal, D./White, M.. Advisory list of environmental weeds in coastal plains and heathy forest bioregions of Victoria. The State of Victoria Department of Sustainability and Environment, Melbourne http://www.dse.vic.gov.au/	Setaria italica ranked as a lower risk weed of Victoria, Australia [with no indication of impacts or recommendations for control]
303	2007. Randall, R.P.. Global Compendium of Weeds - Setaria italica [Online Database]. Hawaii Ecosystems at Risk Project (HEAR), http://www.hear.org/gcw/species/setaria_italica/	Listed as an agricultural weed [but evidence of impacts limited or lacking, or often refer to S. viridis]
304	2007. Randall, R.P.. Global Compendium of Weeds - Setaria italica [Online Database]. Hawaii Ecosystems at Risk Project (HEAR), http://www.hear.org/gcw/species/setaria_italica/	Listed as an environmental weed [but unable to find solid evidence of ecological impacts in native ecosystems]
305	1992. Stone, C.P./Cuddihy, L.W./Tunison, J.T.. Responses of Hawaiian Ecosystems to Removal of Feral Pigs and Goats. Pp. 666-704 in Stone et al. (eds.). Alien Plant Invasions in Native Ecosystems of Hawai'i: Management and Research. University of Hawaii Co	"Population expansion of these and probably other species subsequent to feral animal removal is likely to occur in some areas without aggressive alien plant management programs. Yellow Himalayan raspberry (Rubus ellipticus), Hilo grass (Paspalum conjugatum), meaaow ricegrass, strawberry guava, kahili ginger, firetree, banana poka (Passiflora mollissima), and palm grass (Setaria palmifolia) are the rain forest invaders of most concern in the Park, once feral pigs are gone." [Setaria palmifolia invades rain forests]
305	1992. Tunison, J.T./Stone, C.P.. Special Ecological Areas: An Approach to Alien Plant Control in Hawaii Volcanoes National Park. Pp. 781-798 in Stone et al. (eds.). Alien Plant Invasions in Native Ecosystems of Hawai'i: Management and Research. University	"Eleven alien plant species were targeted for control in Special Ecological Areas: firetree, kahili ginger, strawberry guava, banana poka, Jerusalem cherry (Solanum pseudocapsicum), palm grass (Setaria palmifolia), silk oak, olive (Olea europaea subsp. africana), fountain grass (Pennisetum setaceum), yellow Himalayan raspberry (Rubus ellipticus), and nasturtium (Tropaeolum majus)."
401	2006. Quattrocchi, U.. CRC World Dictionary of Grasses: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. Volume I. CRC Press, Boca Raton, FL	No spines, thorns or burrs.
402	2010. Food and Agriculture Organization of the United Nations. Grassland Species Profiles - Setaria italica. FAO, http://www.fao.org/ag/AGP/AGPC/doc/gbase/data/pf000314.htm	Compatibility with other grasses and legumes: It is usually sown as a pure crop but in India may be interplanted with finger millet (Eleusine coracana) or cotton (Gossypium hirsutum). [no evidence of allelopathy]
403	2006. Quattrocchi, U.. CRC World Dictionary of Grasses: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. Volume I. CRC Press, Boca Raton, FL	Not parasitic
404	2006. Quattrocchi, U.. CRC World Dictionary of Grasses: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. Volume I. CRC Press, Boca Raton, FL	"the grain used for feeding cage-birds and poultry, cultivated for the grain and forage for cattle, straw a good fodder and used for thatching..."
404	2010. Food and Agriculture Organization of the United Nations. Grassland Species Profiles - Setaria italica. FAO, http://www.fao.org/ag/AGP/AGPC/doc/gbase/data/pf000314.htm	It is not often grazed, but can be used for this purpose with one or two grazings a season...Palatability: It is extremely palatable.
405	2010. Food and Agriculture Organization of the United Nations. Grassland Species Profiles - Setaria italica. FAO, http://www.fao.org/ag/AGP/AGPC/doc/gbase/data/pf000314.htm	Toxicity: Millet hay may be toxic to horses due to a glucoside setarian (Maim & Rachie, 1971).
406	2010. Food and Agriculture Organization of the United Nations. Grassland Species Profiles - Setaria italica. FAO, http://www.fao.org/ag/AGP/AGPC/doc/gbase/data/pf000314.htm	Diseases: The crop is subject to leaf and head blast, caused by Pyricularia grisea. In India it is attacked by a smut, Ustilago crameri, and green ear caused by Sclerospora graminicola.
407	2008. ImmunoCAP InVITroSight. ImmunoCAP Allergens - Setaria italica. http://www.immunocapinvitrosight.com/dia_templates/ImmunoCAP/Allergen___28313.aspx#	No allergens from this plant have yet been characterized.
408	2010. WRA Specialist. Personal Communication.	No evidence that grass creates a fire hazard in natural ecosystems

409	2010. Plants for a Future Database. <i>Setaria italica</i> . PFAF, http://www.pfaf.org/user/Plant.aspx?LatinName=Setaria+italica	.It cannot grow in the shade...Succeeds in any well-drained soil in full sun [162]. Established plants are very drought resistant [57, 61].
410	2006. Brink, M./Belay, G.. Plant Resources of Tropical Africa 1. Cereals and pulses. PROTA Foundation,	"Foxtail millet prefers fertile soils with a pH of about 6.5, but can be grown successfully on a wide range of soils, from light sands to heavy clays, and even yields reasonably well on poor or marginal soils."
410	2010. Food and Agriculture Organization of the United Nations. Grassland Species Profiles - <i>Setaria italica</i> . FAO, http://www.fao.org/ag/AGP/AGPC/doc/gbase/data/pf000314.htm	Soil requirements: Preferably sandy loams to clay loams. Millets are difficult to germinate on heavy clay soils.
411	2000. Edgar, E./Connor, H.. Flora of New Zealand, vol. V: Gramineae. Manaaki Whenua Press, Lincoln, New Zealand	Rather stout, tufted, wide-leaved annuals. [not climbing or smothering]
412	2010. WRA Specialist. Personal Communication.	No evidence that <i>Setaria italica</i> form dense thickets [but related <i>S. viridis</i> may]
501	2006. Quattrocchi, U.. CRC World Dictionary of Grasses: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. Volume I. CRC Press, Boca Raton, FL	Terrestrial
502	2006. Quattrocchi, U.. CRC World Dictionary of Grasses: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. Volume I. CRC Press, Boca Raton, FL	Poaceae
503	2006. Quattrocchi, U.. CRC World Dictionary of Grasses: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. Volume I. CRC Press, Boca Raton, FL	Poaceae [not nitrogen-fixing]
504	2006. Quattrocchi, U.. CRC World Dictionary of Grasses: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. Volume I. CRC Press, Boca Raton, FL	Not a geophyte
601	2005. Darmency, H.. Incestuous relations of foxtail millet (<i>Setaria italica</i>) with its parents and cousins. Pp 81-96 in Crop fertility and volunteerism. CRC Press, Boca Raton, FL	No evidence of substantial reproductive failure in native habitat
602	2006. Brink, M./Belay, G.. Plant Resources of Tropical Africa 1. Cereals and pulses. PROTA Foundation,	"Foxtail millet is propagated by seed."
602	2010. Plants for a Future Database. <i>Setaria italica</i> . PFAF, http://www.pfaf.org/user/Plant.aspx?LatinName=Setaria+italica	<i>Setaria</i> millets seed heavily.
603	2005. Darmency, H.. Incestuous relations of foxtail millet (<i>Setaria italica</i>) with its parents and cousins. Pp 81-96 in Crop fertility and volunteerism. CRC Press, Boca Raton, FL	Frequent crosses are expected because there are few hybridization barriers between <i>S. italica</i> and <i>S. viridis</i> . In experimental plots, as much as 3% outcrossing was recorded in experiments where the two species were grown together."
604	2005. Darmency, H.. Incestuous relations of foxtail millet (<i>Setaria italica</i>) with its parents and cousins. Pp 81-96 in Crop fertility and volunteerism. CRC Press, Boca Raton, FL	<i>Setaria</i> species are usually considered as highly autogamous (self-fertile).
604	2006. Brink, M./Belay, G.. Plant Resources of Tropical Africa 1. Cereals and pulses. PROTA Foundation,	"Foxtail millet is largely self-pollinating with an average outcrossing rate of 4%; natural hybrids between wild and cultivated types occur."
605	2010. Plants for a Future Database. <i>Setaria italica</i> . PFAF, http://www.pfaf.org/user/Plant.aspx?LatinName=Setaria+italica	The flowers are hermaphrodite (have both male and female organs) and are pollinated by wind.
607	2006. Quattrocchi, U.. CRC World Dictionary of Grasses: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. Volume I. CRC Press, Boca Raton, FL	Annual, stout, leafy, fast growing [annual grasses complete life cycle in one growing season]

607	2010. Food and Agriculture Organization of the United Nations. Grassland Species Profiles - <i>Setaria italica</i> . FAO, http://www.fao.org/ag/AGP/AGPC/doc/gbase/data/pf000314.htm	Vigour of growth and growth rhythm: It grows quickly and flowers in about 56-62 days.
701	2000. Edgar, E./Connor, H.. Flora of New Zealand, vol. V: Gramineae. Manaaki Whenua Press, Lincoln, New Zealand	N.; S.: scattered. Stony waste land, gardens - from discarded cage-bird seed and seed spillages. [unintentional dispersal in New Zealand]
702	2006. Quattrocchi, U.. CRC World Dictionary of Grasses: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. Volume I. CRC Press, Boca Raton, FL	widely cultivated, grown as a crop
703	2006. Brink, M./Belay, G.. Plant Resources of Tropical Africa 1. Cereals and pulses. PROTA Foundation,	"Foxtail millet has largely lost the ability of natural seed dispersal, and shows a tendency toward uniform plant maturity." [no evidence that <i>S. italica</i> has become a produce contaminant, although the potential exists if it is grown with other crops]
704	2006. Brink, M./Belay, G.. Plant Resources of Tropical Africa 1. Cereals and pulses. PROTA Foundation,	"Foxtail millet has largely lost the ability of natural seed dispersal, and shows a tendency toward uniform plant maturity." [no evidence of wind dispersal]
705	2006. Brink, M./Belay, G.. Plant Resources of Tropical Africa 1. Cereals and pulses. PROTA Foundation,	"Foxtail millet has largely lost the ability of natural seed dispersal, and shows a tendency toward uniform plant maturity." [no evidence of water dispersal]
706	2009. Twigg, L.E./Lowe, T.J./Taylor, C.M./Calver, M.C./Martin, G.R./Stevenson, C./How, R.. The potential of seed-eating birds to spread viable seeds of weeds and other undesirable plants. <i>Austral Ecology</i> . 34: 805–820.	"Abstract The potential for seed-eating birds to spread viable seeds was investigated using captive-feeding trials to determine seed preference, passage time through the gut, and viability of passed seeds for bronzewing pigeons (<i>Phaps chalcoptera</i>), peaceful doves (<i>Geopelia striata</i>), crested pigeons (<i>Ocyphaps lophotes</i>), Senegal doves (<i>Streptopelia senegalensis</i>), zebra finches (<i>Taeniopygia guttata</i>), black ducks (<i>Anas superciliosa</i>) and wood ducks (<i>Chenonetta jubata</i>). Test seeds were bladder clover (<i>Trifolium spumosum</i>), crimson clover (<i>Trifolium incarnatum</i>), gorse (<i>Ulex europaeus</i>), canola (<i>Brassica napus</i>) and red panicum (<i>Setaria italica</i>). Their consumption was compared with that of commercial seed mixes. Although all test seeds were recognizable foods, their consumption usually decreased in the presence of other foods, except for canola, where consumption rates were maintained. Hard-seeded bladder clover was the only species where viable seeds were passed by obligate seedeaters. In contrast, viable seeds of canola and gorse were passed by seed eating omnivorous/herbivorous ducks, although the germination of passed seeds (42%) was reduced significantly compared with that of untreated control seed (67%). Field validation with wild, urban bronzewings and Australian magpies (<i>Gymnorhina tibicen</i>) offered canola and commercial seed yielded similar outcomes, with a range of viable seeds recovered from magpie soft pellets. Mean seed passage time in captive birds ranged from 0.5 to 4.3 h for all test seeds and commercial seed mixes, suggesting that these bird species may potentially disperse seed over moderate distances. Despite the low probability of individual birds spreading viable seed, the high number of birds feeding in the wild suggests that the potential for granivorous and seed-eating omnivorous birds to disperse viable seeds cannot be discounted, particularly if exozoochorous dispersal is also considered." [potential exists for dispersal by birds, but to date, only experimental evidence is provided]
707	2006. Brink, M./Belay, G.. Plant Resources of Tropical Africa 1. Cereals and pulses. PROTA Foundation,	"Foxtail millet has largely lost the ability of natural seed dispersal, and shows a tendency toward uniform plant maturity." [no evidence of external dispersal by animals, and no means of external attachment]
708	1994. Mt. Pleasant, J./Schlather, K.J.. Incidence of Weed Seed in Cow (<i>Bos sp.</i>) Manure and its Importance as a Weed Source for Cropland. <i>Weed Technology</i> . 8(2): 304-310.	Table 1. Species and quantities of apparently-viable seed found in manure samples from 20 New York dairy farms in 1989-1991. [includes <i>Setaria italica</i>]

708	2009. Twigg, L.E./Lowe, T.J./Taylor, C.M./Calver, M.C./Martin, G.R./Stevenson, C./How, R.. The potential of seed-eating birds to spread viable seeds of weeds and other undesirable plants. <i>Austral Ecology</i> . 34: 805–820.	"Abstract The potential for seed-eating birds to spread viable seeds was investigated using captive-feeding trials to determine seed preference, passage time through the gut, and viability of passed seeds for bronzewing pigeons (<i>Phaps chalcoptera</i>), peaceful doves (<i>Geopelia striata</i>), crested pigeons (<i>Ocyphaps lophotes</i>), Senegal doves (<i>Streptopelia senegalensis</i>), zebra finches (<i>Taeniopygia guttata</i>), black ducks (<i>Anas superciliosa</i>) and wood ducks (<i>Chenonetta jubata</i>). Test seeds were bladder clover (<i>Trifolium spumosum</i>), crimson clover (<i>Trifolium incarnatum</i>), gorse (<i>Ulex europaeus</i>), canola (<i>Brassica napus</i>) and red panicum (<i>Setaria italica</i>). Their consumption was compared with that of commercial seed mixes. Although all test seeds were recognizable foods, their consumption usually decreased in the presence of other foods, except for canola, where consumption rates were maintained. Hard-seeded bladder clover was the only species where viable seeds were passed by obligate seedeaters. In contrast, viable seeds of canola and gorse were passed by seed eating omnivorous/herbivorous ducks, although the germination of passed seeds (42%) was reduced significantly compared with that of untreated control seed (67%). Field validation with wild, urban bronzewings and Australian magpies (<i>Gymnorhina tibicen</i>) offered canola and commercial seed yielded similar outcomes, with a range of viable seeds recovered from magpie soft pellets. Mean seed passage time in captive birds ranged from 0.5 to 4.3 h for all test seeds and commercial seed mixes, suggesting that these bird species may potentially disperse seed over moderate distances. Despite the low probability of individual birds spreading viable seed, the high number of birds feeding in the wild suggests that the potential for granivorous and seed-eating omnivorous birds to disperse viable seeds cannot be discounted, particularly if exozoochorous dispersal is also considered."
801	1971. Hitchcock, A.S./Chase, A.. <i>Manual of the grasses of the United States, Volume 2</i> . Dover Publications, New York, NY	"In the larger forms the culms may be as much as 1 cm thick and the panicles as much as 30 cm long and 3 cm thick, yellow or purple..."
801	2010. Food and Agriculture Organization of the United Nations. <i>Grassland Species Profiles - Setaria italica</i> . FAO, http://www.fao.org/ag/AGP/AGPC/doc/gbase/data/pf000314.htm	Number of seeds per kg: 485 000 in the United States.; Seed yield: 800-900 kg/ha. [seed densities likely to be very high]
802	1990. Simpson, G.M.. <i>Seed dormancy in grasses</i> . Cambridge University Press, Cambridge, UK	"There are numerous reports of seed dormancy..."
802	2003. Dekker, J.. <i>The Foxtail (Setaria) Species-Group</i> . <i>Weed Science</i> . 51(5): 641-656.	Seed longevity in the soil. The length of time that weedy <i>Setaria</i> spp. seeds are able to survival in the soil is quite variable, but mortality decreases with depth of burial. The maximum period of survival in the soil varies by species: <i>S. glauca</i> : typical, 13 years; maximum, 30 years (Darlington; 1951; Dawson and Bruns, 1975; Kivilaan and Bandurski, 1973; Toole and Brown, 1946); <i>S. viridis</i> : maximum 10 to 39 years (Burnside et al.; 1981; Dawson and Bruns, 1975; Thomas et al., 1986; Toole and Brown, 1946); <i>S. verticillata</i> : maximum, 39 years (Toole and Brown, 1946). More typically, the majority of weedy <i>Setaria</i> spp. seed live in the soil for much shorter time periods (Atchison, 2001). In general, <i>S. viridis</i> and <i>S. glauca</i> seed on the surface lose viability sooner than buried seed (Banting et. al., 1973; Thomas et al., 1986). The rate of survival of <i>Setaria</i> seed is longer under uncultivated conditions (Stoller and Wax, 1974; Waldron, 1904). Burial of weedy <i>Setaria</i> spp. seed increases both the level of dormancy, viability, and the longevity, of those seeds, possibly due to decreased oxygen at greater depths or within soil aggregates (Banting et. al., 1973; Dekker and Hargrove, 2002; James, 1968; Pareja and Staniforth, 1985; Pareja et al., 1985; Stoller and Wax, 1974). Dawson and Bruns (1975) showed precipitation had no effect on <i>S. viridis</i> seed longevity in the soil.
802	2010. Food and Agriculture Organization of the United Nations. <i>Grassland Species Profiles - Setaria italica</i> . FAO, http://www.fao.org/ag/AGP/AGPC/doc/gbase/data/pf000314.htm	Seed dormancy is common in freshly harvested seed, but disappears by the following spring (Maim & Rachie, 1971).

803	1978. Dawson, J. H./Dell'Agostino, E.. Control of Foxtail Millet (<i>Setaria italica</i>) in New Seedings of Alfalfa (<i>Medicago sativa</i>) with EPTC Applied in Surface Lines. <i>Weed Science</i> . 26(6): 637-639.	Abstract. At Hilario Ascasubi, Argentina, and Prosser, Washington, EPTC (S-ethyl dipropylthiocarbamate) was injected in sandy soil as two lines 5 cm deep and 6 cm apart. At 2 kg/ha (assuming the treated area was 12 cm wide), EPTC controlled 95 to 100% of foxtail millet [<i>Setaria italica</i> (L.) Beauv.] in a band 13 to 14 cm wide without significant injury to alfalfa (<i>Medicago sativa</i> L.) seeded 1.5 cm deep midway between the two lines of herbicide. At 3 and 4 kg/ha, EPTC sometimes injured alfalfa, but only temporarily, and at 1 kg/ha, it controlled 75 to 100% of the millet in a band 11 to 12 cm wide. Where alfalfa is seeded in rows, especially for seed production, subsurface line injection of EPTC could provide effective, efficient, and economical selective control of certain annual weeds.
803	2005. Darmency, H.. Incestuous relations of foxtail millet (<i>Setaria italica</i>) with its parents and cousins. Pp 81-96 in <i>Crop fertility and volunteerism</i> . CRC Press, Boca Raton, FL	"Three instances of herbicide resistance have been transferred to foxtail millet from <i>S. viridis</i> where they originally evolved."
804	2010. Food and Agriculture Organization of the United Nations. Grassland Species Profiles - <i>Setaria italica</i> . FAO, http://www.fao.org/ag/AGP/AGPC/doc/gbase/data/pf000314.htm	Response to fire: It is destroyed by fire...Frost tolerance: It is intolerant of frost...Tolerance to flooding: It cannot tolerate waterlogging...Main disadvantages: It is an annual and is not very suitable for continuous grazing.
805	2010. WRA Specialist. Personal Communication.	Unknown [no information on presence of natural enemies present locally]