

Resource notes to accompany “From Mugwort to Meadow”
Presented by Lydia Pan for the 2020 CIPWG Virtual Symposium
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Solarization: Use of a clear plastic cover to kill weeds using the sun’s energy to heat the upper layer of soil during periods of high ambient temperature. In the Northeast, solarization can be very effective during the late spring and summer, the period of highest solar intensity and longest daylength.

Pros

- Effective for appropriate sites: sunny, level to gently sloping, south-facing
(Note: Essentially no mugwort regrowth was observed during the month after solarizing from mid-April-through August.)
- Once cover is secured, requires little attention over hot summer months
- Reduces pre-existing weed seed bank in top layer of soil
(Note: Wetting the soil before laying down plastic may stimulate germination, whereupon the seedling are heat-killed.)
- Can kill soil dwelling plant pathogens
- Best for small sites (less than half acre)
- Plastic sheeting may be re-used multiple times if it stays intact
(Note: Repair small holes and tears with greenhouse tape.)

Cons

- Effectiveness limited to summer months in northern latitudes
(Note: Our attempt to solarize starting in August was too late in the season.)
- Not recommended for steep, uneven or variable terrain
(Note: Weeds survived along the edge of a large stone slab within the solarized area.)
- Ineffective on shady sites
- Does not efficiently kill deep-rooted or fire-resistant species
*(Note: Invasive porcelainberry *Ampelopsis brevipedunculata* and native common greenbriar *Smilax rotundifolia* were observed regrowing within a month after removal of plastic.)*
- Cost of new UV-stabilized clear polyethylene sheeting if used/donated materials not available

Where to obtain clear plastic for solarization?

- Used greenhouse or hoophouse covers may be salvaged from local farms or growers and repurposed for solarization, provided they are intact or can be repaired.
- “Clear greenhouse film” is sold by greenhouse and horticultural suppliers such as [Growers Supply](#), [A.M. Leonard](#), [Greenhouse Megastore](#), or [Farm Plastic Supply](#). *(Note:*

Mention of a supplier does not constitute an endorsement, merely acknowledgment that they carry the specified product.)

- For solarization, I recommend “4 year clear” UV-stabilized 6 mil polyethylene film, rated/warrantied for 4 years. Although 3-4 mil films cost less and may transmit more sunlight than thicker films, they are more prone to damage and less likely to last for multiple seasons.
- Roll ends or remnant pieces of clear greenhouse film are sometimes available at a fraction of the cost of custom orders.

References:

Sonja Birthisel conducted PhD research on solarization at the University of Maine and has published several articles including the following:

“Solarization and Tarping for Weed Management on Organic Vegetable Farms in the Northeast USA” Sonja K. Birthisel, Eric R. Gallandt, Ana Eliza Souza Cunha. *eOrganic*, published August 30, 2018. <https://eorganic.org/node/25440>

“Effects of Field and Greenhouse Solarization on Soil Microbiota and Weed Seeds in the Northeast USA” Sonja Birthisel, Grace Smith, Gavriela Mallory, Jianjun Hao, Eric Gallandt. *Organic Farming* 5(1), December 2019. DOI 10.12924/of2019.05010066

https://www.researchgate.net/publication/338333248_Effects_of_Field_and_Greenhouse_Solarization_on_Soil_Microbiota_and_Weed_Seeds_in_the_Northeast_USA

This Xerces Society monograph has a useful table comparing solarization with several other organic methods for site preparation (pages 4-5) in addition to a detailed section on solarization (pages 6-11).

“Organic Site Preparation for Wildflower Establishment” Sarah Foltz Jordan, Jessa Kay Cruz, Kelly Gill, Jennifer Hopwood, Jarrod Fowler, Eric Lee-Mäder, and Mace Vaughan. Xerces Society Serial Number 16-027_02

<https://www.xerces.org/publications/guidelines/organic-site-preparation-for-wildflower-establishment>