

Solarization—Cooler Regions

STEP 1—Site Record (SAVE A COPY OF THIS TIMELINE & CHECKLIST FOR YOUR RECORDS)

SITE NAME: _____ START DATE: _____
 WEED PRESSURE BEFORE TREATMENT: _____ PRIMARY WEED SPECIES TARGETED: _____
 High Moderate Low _____

STEP 2—Cooler Regions Solarization Timeline & Checklist

This timeline is ideal for small plantings (e.g., strip plantings or wildflower plots, less than ½ ac) in sunny areas with moderate to high weed pressure in cooler regions (e.g., Upper Midwest, Northeast).

RECOMMENDED TIMELINE		ACTIVITY	DATE COMPLETED	
			YEAR 1	YEAR 2†
Spring	STEP 1	Obtain plastic.		
	STEP 2	Mow or cultivate site.		
Early–mid-spring	STEP 3	Dig trench around perimeter, lay plastic, bury edges.		
Late spring	STEP 4	Check plastic for holes; repair any holes with greenhouse repair tape.		
Summer	STEP 5	EARLY SUMMER	Regularly check plastic for holes; repair any holes with greenhouse repair tape.	
		MID-SUMMER		
		LATE SUMMER		
Fall	STEP 6	A. Assess weed growth under the plastic: <i>Low weed pressure</i> →→		GO TO STEP 7
		<i>High to moderate weed pressure</i> →→		GO TO STEP 6B
	STEP 7	B. Continue solarization (repeat STEPS 4–5) and return to STEP 7 in the fall of the following year.		GO BACK TO STEP 4
		Remove plastic: Unbury all edges and remove plastic, or Unbury three edges and flip plastic to adjacent area (repeat STEPS 2–6 on the new area‡); then		
STEP 8	Carefully remove perennial weeds by hand. DO NOT CULTIVATE.			
Fall/winter*	STEP 9	Seed pollinator mix into the prepared area.		

Notes:

- * Dormant season
- † A second year of site preparation may be necessary on sites with high weed pressure.
- ‡ Start a new timeline & checklist for the adjacent area.
- 📖 Timeline & checklist originally published in the Xerces Society guidelines, *Organic Site Preparation for Wildflower Establishment*.
- 📄 Download additional copies of this timeline and other resources at: www.xerces.org/pollinator-habitat-installation-guides

ADDITIONAL PROJECT NOTES:

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Solarization—Warmer/Semi-Arid Regions

STEP 1—Site Record (SAVE A COPY OF THIS TIMELINE & CHECKLIST FOR YOUR RECORDS)

SITE NAME: _____ START DATE: _____

WEED PRESSURE BEFORE TREATMENT: _____ PRIMARY WEED SPECIES TARGETED: _____

High Moderate Low

STEP 2—Warmer/Semi-Arid Regions Solarization Timeline & Checklist

This timeline is ideal for small plantings (e.g., strip plantings or wildflower plots, less than ½ ac) in sunny areas with moderate to high weed pressure in warmer/semi-arid regions (e.g., California).

RECOMMENDED TIMELINE		ACTIVITY	DATE COMPLETED	
			YEAR 1	YEAR 2 [†]
Spring	STEP 1	Obtain plastic.		
	STEP 2	Mow or cultivate site.		
Early summer	STEP 3	Dig trench around perimeter, lay plastic, bury edges.		
Summer	STEP 4	MID-SUMMER	Regularly check plastic for holes; repair any holes with greenhouse repair tape.	
		LATE SUMMER		
Fall	STEP 5	A. Assess weed growth under the plastic: <i>Low weed pressure</i> →	GO TO STEP 6	
		<i>High to moderate weed pressure</i> →	GO TO STEP 5B	
	B. Continue solarization (repeat STEP 4) and return to STEP 7 in the fall of the following year.	GO BACK TO STEP 4		
	STEP 6	Remove plastic: Unbury all edges and remove plastic, or Unbury three edges and flip plastic to adjacent area (repeat STEPS 2–4 on the new area [‡]); then		
	STEP 7	Carefully remove perennial weeds by hand. DO NOT CULTIVATE.		
Fall/winter*	STEP 8	Seed pollinator mix into the prepared area.		

Notes:

- * Dormant season
- † A second year of site preparation may be necessary on sites with high weed pressure.
- ‡ Start a new timeline & checklist for the adjacent area.
- 📖 Timeline & checklist originally published in the Xerces Society guidelines, *Organic Site Preparation for Wildflower Establishment*.
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ADDITIONAL PROJECT NOTES:

Buckwheat Smother Crop—East/Midwest

STEP 1—Site Record (SAVE A COPY OF THIS TIMELINE & CHECKLIST FOR YOUR RECORDS)

SITE NAME: _____ START DATE: _____
 WEED PRESSURE BEFORE TREATMENT: _____ PRIMARY WEED SPECIES TARGETED: _____
 High Moderate Low

STEP 2—Buckwheat Smother Crop Timeline & Checklist—East/Midwest

This timeline is ideal for larger areas of low to moderate weed pressure on farms in the East/Midwest where cultivation equipment is available, and farmers/operators are already experienced with successful cover cropping.

RECOMMENDED TIMELINE		ACTIVITY	DATE COMPLETED	
			YEAR 1	YEAR 2 ¹
Early spring	STEP 1	As soon as the field is accessible, mow existing vegetation to the ground. Then lightly cultivate project area (1–2" depth).		
Spring ¹	STEP 2	Repeated shallow cultivation (≤2" depth) to eliminate emerging weed seedlings and break up soil clumps.		
Mid–late spring	STEP 3	Assess weed pressure. Continue to eliminate germinating weed seedlings.		
Late spring (~mid-June)	STEP 4	A. Prepare seedbed. Lightly rake or harrow project area to remove all remaining vegetation, residue, or thatch, then immediately plant buckwheat.		
		B. Drill seed 50–60 lb/ac at 0.5–1" deep in 6–8" rows; or Broadcast seed at a minimum rate of 70 lb/ac. Use a drag/chain harrow to incorporate seed.		
		C. Irrigate seedbed after seeding until germination.		
Late spring ²	STEP 5	Assess for gaps in germination and re-seed bare spots as needed.		
Summer ³	STEP 6	Terminate buckwheat cover crop before seed set. Then immediately plant a second buckwheat crop.		
Early fall ⁴	STEP 7	Mow or incorporate cover crop. Leave residue on soil surface.		
Fall	STEP 8	A. For sites with: Low weed pressure →	GO TO STEP 9	
		High to moderate weed pressure →	GO TO STEP 8B	
		B. Return to STEP 3 the following spring and repeat process for an additional growing season. Consider planting a winter cover crop.	GO BACK TO STEP 3	
Late fall	STEP 9	Remove all residue and expose soil. Plant a nurse crop of oats at 20 lb/ac before September 15 th . Seed recommended pollinator mix into oats.		

Notes:

1. 2–3 week after first disking
 2. One week after planting
 3. 35–40 days after seeding
 4. 35 days after second seeding
- † A second year of site preparation may be necessary on sites with high weed pressure.
- 📖 Timeline & checklist originally published in the Xerces Society guidelines, *Organic Site Preparation for Wildflower Establishment*.
- 📄 Download additional copies of this timeline and other resources at: www.xerces.org/pollinator-habitat-installation-guides

Lacy Phacelia Smother Crop—East/Midwest

STEP 1—Site Record (SAVE A COPY OF THIS TIMELINE & CHECKLIST FOR YOUR RECORDS)

SITE NAME: _____ START DATE: _____

WEED PRESSURE BEFORE TREATMENT: _____ PRIMARY WEED SPECIES TARGETED: _____

High Moderate Low

STEP 2—Lacy Phacelia Smother Crop Timeline & Checklist—East/Midwest

This timeline is ideal for larger areas of low to moderate weed pressure on farms in the East/Midwest where cultivation equipment is available, and farmers/operators are already experienced with successful cover cropping.

RECOMMENDED TIMELINE		ACTIVITY	DATE COMPLETED	
			YEAR 1	YEAR 2 [†]
Late winter/early spring [△]	STEP 1 [△]	Lightly cultivate (disk) project area (1–2" depth).		
Spring	STEP 2	2–3 weeks after first disking , shallow cultivation of site (≤2" depth) to target emerging seedlings and break soil clumps.		
	STEP 3*	Lightly harrow or rake to prepare seed bed*.		
	STEP 4*	A. Seed <i>Phacelia tanacetifolia</i> *.		
B. 1 week after planting , assess for gaps in germination, and reseed as needed.				
Summer–fall	STEP 5	Irrigate occasionally only if needed (i.e., twice per month in absence of rainfall during spring–summer).		
Summer	STEP 6	High mow* if significant weed germination in project area.		
Fall	STEP 7	A. For sites with: Low weed pressure →	GO TO STEP 8	
		High to moderate weed pressure →	GO TO STEP 7B	
	STEP 8 [†]	Flail/low mow vegetation, and return to STEP 3 in early spring.		
		Flail/low mow vegetation and immediately seed recommended pollinator mix.		

Notes:

- △ As early in the season as possible.
- * Complete this step immediately after previous step.
- * Be careful to avoid damaging the growing tips of the phacelia.
- † Seed recommended pollinator mix immediately after flailing/mowing vegetation.
- ‡ A second year of site preparation may be necessary on sites with high weed pressure.
- 📖 Timeline & checklist originally published in the Xerces Society guidelines, *Organic Site Preparation for Wildflower Establishment*.
- 📄 Download additional copies of this timeline and other resources at: www.xerces.org/pollinator-habitat-installation-guides

ADDITIONAL PROJECT NOTES:

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Lacy Phacelia Smother Crop—West

STEP 1—Site Record (SAVE A COPY OF THIS TIMELINE & CHECKLIST FOR YOUR RECORDS)

SITE NAME: _____ START DATE: _____
 WEED PRESSURE BEFORE TREATMENT: _____ PRIMARY WEED SPECIES TARGETED: _____
 High Moderate Low

STEP 2—Lacy Phacelia Smother Crop in the West Timeline & Checklist

This timeline is ideal for larger areas of low to moderate weed pressure on farms in the West where cultivation equipment AND access to irrigation is available, and farmers/operators are already experienced with successful cover cropping.

RECOMMENDED TIMELINE		ACTIVITY	DATE COMPLETED	
			YEAR 1	YEAR 2 [†]
Early October	STEP 1 [△]	A. Pre-irrigate site as needed.		
	STEP 2	B. Lightly cultivate (disk) project area (≤2" depth).		
Early/mid-October	STEP 3*	Lightly harrow or rake to prepare seed bed*.		
	STEP 4*	Seed <i>Phacelia tanacetifolia</i> *.		
October–February	STEP 5	Irrigate occasionally in absence of rainfall.		
March–August	STEP 6	MARCH	Irrigate if necessary [‡] ; and High mow [‡] if significant weed germination in project area.	
		APRIL	Irrigate if necessary; and High mow if significant weed germination in project area.	
		MAY	Irrigate if necessary; and High mow if significant weed germination in project area.	
		JUNE	Irrigate if necessary; and High mow if significant weed germination in project area.	
		JULY	Irrigate if necessary; and High mow if significant weed germination in project area.	
		AUGUST	Irrigate if necessary; and High mow if significant weed germination in project area.	
October	STEP 7	A. For sites with: Low weed pressure →	GO TO STEP 8	
		High to moderate weed pressure →	GO TO STEP 7B	
November	STEP 8	A. Flail/low mow vegetation; and		
		B. Seed recommended pollinator mix.		

Notes:

- △ As early in the season as possible.
- * Complete this step immediately after previous step.
- ‡ Even in absence of rainfall during spring–summer, do not irrigate more than twice a month from March to August.
- ‡ Be careful to avoid damaging the growing tips of the phacelia.
- ‡ A second year of site preparation may be necessary on sites with high weed pressure.
- 📖 Timeline & checklist originally published in the Xerces Society guidelines, *Organic Site Preparation for Wildflower Establishment*.
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Sheet Mulching

STEP 1—Site Record (SAVE A COPY OF THIS TIMELINE & CHECKLIST FOR YOUR RECORDS)

SITE NAME: _____ START DATE: _____
 WEED PRESSURE BEFORE TREATMENT: _____ PRIMARY WEED SPECIES TARGETED: _____
 High Moderate Low _____

STEP 2—Sheet Mulching Timeline

This method is ideal for small sites on farms where appropriate mulching materials (e.g., straw and composted animal manure) are readily available. Weed growth is suppressed by creating a barrier of layered carbon- and nitrogen-rich mulch.

RECOMMENDED TIMELINE		ACTIVITY	DATE COMPLETED
Winter-late spring	STEP 1	Mow or flatten existing vegetation.	
	STEP 2	Aerate compacted soils.	
	STEP 3	Deeply water arid or semi-arid sites.	
	STEP 4	Layer sheet mulch, watering each layer.	
Summer (arid or semi-arid)	STEP 5	Keep your sheet mulch moist throughout the growing season, but neither too dry nor too wet. Irrigate if needed in dry climates.	
Late fall/early winter	STEP 6	A. For sites established using: Seeding →	GO TO STEP 7
		Transplants →	GO TO STEP 6B
		B. Plant transplants directly into the sheet mulch in the fall or the following spring. SKIP STEPS 7 & 8.	
	STEP 7	Remove top carbon-based layer of sheet mulch.	
	STEP 8	Seed recommended pollinator mix into nitrogen-based compost layer.	

STEP 3—Sheet Mulching Checklist

LAYER #	DEPTH	MULCHING MATERIALS USED	RECOMMENDED MATERIALS & DEPTH
Layer 6 (TOP):	"		1–2" Carbon-based materials (wood bark, chips, sawdust, or shavings)
Layer 5:	"		1–3" Nitrogen-based materials (composted animal or plant materials)
Layer 4†:	"		1–3" Carbon-based materials (crop residues, hay, hulls, leaves, peat moss, or straw)
Layer 3†:	"		1" Nitrogen-based materials (any from the list)
Layer 2:	"		1/4–1/2" Carbon-based materials (corrugated cardboard, newspaper, or recycled paper)
Layer 1* (BOTTOM):	"		1" Nitrogen-based materials (meals, grass clippings, green prunings, grounds, pellets, or seaweeds)

Layer 1* should be placed on mown vegetation

Notes:

- * Layer 1 should be placed on mown vegetation after the soil has been aerated and deeply watered (if necessary).
- 💧 Water previous layer.
- 🌀 **Thoroughly** water previous layer.
- † Omit Layers 3–4 on sites with low weed pressure.
- 📖 Timeline & checklist originally published in the Xerces Society guidelines, *Organic Site Preparation for Wildflower Establishment*.
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Soil Inversion

STEP 1—Site Record (SAVE A COPY OF THIS TIMELINE & CHECKLIST FOR YOUR RECORDS)

SITE NAME: _____ START DATE: _____

WEED PRESSURE BEFORE TREATMENT: _____ PRIMARY WEED SPECIES TARGETED: _____

High Moderate Low

STEP 2—Soil Inversion Timeline & Checklist

This method is ideal for areas of moderate to high weed pressure (including sod-forming grasses) on farms where appropriate equipment is available.

RECOMMENDED TIMELINE		ACTIVITY	DATE COMPLETED
Spring	STEP 1	Prior to plowing the site, mow existing vegetation to the ground.	
	STEP 2	Use moldboard plow to overturn plant residue and invert the soil surface.	
Late spring	STEP 3	Two to three weeks later, disk the site. Time disking in advance of expected rainfall to aid seed germination.	
	STEP 4	Immediately seed your pollinator mix into your prepared site.	

Notes:

- * Soil inversion can also be conducted at other times during the growing season. If undertaking soil inversion in summer, include a cover crop (e.g., oats) that will winter kill in your seed mix.
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ADDITIONAL PROJECT NOTES:

ORGANIC SITE
PREPARATION

Solarization—Warmer/Semi-Arid Regions

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High Moderate Low

STEP 2—Warmer/Semi-Arid Regions Solarization Timeline & Checklist

This timeline is ideal for small plantings (e.g., strip plantings or wildflower plots, less than ½ ac) in sunny areas with moderate to high weed pressure in warmer/semi-arid regions (e.g., California).

RECOMMENDED TIMELINE		ACTIVITY	DATE COMPLETED	
			YEAR 1	YEAR 2 [†]
Spring	STEP 1	Obtain plastic.		
	STEP 2	Mow or cultivate site.		
Early summer	STEP 3	Dig trench around perimeter, lay plastic, bury edges.		
Summer	STEP 4	MID-SUMMER	Regularly check plastic for holes; repair any holes with greenhouse repair tape.	
		LATE SUMMER		
Fall	STEP 5	A. Assess weed growth under the plastic: <i>Low weed pressure</i> →	GO TO STEP 6	
		<i>High to moderate weed pressure</i> →	GO TO STEP 5B	
	B. Continue solarization (repeat STEP 4) and return to STEP 7 in the fall of the following year.	GO BACK TO STEP 4		
	STEP 6	Remove plastic: Unbury all edges and remove plastic, or Unbury three edges and flip plastic to adjacent area (repeat STEPS 2–4 on the new area [‡]); then		
	STEP 7	Carefully remove perennial weeds by hand. DO NOT CULTIVATE.		
Fall/winter*	STEP 8	Seed pollinator mix into the prepared area.		

Notes:

- * Dormant season
- † A second year of site preparation may be necessary on sites with high weed pressure.
- ‡ Start a new timeline & checklist for the adjacent area.
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ADDITIONAL PROJECT NOTES:

Solarization—Cooler Regions

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High Moderate Low

STEP 2—Cooler Regions Solarization Timeline & Checklist

This timeline is ideal for small plantings (e.g., strip plantings or wildflower plots, less than ½ ac) in sunny areas with moderate to high weed pressure in cooler regions (e.g., Upper Midwest, Northeast).

RECOMMENDED TIMELINE		ACTIVITY	DATE COMPLETED	
			YEAR 1	YEAR 2†
Spring	STEP 1	Obtain plastic.		
	STEP 2	Mow or cultivate site.		
Early–mid-spring	STEP 3	Dig trench around perimeter, lay plastic, bury edges.		
Late spring	STEP 4	Check plastic for holes; repair any holes with greenhouse repair tape.		
Summer	STEP 5	EARLY SUMMER	Regularly check plastic for holes; repair any holes with greenhouse repair tape.	
		MID-SUMMER		
		LATE SUMMER		
Fall	STEP 6	A. Assess weed growth under the plastic: <i>Low weed pressure</i> →		GO TO STEP 7
		<i>High to moderate weed pressure</i> →		GO TO STEP 6B
	STEP 7	B. Continue solarization (repeat STEPS 4–5) and return to STEP 7 in the fall of the following year.		GO BACK TO STEP 4
		Remove plastic: Unbury all edges and remove plastic, or Unbury three edges and flip plastic to adjacent area (repeat STEPS 2–6 on the new area‡); then		
STEP 8	Carefully remove perennial weeds by hand. DO NOT CULTIVATE.			
Fall/winter*	STEP 9	Seed pollinator mix into the prepared area.		

Notes:

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ADDITIONAL PROJECT NOTES:

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Sheet Mulching

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SITE NAME: _____ START DATE: _____
 WEED PRESSURE BEFORE TREATMENT: _____ PRIMARY WEED SPECIES TARGETED: _____
 High Moderate Low _____

STEP 2—Sheet Mulching Timeline

This method is ideal for small sites on farms where appropriate mulching materials (e.g., straw and composted animal manure) are readily available. Weed growth is suppressed by creating a barrier of layered carbon- and nitrogen-rich mulch.

RECOMMENDED TIMELINE		ACTIVITY	DATE COMPLETED
Winter-late spring	STEP 1	Mow or flatten existing vegetation.	
	STEP 2	Aerate compacted soils.	
	STEP 3	Deeply water arid or semi-arid sites.	
	STEP 4	Layer sheet mulch, watering each layer.	
Summer (arid or semi-arid)	STEP 5	Keep your sheet mulch moist throughout the growing season, but neither too dry nor too wet. Irrigate if needed in dry climates.	
Late fall/early winter	STEP 6	A. For sites established using: Seeding →	GO TO STEP 7
		Transplants →	GO TO STEP 6B
		B. Plant transplants directly into the sheet mulch in the fall or the following spring. SKIP STEPS 7 & 8.	
	STEP 7	Remove top carbon-based layer of sheet mulch.	
	STEP 8	Seed recommended pollinator mix into nitrogen-based compost layer.	

STEP 3—Sheet Mulching Checklist

LAYER #	DEPTH	MULCHING MATERIALS USED	RECOMMENDED MATERIALS & DEPTH
Layer 6 (TOP):	"		1–2" Carbon-based materials (wood bark, chips, sawdust, or shavings)
Layer 5:	"		1–3" Nitrogen-based materials (composted animal or plant materials)
Layer 4†:	"		1–3" Carbon-based materials (crop residues, hay, hulls, leaves, peat moss, or straw)
Layer 3†:	"		1" Nitrogen-based materials (any from the list)
Layer 2:	"		1/4–1/2" Carbon-based materials (corrugated cardboard, newspaper, or recycled paper)
Layer 1* (BOTTOM):	"		1" Nitrogen-based materials (meals, grass clippings, green prunings, grounds, pellets, or seaweeds)

Layer 1* should be placed on mown vegetation

Notes:

- * Layer 1 should be placed on mown vegetation after the soil has been aerated and deeply watered (if necessary).
- 💧 Water previous layer.
- 🌀 **Thoroughly** water previous layer.
- † Omit Layers 3–4 on sites with low weed pressure.
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