

NONCROP - Ditchbank
 Japanese Knotweed (*Fallopia japonica*)
 carfentrazone, glyphosate, imazamox,
 imazapyr, triclopyr

M. J. VanGessel, Q.R. Johnson, and B.A. Scott
 University of Delaware, Research and Education Center
 16483 County Seat Hwy, Georgetown, DE 19947
 A. Z. Skibo, SePRO Corp., Fort Collins, CO
 M. Yost, Delaware Dept. of Natural Resources and
 Environmental Control, Dover, DE 19901

Management of Japanese knotweed

An experiment was conducted along a drainage ditch near Greenwood, DE in 2014. Experimental area level portion (berm) naturally infested with Japanese knotweed, at a density of 8 stems per yd². Entire area was mowed to soil surface on May 19, 2014 and plants were allowed to regrow. The experiment was conducted as a randomized complete block design with four replications. Plots were 10 feet wide and 20 ft. long. The length of the plots were arranged perpendicular with the stream.

Herbicide applications were made with 20 g/A spray volume, at 3 mph, and 11002 spray nozzles, applied with CO₂ backpack sprayer using 30 psi. Mowed treatments had stems cut at 2 inches above soil surface with string weed trimmer. All herbicide treatments were applied on the same date, June 26, 2014 when stems had regrown to a height of 30 inches. Treatments are listed in table below and are all labeled for use near aquatic settings; in addition, an untreated check was included for comparison. The first of the mowing treatments was done on June 26, second one was July 18 (12 inch tall stems), and third was August 7 and stems regrown to height of 8 inches. Japanese knotweed control is a reduction in plant biomass, both reduction in stems and stunting. Evaluations of control were on a scale of 0 (no control) to 100 (complete kill), made based on appropriate check plots.

Habitat (imazapyr) alone and with Stingray (carfentrazone), or AquaPro (glyphosate) stood out for control both the year of application as well as the following spring. The addition of Stingray did not improve control compared to Habitat alone. Renovate and three mowings reduced Japanese biomass at the end of the summer, but the following spring there was less than 50% control of Japanese knotweed. Clearcast at 37 fl oz, provided less than 50% control the summer of application but there was noticeable suppression the following spring. However, when Clearcast was included at 27 fl oz in combination with other products results were not consistent. In fact, there was a reduction in control when used in combination with AquaPro.

An application of Habitat or AquaPro following a mowing provided very good reduction of Japanese knotweed biomass the year of application and the following spring. However, additional management or treatments are required to further deplete the Japanese knotweed rhizomes, but either of these treatments appear to be solid first step for management. Always be cautious of results from a single location, and one year. There are numerous variables including temperature, growing conditions, application timing, and plant stress that can impact results of any one year. Use data and observations from university trials, local demonstration plots and your own experience to determine consistent trends.

Table 1. Comparison of various herbicide treatments rated at various intervals after application.

Treatment	Rate (fl oz/ A)	Japanese knotweed control (%)			
		7/17/14	8/28/14	9/30/14	5/13/15
Stingray + MSO	13.5	61 cd	30 f	35 gh	0 f
Clearcast + MSO	37	23 e	43 de	47 ef	64 b
Habitat + MSO	64	29 e	80 b	92 b	96 a
AquaPro + NIS	62	60 cd	83 b	90 b	91 a
Renovate + NIS	96	65 cd	78 b	81 c	48 c
Clearcast + AquaPro + NIS	27 + 62	26 e	27 f	40 fg	30 d
Clearcast + Stingray + NIS	27 + 13.5	59 cd	50 cd	55 e	18 e
Habitat + Stingray + NIS	41 + 13.5	66 bc	97 a	99 a	94 a
Stingray + NIS	20.6	58 d	37 ef	29 h	0 f
Two mowings (POST fb 3wks)		75 a	60 c	73 d	33 d
Three mowings (POST fb 3wks fb 6wks)		74 ab	58 c	88 bc	45 c
LSD P=0.05		7.74	7.35	5.73	12.38
Standard Deviation		5.35	5.09	3.97	8.56
CV		9.89	10.02	7.06	18.2
P<F		0.001	0.001	0.001	0.001

^yMeans within a column followed by the same letter are not significantly different ($p=0.05$) according to Fisher's protected LSD test.

^xP values ≤ 0.05 indicate significant differences exist among treatments.

fb= followed by; MSO= methylated seed oil; LeciTech @ 1.5pt/A; NIS= nonionic surfactant; LI 700 @ 0.25% v/v
AquaPro 4AS= glyphosate; Clearcast 1AS= imazamox; Habitat 2AS= imazapyr;
Renovate 3L= triclopyr; Stingray 1.9EC= carfentrazone



Untreated check in background; three plots moving away from camera 1:Habitat+Stingray 2: Habitat; 3: AquaPro