

Fact Sheet: Ecology and Control of Japanese Chaff Flower

[*Achyranthes japonica* (Miq.) Nakai]



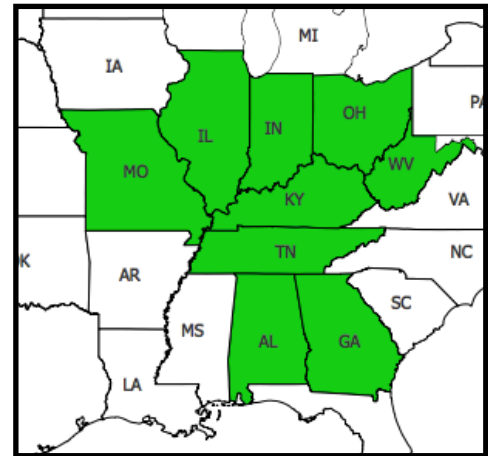
RIVER TO RIVER
Cooperative Weed Management Area

Background

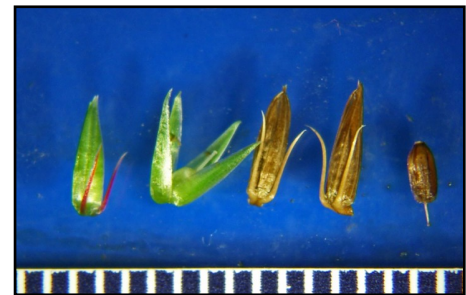
Japanese chaff flower (Amaranthaceae) is a relatively new exotic species that is native to the eastern and south-eastern regions of Asia. This perennial herbaceous plant was first found in North America in 1981 along the Tug Fork River in Martin County, Kentucky and has since spread down the Ohio River and its tributaries. Today, this species has been confirmed in 9 states and over 50 counties. The actual distribution of chaff flower in the United States is most likely underestimated due to the lack of public awareness. Water and animals, which includes birds, deer, and people, are the primary cause of spread. The longevity of Japanese chaff flower seed in the soil is unknown, but it is believed that the seeds can remain viable for a number of years.

Impacts/Characteristics

- High germination rate (~62% in drought years and ~94% in average years)
- High seed output (up to ~2,000/plant)
- ~ 60% of seedlings survive to produce seed in first year
- Produces over 80 stems/m² (~16,000 seeds)
- Similar competitive capabilities of other species in the same family (i.e., Palmer amaranth (*Amaranthus palmeri*) or common waterhemp (*Amaranthus tuberculatus*))
- Continual flushes of germination
- Outcompetes native and invasive species (i.e., Japanese stiltgrass (*Microstegium viminum*))
- Allows very little to no undergrowth due to dense canopy
- Grows in areas with partial sun and moist soils, but can also grow in heavily shaded and dry areas
- Found in bottomland and upland forests, along riverbanks, along agricultural field margins, and in roadside ditches



Current distribution of Japanese chaff flower (map courtesy of www.eddmaps.org).



Progression of seed development (Photo by Travis Neal).



Lopseed surrounded by Japanese chaff flower (Photo by Karla Gage).

Phenology

Japanese chaff flower starts growing in late spring and flowers in the late summer. Flowers can continue to develop into the early fall, even when seed is starting to be produced. The seeds are mature in mid- to late-fall. As the plants die off in late fall or early winter the stems and remaining seed turn an orange-brown color. The dead plant stand can remain erect even into the winter until heavy snow, ice, or floods cause the stems to break.

Description

- Perennial, herbaceous species (becomes perennial at three or four nodes)
- Grows up to three meters tall
- Leaves: opposite and simple
- Stem: red at ground level (as well as the nodes)
- Flowers: erect spikes at the end of the stems and upper branches (bottle-brush appearance)
- Fruits: two stiff bracts aid in dispersal by attaching to clothing, shoes, hair, or animal feathers/fur

Commonly Misidentified Species:

- lopseed (*Phryma leptostachya*)
- hophornbeam copperleaf (*Acalypha ostryifolia*)

Mechanical Control: Infestations with chaff flower having four nodes or less can be controlled by hand pulling the above ground plant and roots. It is not recommended to attempt to control perennial populations by hand

pulling alone due to chaff flower's ability to resprout with increased branching and seed production. In situations where populations of chaff flower are located along hiking trails, road sides and in urban areas, weed eating and mowing could be a good option to remove flowering heads and temporarily delay seed release. However, follow-up treatments with systemic herbicides are required to eliminate the plants.

Chemical Control: All of the chemicals tested below are systemic herbicides designed to kill the aboveground plant as well as the perennial growth. The herbicides tested were all effective in the control of chaff flower when sprayed as a 2% solution in water. A non-ionic surfactant can be added to the solution to help herbicide absorption by the plant. Always read and follow the herbicide label. If making applications near standing water, aquatic-safe herbicides and surfactants must be used and an EPA NPDES permit may need to be obtained. Take every precaution to prevent impact to non-target plants in sensitive forestry sites. Aminopyralid may damage leguminous trees and certain evergreens. Applicators may exceed the 7/14 fl. oz./acre rate limit if not careful. Off-target drift should always be a concern regardless of the chemical. ***Always read and follow the herbicide label; the label is the law.***

Chemical Name	Trade Name	Aquatic Safeness	Herbicide Selectivity	Manufacturer
2,4-D ester	Various	Do not apply to standing water	Selective: Broadleaf	Various
triclopyr amine	Various	Labeled for aquatic use	Selective: Broadleaf	Various
glyphosate	Various	Some labeled for aquatic use	Nonselective	Various
aminopyralid	Milestone Specialty®	Do not apply to standing water	Selective: Broadleaf	Dow AgroSciences LLC Indianapolis, IN www.dowagro.com
triclopyr and fluroxypyr	PastureGard HL®	Do not apply to standing water	Selective: Broadleaf	Dow AgroSciences LLC Indianapolis, IN www.dowagro.com
aminopyralid and metsulfuron	Opensight Specialty®	Do not apply to standing water	Selective: Broadleaf	Dow AgroSciences LLC Indianapolis, IN www.dowagro.com



Close up of leaf orientation and seed head (Photo by Chris Evans).



Japanese chaff flower seedling.

Activities such as hiking and hunting can spread chaff flower seed. Make sure to thoroughly clean all seeds off of your clothing, equipment and pets if you are hiking, camping, or hunting in an area where this species occurs.

Reporting

If you find any populations of Japanese chaff flower, please contact the River to River CWMA (618-998-5920; rtrcwma@gmail.com) or your local extension office, and alert other land managers in your area. Use resources like Eddmaps (www.eddmaps.org) to check the current distribution of this species and to report any populations that you come across.

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Infestation of Japanese chaff flower.

