A close-up photograph of a garden scene. In the foreground, several golden wheat stalks with long, thin awns are prominent. Interspersed among the wheat are numerous small, vibrant purple flowers, likely delphiniums, with some light pink flowers visible in the upper left. The background is a soft-focus field of more purple flowers and green foliage.

Gardening with **GRAINS**



Brie Arthur

Author
Horticulturist
Curious Gardener

#CrazyGrainLady

Inspired by Agriculture



Convert to
Landscapes



Focus on Grains


Cereals in the Poaceae
family

GRASSES





Wind Pollinated

A ginger cat with a white-tipped tail is walking from left to right across a garden bed. The ground is covered with dark mulch and patches of bright green grass. In the background, there are dark green plants and a black metal fence. A semi-transparent grey box with the text "Attract 'Wildlife'" is positioned in the upper right corner of the image.

Attract "Wildlife"

A low-angle photograph of several sorghum plants against a clear blue sky. The plants have tall, green stems and large, broad leaves that show some yellowing and brown spots, possibly from age or disease. At the top of each stem is a dense, elongated cluster of small, reddish-brown seeds. The text "Grow your own Bird Seed" is overlaid in white, sans-serif font in the upper right quadrant.

Grow your own
Bird Seed

Where to grow grains?



Grains LOVE Sun!

FULL SUN = 8+ hours

PART SUN = 4-6 hours

GRAINS DO NOT LIKE SHADE

Water in summer during HOT
& DRY conditions



A sunny landscape featuring a blue house with white trim and a gabled roof, partially obscured by lush green trees. In the foreground, a field of tall, golden-brown grasses and clusters of vibrant purple flowers grows. The scene is bright and cheerful, with sunlight filtering through the leaves.

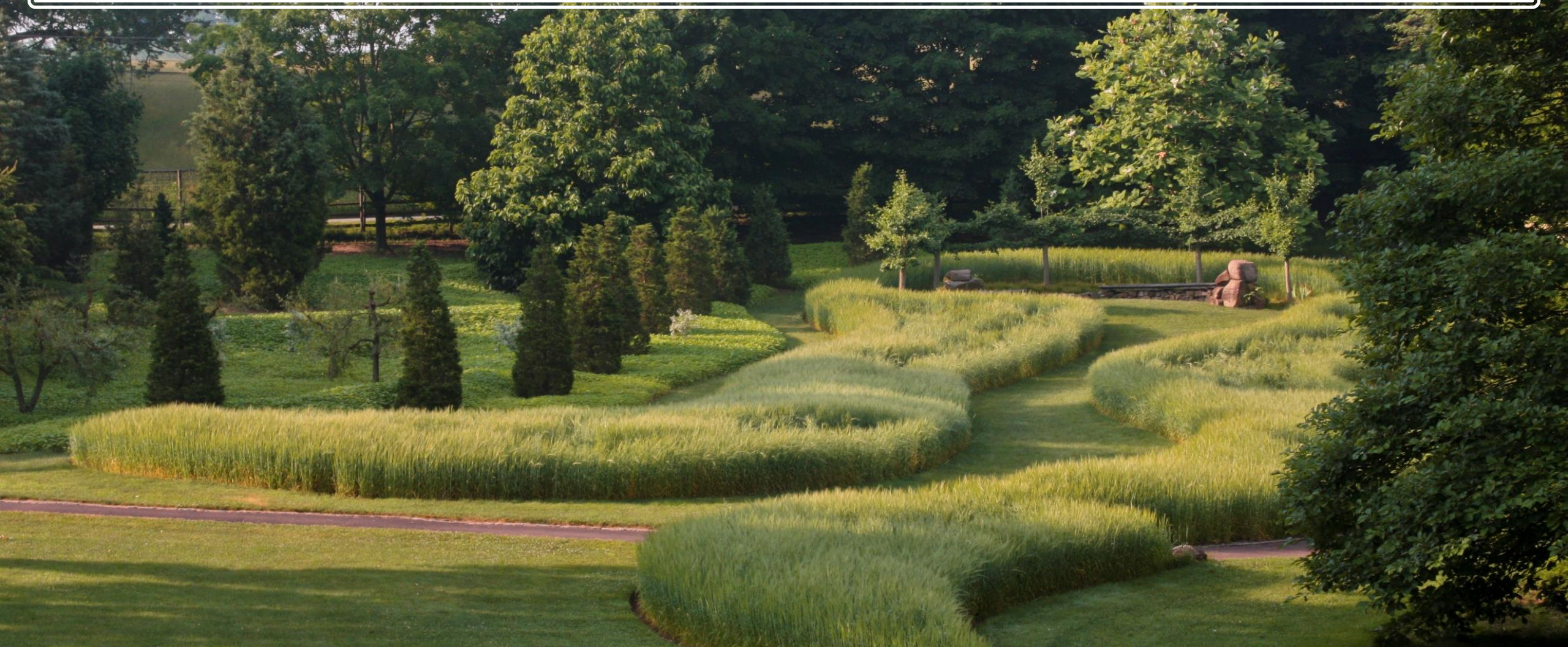
Sunny landscapes and lawns



40 million acres of turf in the United States

Let's do something more interesting
and meaningful with this space

The Serpentine at Chanticleer Garden



Barley Display




How much beer?





200 square feet = 4lbs of barley seed

A woman with long brown hair, wearing a blue dress, is standing in a lush field. She is holding a large bundle of harvested grain, possibly wheat or barley, which is golden-brown. The field is filled with tall green grass and numerous small purple flowers. The background is a dense wall of green foliage. The overall scene is bright and natural, suggesting a sunny day in a garden or field.

Growing Grains has
made me a better
Gardener, Cook,
Land Steward &
Consumer

Gluten Free Grains

Corn
Oats
Rice
Sorghum
Teff





What is “LOCAL”?

Where are our
carbohydrates
coming from?

How are they being
grown?

A young girl with brown hair, wearing a white and grey striped sleeveless top, stands in a field of tall green wheat. She is holding a single wheat stalk in her right hand. The background is filled with more wheat plants under bright sunlight.

The Cultural Practices
Matter Most:

AVOID

Synthetic Fertilizer
Systemic Fungicide and
Pesticide Applications
Persistent Herbicide
Spray to dry crop

“Killer Compost” from sprayed grains



ComPost

CONFIDENTIAL



The backstory and view behind the scenes of Growing a Greener World

Killer Compost

BY JOE LAMP'L ON AUGUST 19, 2013

It Happened to Us!

I say it often; it's alright to make mistakes as long as you learn from them—especially in the garden. Well, I made a doozy recently and have I ever learned from it.

If you watched our [Episode 406](#) on **building out our GGWTV Vegetable Garden**, you know how hard we've been working. I was especially proud when the time finally came to fill my beds with carefully selected, rich topsoil, organic compost and manure. And I was feeling particularly resourceful about utilizing the manure from right here on our farm. With horses, goats and chickens, we had a generous inventory that was well rotted and ready for the garden.

As a full time gardening communicator who prides himself at being in the know, I am also aware of the potential current hazards of using manure to amend garden soil. In recent years, it has become very apparent that some herbicides used to control weeds in farm fields persist for a very, very long time. Even worse, they don't readily break down, even as composted manure!



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FREE
GUIDE!

The Complete Guide
to Home Composting

GET IT!



How to Grow Grains?



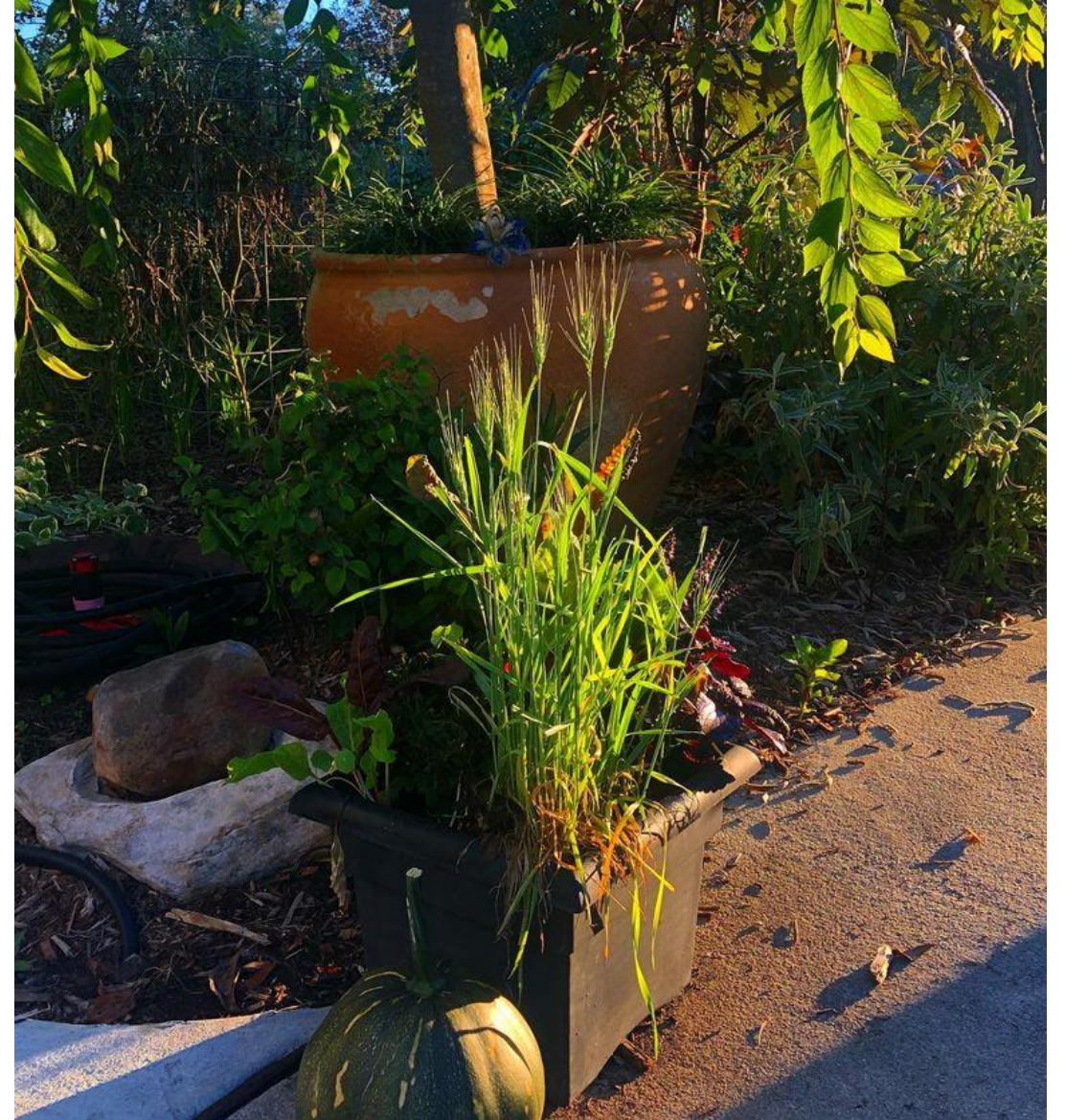
Grains in Containers

1. Fill container with soil
2. Scatter Seed on top
3. Mulch Lightly



Germinates in 2 weeks







How much flour do you get from 3 5 gallon fabric bags?

1 loaf of bread



Grow as Clumps




Yoder's
Amish Market
Prairie Gold Wheat
Berries
Organically Grown, Certified
Non-GMO, Kosher, Gluten Free
Net Weight 4.43 lbs (2.01 kg)
0.89 4.99 4.43



Mixed Meadow



A close-up photograph of a person's hand, wearing a purple knitted sleeve, sowing small, light-brown seeds into dark, rich soil. The soil is uneven and contains some green weeds and dry leaves. A white circular text box is overlaid on the left side of the image.

Direct
seed in
existing
open
space

A close-up photograph of a ground surface covered with dense, bright green, blade-like plants. The plants are growing in dark, rich soil. Some dry, brown leaves and twigs are scattered on the ground, particularly in the foreground and around the plants. The overall scene suggests a natural or managed ground cover.

Ground plane coverage

Lowers weed pressure and herbicide use



After harvest
mow the stalks
in place

Shredded
organic
matter
breaks
down in
30-45 days



Use stalks as compost to improve soil
Leave root systems in place to rot
Utilize crop rotations to increase fertility
Inexpensive & efficient strategy



The background of the slide features a close-up, slightly blurred photograph of wheat stalks with their characteristic awns. Interspersed among the wheat are small, vibrant purple flowers, likely lavender, which add a splash of color to the green and golden tones of the grain. The overall composition is soft and natural, suggesting a focus on agriculture and environmental science.

Soil Improvement



What are cover crops?

A cover crop is a plant that is used primarily to slow erosion, improve soil health, enhance water availability, smother weeds, help control pests and diseases, increase biodiversity and bring a host of other benefits to your land.



Rotate Grains & Legumes
for natural fertilization cycle

Legume Cover Crops:

Crimson Clover	<i>(Trifolium incarnatum)</i>
Red Clover	<i>(Trifolium pratense)</i>
Hairy Vetch	<i>(Vicia villosa)</i>
Austrian Winter Pea	<i>(Pisum sativum subsp. arvense)</i>
White Sweetclover	<i>(Melilotus alba)</i>
Yellow Sweetclover	<i>(Melilotus officinalis)</i>
Berseem Clover	<i>(Trifolium alexandrinum)</i>
Subterranean Clover	<i>(Trifolium subterraneum)</i>
White Clover	<i>(Trifolium repens)</i>
Faba Bean	<i>(Vicia faba)</i>
Soybean	<i>(Glycine max)</i>
Peanuts	<i>(Arachis hypogaea)</i>



A close-up photograph of wheat stalks with golden-brown grain heads and green awns, serving as the background for the text overlay.

Non-legume cover crops:

Cereal Rye	<i>(Secale cereale)</i>
Annual Ryegrass	<i>(Lolium multiflorum)</i>
Barley	<i>(Hordeum vulgare)</i>
Buckwheat	<i>(Fagopyrum esculentum)</i>
Mustard	<i>(Brassica nigra)</i>
Oats	<i>(Avena sativa)</i>
Rape	<i>(Brassica napus)</i>
Forage Radish	<i>(Raphanus sativus)</i>
Winter Wheat	<i>(Triticum aestivum)</i>

The background of the entire image is a dense field of leafy green plants, likely cover crops, with many leaves showing a distinct purple or magenta hue. The plants are growing closely together, creating a textured, layered appearance. The lighting is natural, highlighting the various shades of green and purple.

Cool Season Leafy Greens Cover Crops

Arugula
Chard
Cilantro
Collards
Kale
Lettuce
Mustard

Cool Season Root Cover Crops

Beets

Carrots

Daikon Radish

Parsnips

Potatoes

Rutabaga

Turnips



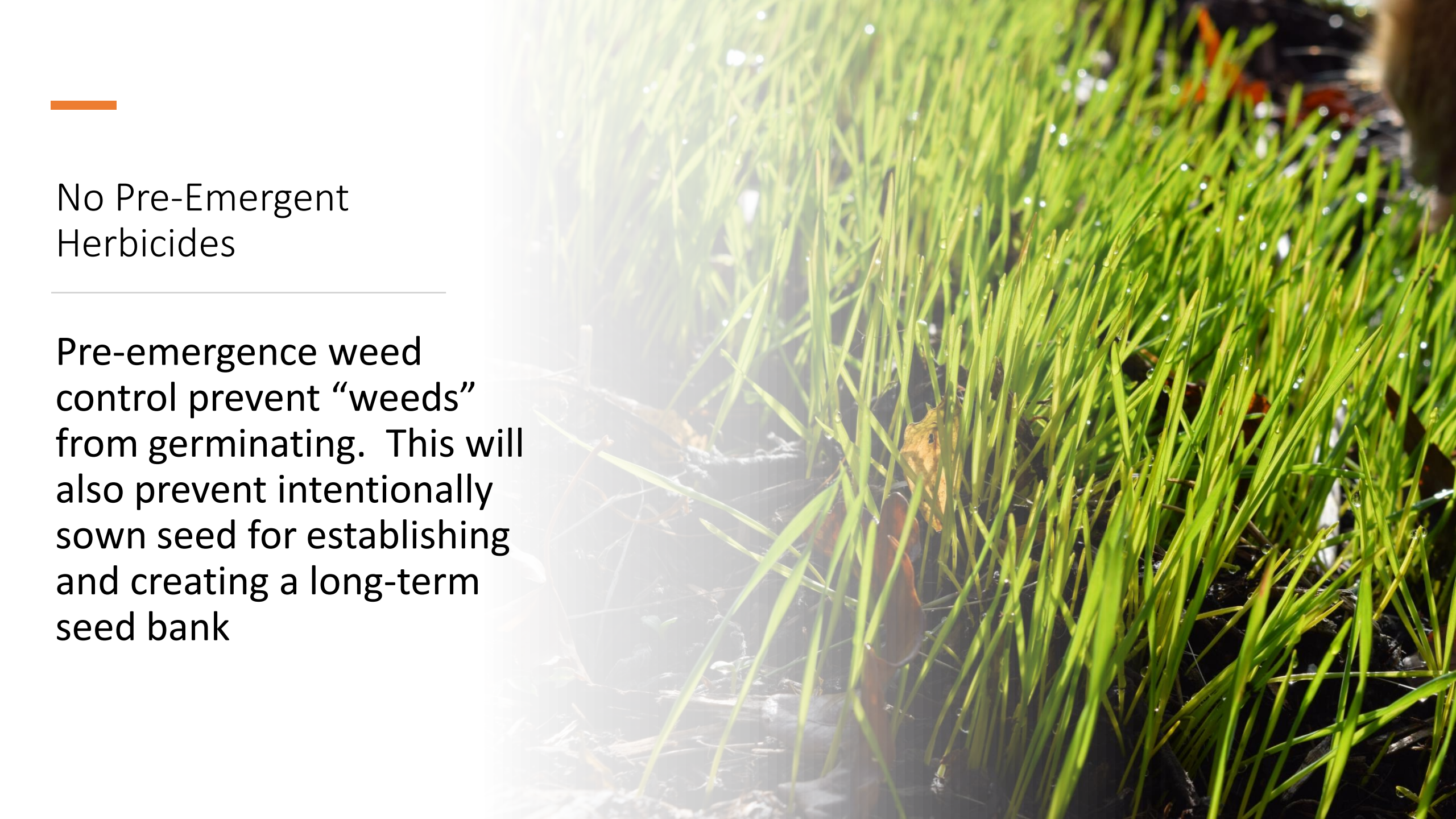


Cool Season Flowering Cover Crops

Cilantro, Poppies, Nigella, Carrots, Larkspur

Ground plane coverage

- Direct Seed
- Eliminate open mulch space
- Reduce need for herbicide applications
- Utilize crop rotations to improve soil
- Inexpensive & efficient strategy
- Reduces need for mulch
- Low maintenance



No Pre-Emergent Herbicides

Pre-emergence weed control prevent “weeds” from germinating. This will also prevent intentionally sown seed for establishing and creating a long-term seed bank

Weed Control 101:

Hand Weeding is ALWAYS BEST!

DO NOT USE VINEGAR IN YOUR GARDEN!

- Vinegar can be used on hardscape spaces at a 15% concentration to be effective; very caustic, will burn skin and eyes and harmful to amphibians. **DO NOT USE VINEGAR!**
- Glyphosate - is a broad-spectrum systemic herbicide and desiccant. It is an organophosphorus compound, specifically a phosphonate, which acts by inhibiting the plant enzyme 5-enolpyruvylshikimate-3-phosphate synthase. It is used to kill weeds, especially annual broadleaf weeds and grasses that compete with crops.
- Glufosinate - does not translocate as well, need to use on seedling broadleaf weeds, glyphosate resistant horseweed. Use with pre emergent. Does not work as well on Bermuda, pigweed, some annual weeds

Weed Control 101:

Hand Weeding is ALWAYS BEST!

- Envoy - does not work on drought stressed grasses
- Avenger (d-limonene) good contact herbicide at correct dosage on broadleaf seedlings. No effect on grasses or nutsedge
- Scythe and Axe (pelagonic acid) will burn but weeds come back. Need good spray coverages and need two applications to finish the job, works within hours but stinks and odor persists
- Reward or diquat works better than scythe need 2 apps not effective on grasses works fast do not mix with selective grass herbicides

All more expensive then glyphosate



What are Grains?



Ancient Grains

- Wheat: Spelt, Kamut, Freekeh, Bulgar, Farro, Einkhorn and Emmer
- Barley, Millet, Teff, Oats and Sorghum
- Pseudocereals: Amaranth, Buckwheat, Quinoa and Chia



Cool Season Grains

Barley

Oats

Rye

Wheat

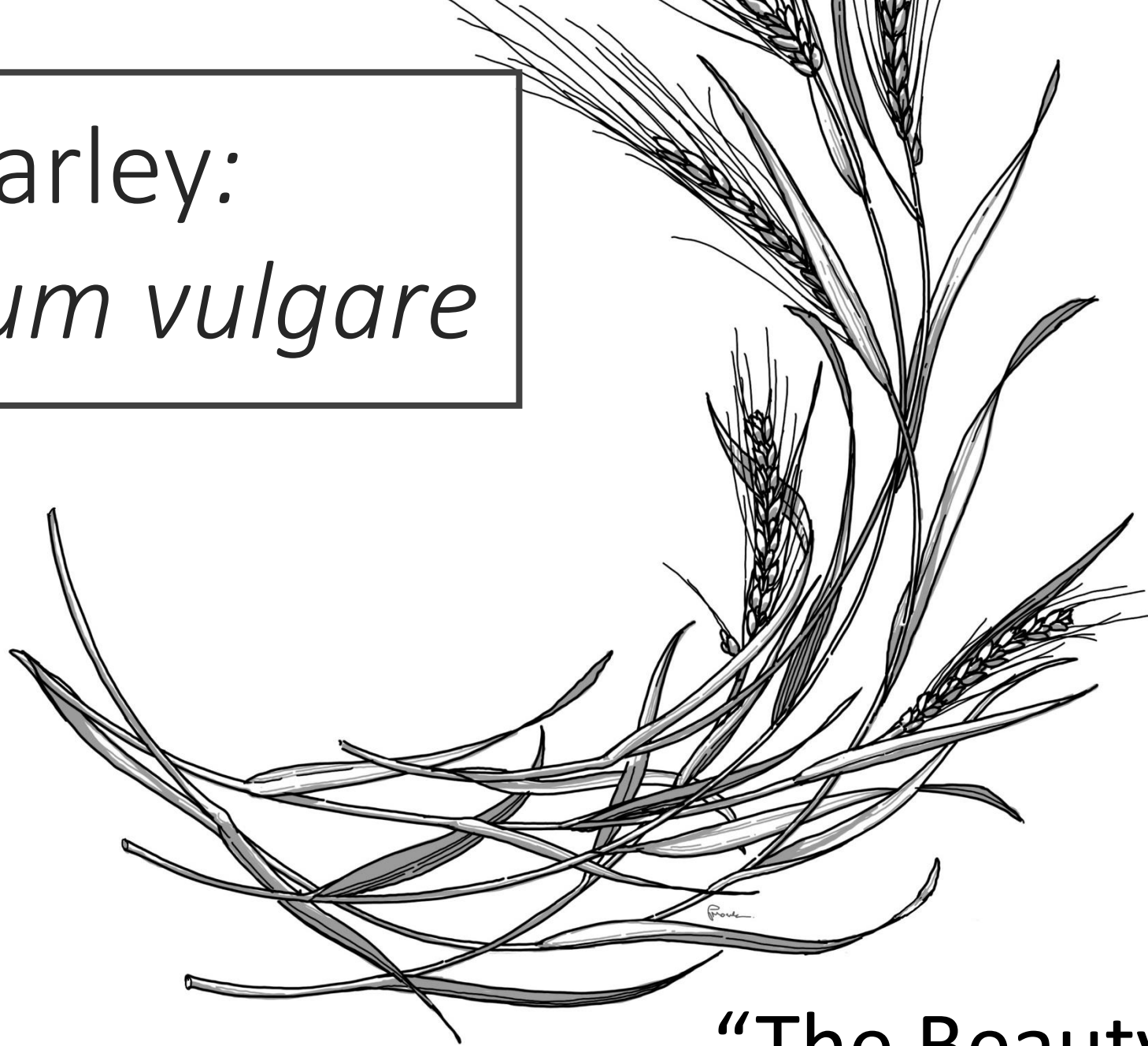
Prefer cool soil and air
temperatures

Sow in late fall or early
spring

Harvest in summer



Barley:
Hordeum vulgare



“The Beauty Queen”

Fun Facts

- Barley seed was a form of measurement, weight & currency
- American shoe sizes are still a reference to “Barleycorn”
- The saying “eating your savings” refers to barley





Oats:
Avena sativa

“The Dancer”

Fun Facts

- Oats have the deepest root systems reaching 36"+ and act as nutrient scavengers
- Oats and Peas combined are a “complete” cover crop
- The term “sow your wild oats” means to grow a crop that you will regret and dates to the 1560s





Wheat:
Triticum
aestivum

“The Workhorse”


Fun Facts

- Wheat is grown on more land than any other crop and is cultivated on every continent except Antarctica
- Wheat has 13% vegetable protein content- more than all other major cereals



Stem Strength MATTERS!



A photograph of a single-story house with blue horizontal siding and a dark grey roof. The house features a front porch with white columns and a dark door. The roofline is accented with red shingles. The house is surrounded by lush green trees and a field of tall, golden-brown grass and purple flowers in the foreground. A white text box is overlaid on the left side of the image.

850 sq ft= 25 lbs of flour

A photograph of three children participating in a hand harvest. On the left, a boy in a yellow t-shirt is reaching into a large black bucket filled with harvested wheat. In the center, a girl in a colorful floral dress is also reaching into the bucket. On the right, a boy in a white t-shirt with the text 'LET ME TALK IN THE KITCHEN' and black shorts is holding a smartphone and looking at the bucket. They are standing in a garden with various plants, including tall wheat stalks and green leafy plants. In the background, there is a blue house with white vertical slats. A white rectangular box with a thin black border is overlaid on the bottom left of the image, containing the text 'Hand Harvest'.

Hand Harvest

Thresh

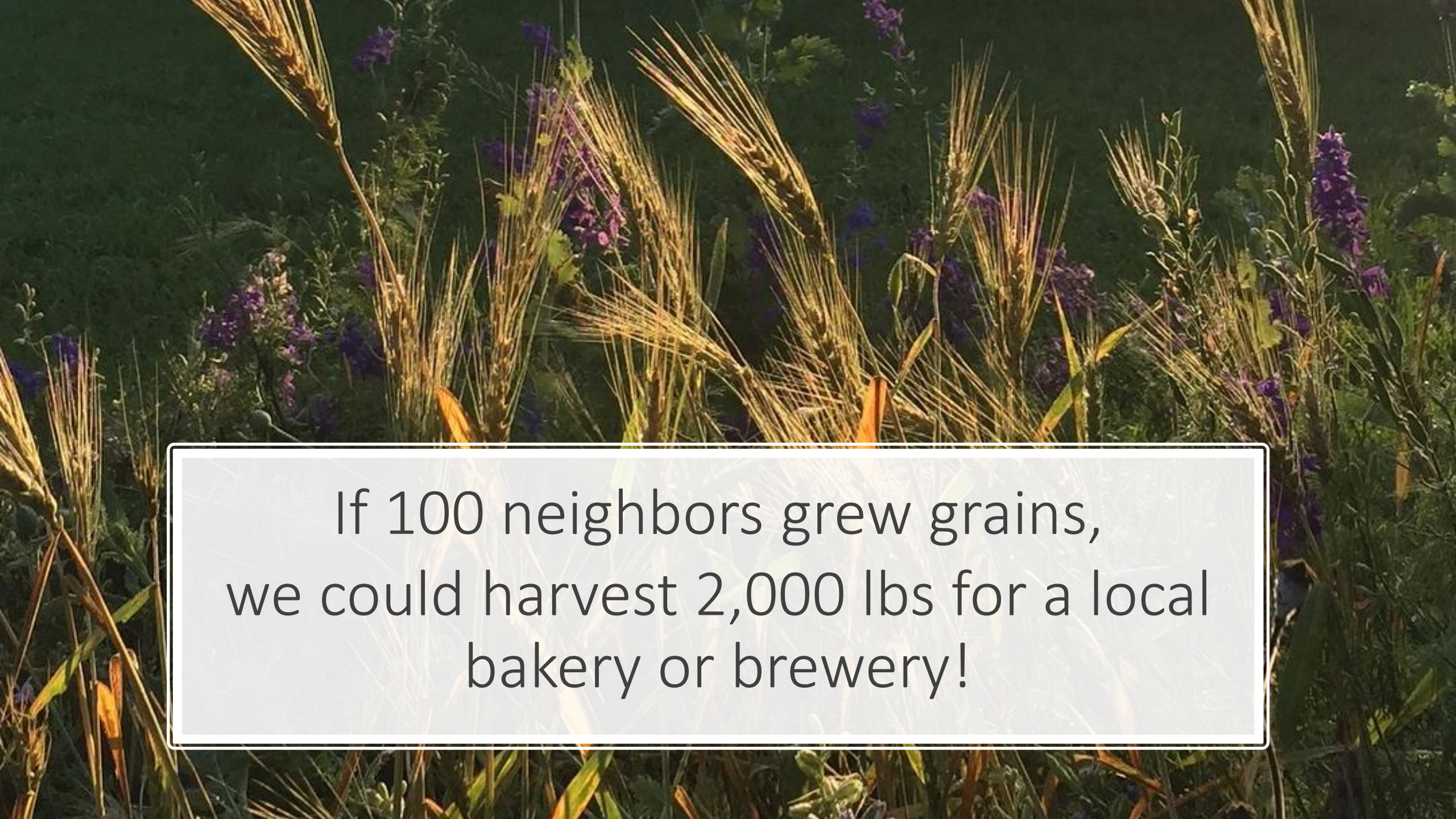


Winnow



Clean seed
ready to grind
or sow



A close-up photograph of a field of grain, likely wheat or barley, with several stalks in the foreground. Interspersed among the golden-brown grain are several tall, slender stalks of purple flowers, possibly lupines. The background is a dense field of similar vegetation, slightly out of focus. The lighting suggests a bright, sunny day, with some highlights on the grain and deep shadows in the foliage.

If 100 neighbors grew grains,
we could harvest 2,000 lbs for a local
bakery or brewery!



Warm Season Grains

Corn

Millet

Rice

Sorghum

Prefer warm soil and air
temperatures

Sow in early summer

Harvest in fall



Corn:
Zea mays

“The Catalyst for Change”

Fun Facts

- Corn is the only cereal grain native to North America
- An ear of corn has an average of 800 kernels in 16 rows and will always have an even number of rows
- There are over 3,500 different uses for corn products globally





Corn is an
exclamation point
in the garden

Rice:
Oryza sativa

“The Mystifier”



Fun Facts

- Rice does not have to be grown in constant saturation. Paddies are a way to naturally reduce weed pressure
- April 19th is national Rice Ball day
- Over 40,000 varieties of rice





Rice is a warm season
grass

Very Ornamental

Seed can be harvested
August-October

Great container plant
Can tolerate no drainage



Direct sow seed in June
pot with no drainage
holes

Full Sun

Keep it saturated





Purple Fountain Grass collapses in rain

‘Black Madras’ & ‘Carolina Gold’ rice

Sorghum:
Sorghum bicolor

“The Sweetness”



Fun Facts

- When Mary Poppins sang “A spoon full of sugar” she was referring to a spoon full of sorghum syrup, which is full of nutrients and vitamins
- Sorghum is the most heat and drought tolerant cereal grain
- Sorghum is gluten free



Sorghum grows up to 14' tall in less than 4 months
Heat and Drought Tolerant





Seed Color Variation

Ideal Bird Seed



What do you DO with these grains?



The Wonder Mill & Kitchen Aide Grinder



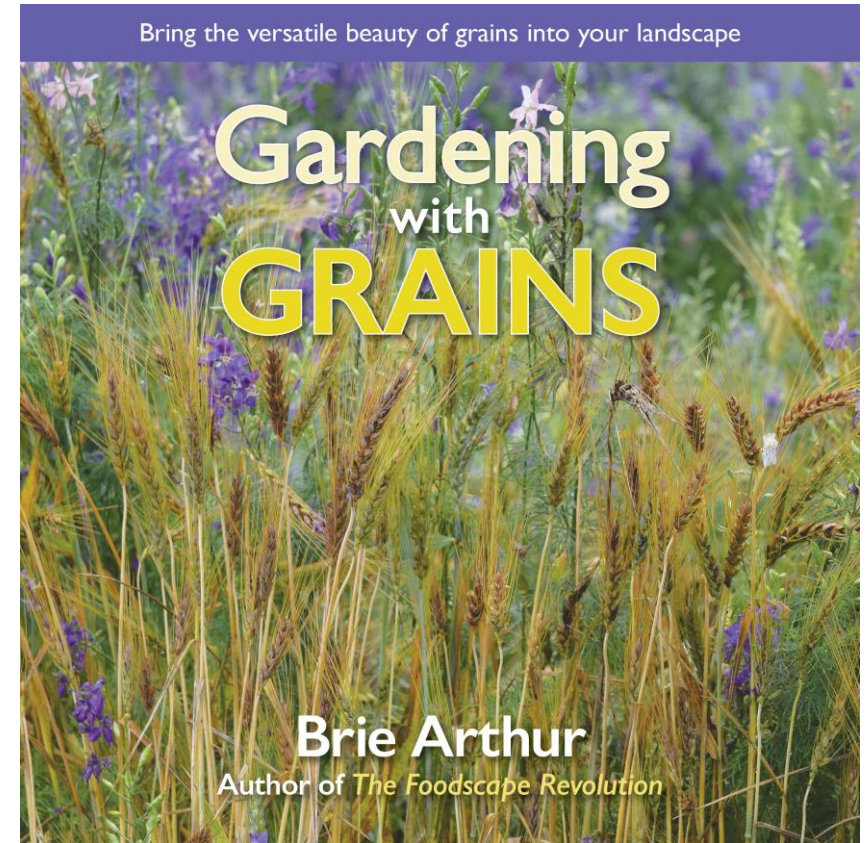
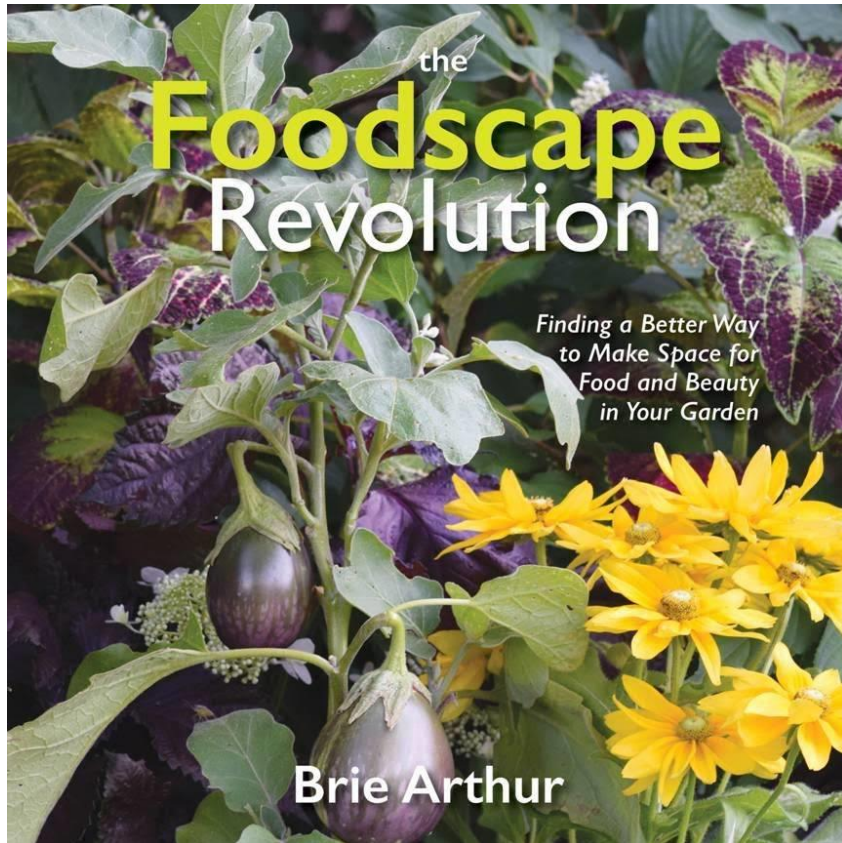
Home grown is WHOLE GRAIN



Thank you
Ohio
Master
Gardeners



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