



Invasive Plant Control Series

Japanese Hops (*Humulus japonicus*)

Summary

Japanese Hops (*Humulus japonicus*) is an up and coming invasive annual herbaceous vine in Knox County. Japanese Hops (Fig. 1) is often found invading forest edges, right-of-ways, riparian areas, and agricultural field edges after disturbances. Several methods of chemical control were evaluated in 2019 to determine the best method for controlling this species. All treatments were effective in controlling Japanese Hops; however, new Japanese Hops plants appeared in control plots around a month after treatments. Of the treatments, the 0.5% glyphosate solution appears to be the best right now, but more research is needed to determine how effective larger scale treatments are and what herbicides/rates are good to use near bodies of water.

Methods

Three different herbicide treatments were tested to control Japanese Hops. The different treatments were: 1) 0.7 oz./gal. 2,4-D amine salt plus nonionic surfactant, 2) 0.5% glyphosate solution plus nonionic surfactant, 3) 1% glyphosate solution plus nonionic surfactant, and 4) a control (or no treatment). Herbicide were applied with a foliar application to young - maturing individuals (fully developed leaves but not near flowering, 6" to 1' tall) on July 15th, 2019. The experimental site was a disturbed riparian area on the top of a ditch bank. Treatment areas were rectangular swaths roughly 20 ft. x 10 ft. Efficacy of treatments was measured by estimating the percent controlled from 2 to 52 days after treatment (or DAT).



Figure 1: Japanese Hops in flower.

Results

The percent control of the different treatments is listed in Table 1 and visualized in Fig. 2. Treatment 1 was the first to show signs of controlling the plants at 2 DAT, but from 7 DAT on to 52 DAT all three treatments (1-3) followed the same trajectory and did not differ statistically from one another. Treatment 2 and 3 ended up with the least amount of Japanese Hops at the end of the study (52 DAT) but were not statistically different from treatment 1.

The Knox County Cooperative Invasive Species Management Area (CISMA) is a local, non-profit organization, whose mission is to minimize the impact of invasive plant species in Knox County by educating the public, monitoring and removing invasive plants, and promoting and protecting native plants.



Knox County Cooperative Invasive Species Management Area

Table 1: The different treatments, rates, and percent control of Japanese Hops.

Treatment #	Treatment Name	Rate	Rate Unit	Visual Percent Control					
				2 DAT ⁺	7 DAT	11 DAT	17 DAT	29 DAT	52 DAT
1	2,4-D amine salt + NIS*	0.7	oz/gal	70	95	98	98	95	92
2	Glyphosate + NIS	0.64	oz/gal	0	95	100	100	97	95
3	Glyphosate + NIS	1.28	oz/gal	0	95	98	100	95	95
4	Control	N/A	N/A	0	0	0	0	0	0

*NIS = Nonionic Surfactant

⁺DAT = Days After Treatment

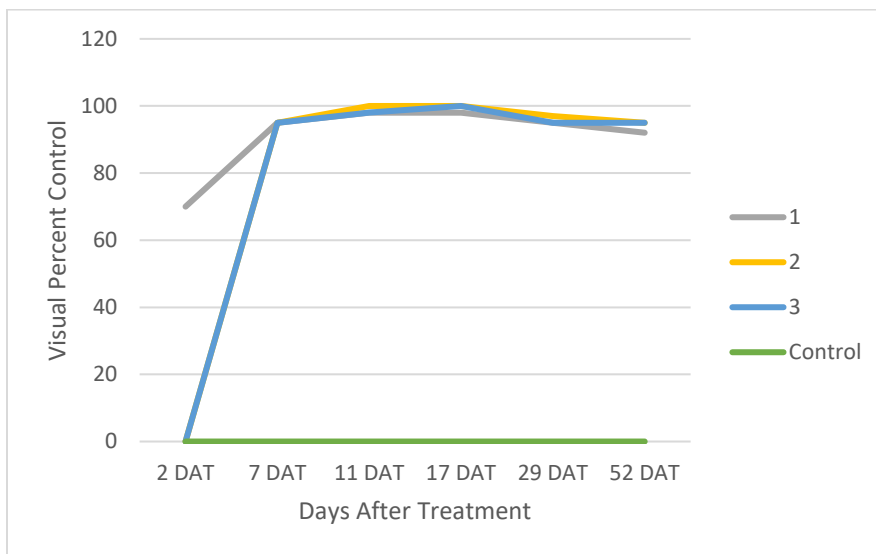


Figure 2: Percent control of Japanese Hops days after different treatments.

Discussion

All control techniques were effective in reaching 95% control of Japanese Hops by 7 DAT. However, treatment 2 appeared to have the least collateral damage to other forbs and grasses; the violets and sedges in the nearby area seemed mostly unaffected. Treatment 1 worked well and was the first application to see major results, but it did have some collateral impact. The grasses and sedges were completely unaffected; however, the violets nearby did get slightly damaged where spray touched but recovered later. Treatment 3 mostly killed everything it touched and had new Japanese Hops seedlings appear around 29 DAT. All treatment plots had Japanese Hops not in the trial areas start to creep and grow into them around 29 DAT, which is shown by the decreases in percent control for all the treatments from 29 to 52 DAT. More research is needed to determine how effective larger scale treatments are and what herbicides/rates are good to use near bodies of water.

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