The Five Most Unwanted Midwest Nursery Weeds. Part 2. Mugwort (*Artemisia vulgaris* L.)

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Five of the most unwanted Midwest nursery weeds include: Creeping Yellow Cress (*Rorippa sylvestris* L.); Mugwort (*Artemisia vulgaris* L.); Red Stem Filaree (*Erodium cicutarium*); Field Horsetail (*Equisetum arvense*) and Yellow Nutsedge (*Cyperus esculentus* L.). In past USDA Specialty Crop Block Grants (SCBG) conducted in MI in conjunction with the Michigan Department of Agriculture (MDA) and the Michigan Nursery and Landscape Association (MNLA), we have found various products to control three of these extreme weeds with varying levels of success. In part one, we discussed creeping yellow cress, in this article, part two, we will discuss Mugwort (*Artemisia vulgaris* L.) the issues with this weed species and the controls found effective in past MI trials.

Mugwort (*Artemisia vulgaris* L.).

Mugwort (*Artemisia vulgaris* L.) is a clump-forming rhizomatous perennial (Uva, et al., 1997). In folklore it is said to enhance the dreamers' capacity to remember their dreams and thus is called "Dream herb". It is also reported to provide power to repel/banish negative energies, entities/spirits or wild beasts and prevent weariness and is thus called the "Warding herb." Of the folklore names, "Traveler's herb" is perhaps the most common. If small pieces of Mugwort are placed inside your shoes, allegedly, it will help strengthen you in long walks and generally protect you on your journey. Other synonyms, used in more technical literature include, chrysanthemum or false chrysanthemum weed, wormwood and felon herb. Mature *A. vulgaris* stems, which can grow 2 m (6 ft.) tall, yield rankly aromatic flower heads (Klingeman et al., 2004). It disperses in nurseries and landscape plantings primarily by rhizomes transported on contaminated cultivation equipment and nursery crops (Klingeman et al., 2004) (Fig.1).

Once established, Mugwort rhizomes gradually expand outward, excluding other plants and forming a dense stand (Fig. 2). It has been named one of the 10 most problematic weeds in nurseries of the eastern U.S. (Henderson and Weller, 1985; Holm et al., 1997).

Fig. 1. (Left) Mass of Mugwort rhizomes left behind after lifting a nursery bed of liners in early-spring 2016. Additional rhizome pieces would certainly persist on the lifted stock capable of creating whole new infestations when planted in another field or landscape. (Photo by: H. Mathers, 03/2016).

Fig. 2. (Left) Mugwort or false chrysanthemum (*Artemisia vulgaris*.) is a non-native perennial aster. Mugwort foliage appears similar to common ragweed (*Ambrosia artemisiifolia*) and ornamental chrysanthemums (*Chrysanthemum* spp.). Unlike those weeds, the lower surfaces of Mugwort leaves are covered with a dense, silver-white pubescence (Photo by: H. Mathers, 2013).

Mugwort is extremely difficult to hand weed due to its large underground rhizomes and the persistence of the rhizomes make its control challenging in perennial crops. It is rarely encountered in vegetables, grains and other annual row crops but is an arduous weed in turf, nursery and landscape sites. It produces a tremendous amount of biomass in a short period, making it highly invasive (Fig. 3). Considering each 1,000 lbs. of weeds take 40 hrs. to pull. A wagon load, as shown in Fig. 3, would cost over $6,000 to hand weed, making Mugwort a very expensive weed. The white-woolly hairs on the undersurface of the leaves can be 1 to 10 cm long (Fig. 3). The leaves in the middle stem are divided and coarsely toothed. On the lower stem leaves, are divided again into smaller sections. On the upper stem, leaves may be only toothed. (Fig. 3).

Fig. 3. Mugwort (*Artemisia vulgaris*) stems are often red, brown or purplish and almost hairless. Mugwort leaves can be hairy on the upper surface and are densely hairy underneath making herbicide penetration without a surfactant difficult. (Picture by: H. Mathers, 2011).

In previous Specialty Crop Block Grants (SCBGs) funded through MNLA, at Berry Family Nurseries (BFN) (now Zelenka), in a heavy non-crop infested area with *Mugwort* (Fig.2) four products showed promise for continued trials: Lontrel®, Certainty, Corsair™ and Sedgehammer versus the control (Table 5). Of these four products, Corsair is not worth pursuing, as it will never be registered in ornamentals (NuFarm personal communication).

Table 5. Berry Family Nurseries (BFN) (now Zelenka), **Buxus phytotoxicity** and **Mugwort efficacy** trial. Note, x = efficacy ratings that are based on a 0-10 scale with 0 being no weed control and 10 perfect weed control with ≥7 commercially acceptable. Ratings are averaged over all evaluation dates and replications. Treatments with different letters signify efficacy was statistically different at p=0.05 using LSD.

Treatment	Rate/ac	Buxus		Efficacy	
Basagran	2 pt.	0.1[z]		1.5[x]	cd
V-10233	11 oz.	3.8	**	5.3	b
Pennant Magnum	2 pt.	0.3		0.8	d
Lontrel	1 pt.	1.9	**	8.0	a
Certainty	0.06 lb. ai	2.3	**	7.5	a
F6875	0.375 lb. ai	2.9	**	3.8	bc
Corsair	5.5 oz.	1.8	**	8.3	a
Sedgehammer	0.125 lb. ai	1.2	*	1.8	a
Sedgehammer	0.5 lb. ai	5.2	*	7.8	a
Untreated	--	0.0		0.0	d

z = Ratings are based on a 0-10 scale with 0 being no phytotoxicity and 10 death, with ≤3 commercially acceptable. Ratings are averaged over 3 dates of evaluation. Treatment means followed by *, ** are significantly different from the control, based on Dunnett's t-test (α = 0.10 and 0.05, respectively).

Bradley and Hagood (2002) established a two non-crop fields in Virginia of *Artemisia vulgaris* for the purpose of studying long-term control. They found complete control of Mugwort plants and rhizomes was achieved at 1 yr. after treatment with Picloram at rates ≥ 0.28 kg ai/ha, with Clopyralid at rates ≥ 4.4 kg ai/ha, and with glyphosate at 8.9 kg ai/ha. Greater than 80% Mugwort control was also achieved at 1 yr. after treatment with Clopyralid at rates ≥ 0.28 kg/ha, with glyphosate at rates ≥ 4.4 kg/ha, and with Dicamba at 8.9 kg ai/ha (Bradley and Hagood, 2002) . However, all rates (≤ 8.9 kg ai/ha) of glufosinate, triclopyr, and the dimethylamine salt and the isooctyl ester of 2,4-D provided less than 50% Mugwort control at 1 yr. after treatment . Similar results were obtained with Metsulfuron at rates ≤ 0.063 kg ai/ha (Bradley and Hagood, 2002). The addition of pelargonic acid to glyphosate, glufosinate, or the dimethylamine salt of 2, 4-D did not significantly enhance Mugwort control when compared with applications of these herbicides alone (Bradley and Hagood, 2002).

Conclusions

Obviously, many of the products listed in the Bradley and Hagood (2002) study could never be applied in nursery fields in over the top (OTT) or even as directed applications. Even the SedgeHammer used in the BFN studies (Table 5) were very phytotoxic to the *Buxus* causing severe, long term stunting to boxwood as a 4X rate was require to achieve the level of control stated in Table 5. Fig. 4 illustrates the dose response SedgeHammer. Because of the success of Group 2 herbicides in these previous SCBGs, we recommend evaluating other ALS herbicides in nursery and because of the foliar pubescence the testing of various adjuvants.

Fig. 4. *Artemisia vulgaris,* showing a dose response to SedgeHammer. Left to right, 4X, 2X, 1X and control. Note the major impact of the 2 and especially the 4X rate of SedgeHammer is on the rhizome of the Mugwort, indicating a potential for improved control 1 yr. after treatment. Although possible control was indicated at the 4X rate, the damage to the Buxus in the field was too great to continue testing at this high dose. However, if dose could be reduced by adding surfactant for better uptake through the lower leaf surfaces this ALS herbicide may have some promise to nursery Mugwort control. (Photo by: H. Mathers 2011).

Fig. 5. Mugwort severely stunted by high rates of SedgeHammer. Note two furthest rows to left were sprayed with SedgeHammer (Photo by: H. Mathers, 2011).

Literature Cited:

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