Bee lawns: practical applications for industry professionals

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February 21, 2024

UNIVERSITY OF MINNESOTA
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My background

- B.S. Ecology
- M.S. Plant Sciences (thesis: genetic diversity of native plants for roadsides)
- UMN Department of Agronomy & Plant Genetics
- UMN Department of Horticultural Science (now)

Photo: Kristine Moncada

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A link to resources and slides at the Landscape and Grounds Maintenance Short Course webpage

- Bee lawns: installing and maintaining
- Fine fescue lawns: establishing and maintaining
- Flowering bee lawns: a toolkit for land managers
- Slides
- Resources (Bee lawn webpage!) and references

https://hort.extension.wisc.edu/landscape-and-grounds-maintenance-short-course/

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Topics

- A deeper dive into bee lawns
  - Plant options
  - Establishment and maintenance
  - Pitfalls
  - Client needs*
- Latest research from UMN

Photo: Florence Sessoms

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What is a bee lawn?

A **low-input** lawn intentionally managed and/or planted with **forbs** and/or **legumes** that have flowers on which **pollinators** can forage for nectar and/or pollen

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Photo: Hannah Ramer

- Bee lawns also called “pollinator lawns”
- UMN research – self-heal, creeping thyme, white clover

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Lawn turfgrasses for bee lawns – two choices

Fine fescues - low-input species:
Strong creeping red fescue
Slender creeping red fescue
Chewings fescue
Hard fescue
Sheep fescue

Kentucky bluegrass

Tall fescue and perennial ryegrass are not recommended for bee lawns

Fine fescue mix. Photo: Ross Braun

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Self-heal

- *Prunella vulgaris* ssp. *lanceolata* = Lance-leaf self-heal – native
- *Prunella vulgaris* ssp. *vulgaris* = Common self-heal – introduced
- Mint family

Photos: Ryan Schwab (top) and James Wolfin (left)

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Creeping thyme

- *Thymus praecox* ssp. *arcticus*; formerly *Thymus serpyllum*
- Mint family
- Non-native

Photos: James Wolfin

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White clover

- *Trifolium repens*
- Legume family
- Does not need N fertilizer
- Non-native, but widely naturalized

Photos: Kristine Moncada

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Why not any flowering plant or weed?

Photos: Kristine Moncada

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Bee lawn flowers - sun and soil conditions

Forb	Full sun	Part sun to part shade	Sandy soil	Silty/Clay/Loam soil
Dutch white clover	x	x	x	x
Creeping thyme	x		x	x
Self-heal		x		x

Soil pH range 6-7, white clover down to 5.5

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Native flower options?

- Ground Plum (*Astragalus crassicarpus*)
- Lanceleaf Tickweed (*Coreopsis lanceolata*)
- Calico American Aster (*Symphyotrichum lateriflorum*)

Bottom photo: Kristine Moncada

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Future work with other potential species

- Wild petunia
- Asters
- Blue-eyed grass
- Yarrows
- Native violets
- Spring beauty

Photos: Kristine Moncada (top row)

Casey O'Neal, Auburn University, Refuge Lawn project (left)

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Commercial options

- "Standard" bee lawn mix
- New bee lawn mix with self heal, Yaak yarrow and blue-eyed grass
- Other variations on the bee lawn theme
- Make sure to choose a mix adapted to your region!

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Establishment decisions

- Renovate or overseed
- When to establish
- Some additional factors

Photo: Andrew Hollman

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Prepping your site for seed – overseed or renovate?

Why overseed	Why renovate
Lawn is healthy with few weeds	Lawn is mostly weeds or has many bare spots
Less work	Lawn is uneven or compacted
Less seed?	You have Kentucky bluegrass and want low-input fine fescues

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Overseeding vs. renovating - steps

Overseed	Renovate
Mow very short to set back existing turf	**Need to remove existing vegetation**
Seed has some bare areas to occupy and grow	Seed bed prep
No seed bed prep or cover/mulch	Seeding blankets may be necessary

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When to establish

- Turfgrasses do best in fall, but forbs do best in spring
- We recommend:
  - Spring
  - Dormant
- Are there other options? Yes, but less research to back up

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Spring seeding

- Seed after risk of frost mid- to late May
- Will need to water regularly
- Will have more weed challenges but fewer tools

Photo: Kristine Moncada

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Dormant seeding

- Seed late fall to winter
- Don't have to water
- Less concern about weeds
- However…winter conditions can have an effect

Fine fescue seedlings germinating in early April. Photo: Kristine Moncada

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Dormant seeding "pitfalls"

- Warm spells where seed germinates too early
- Birds and rodents
- Unprotected seed can wash away in rains

Photo: Kristine Moncada

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Knotweed starting to germinate already

February 7, 2024; Photo: Gary Deters

April 29, 2021; Photo: Kristine Moncada

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Summer seeding?

- August seeding will need a lot more watering
- Less weed pressure than spring seeding
- Favors the turfgrasses over the forbs
- Not ideal for creeping thyme

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Dormant seeding – other factors

- For this next section, I received help from colleague Andy Hollman (Turfgrass Researcher)
- Andy has done a lot of the recent bee lawn fieldwork
- Turfgrass establishment pro!

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How to establish (new info!)

- Demonstration on dormant seeding comparing:
  - Bare soil
  - Seeding blanket
  - Dead turfgrass foliage
- Included bee lawn mix as one of the seed treatments

A=blanket, B=bare soil, C=dead grass. Photo: Andrew Hollman

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Overall results

- All treatments: blanket>dead turf>bare soil
- Bare soil may have dried out in early 80ºF temps

A=blanket, B=bare soil, C=dead grass Photo: Andrew Hollman

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Bee lawn results

- Creeping thyme (in bee lawn treatments) did not make it under the blankets or bare soil
- White clover and self-heal bloomed, but creeping thyme didn't (as expected)

Photo: Andrew Hollman

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Creeping thyme germination

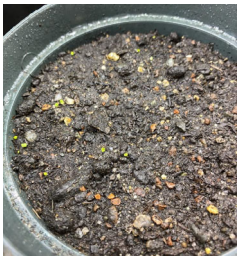

Photo: Andrew Hollman

Andy is looking at germination conditions in soil and under blankets (greenhouse)

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More work is needed on consistent establishment

- New grant - *Increasing establishment success of bee lawns in Minnesota* funded by UMN-CFANS
- Find best approaches **for consumers** to establish bee lawns
- Possible treatments will include time of year, soil surface, split applications

Photo: Andrew Hollman

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Fertilizing once established

- Low to medium-low maintenance levels
- Depends on soil organic matter, how much watering, if clippings are removed
- Get a soil test to determine SOM
- In general, 1-2 lbs N per 1000 ft^2

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N recommendations – UMN Extension

Nitrogen recommendations for established lawns

Maintenance level and practices		Total annual nitrogen to apply			Number and timing of applications
Soil organic matter	Low	Medium	High	Organic	
	Medium	maintenance			
Some watering, clippings returned	2 lbs N/ 1000 sq ft/ year	1.5 lbs N/1000 sq ft/ year	1 lb N/ 1000 sq ft/ year	0.5 lb N/ 1000 sq ft/ year	Two annual applications: Sept, May–June
	Low	maintenance			
No watering, clippings returned	1 lb N/1000 sq ft/ year	1 lb N/1000 sq ft/ year	0.5 lb N/ 1000 sq ft/ year	0.5 lb N/ 1000 sq ft/ year	One annual application: Sept

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Other maintenance

- Weed control – manual removal and spot treat as needed
- Water less than a traditional lawn
- Mow at higher height (3"+) and less often to allow flowers to bloom

Photo: Kristine Moncada

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How to care over the long-term

- Bee lawn research in MN by Wolfin et al. completed only a few years ago; no long-term data!
- MSP-LTER project is working on what happens over time
- Could be a need to supplement some species

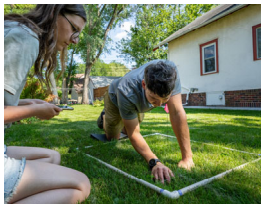

Photo: Anne Readel, Sierra Club

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Bee lawns and No Mow May?

- Bee lawn species are adapted to mowing!
- Blooming for the bee lawn flowers usually doesn't start until late May (MN)
- Mowing encourages reblooming
- Not mowing during high growth periods is stressful

Photo: Kristine Moncada

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Client needs*

Photo: Kristine Moncada

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Popularity of bee lawns

- Our group does a lot of outreach
- In the Twin Cities, bee lawns are extremely popular
  - One of the top topics at our state fair booth
  - The Extension bee lawn webpage is one of the most visited pages in Yard and Garden section

UMN Turfgrass Extension Educator Jon Trappe
Photo: Ryan Schwab

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Things we've noticed in our outreach

- Those interested in bee lawns **do not** want to use pesticides
- They have a higher tolerance for weeds
- They have a higher tolerance for "messiness" (some are No-mow May-ers)

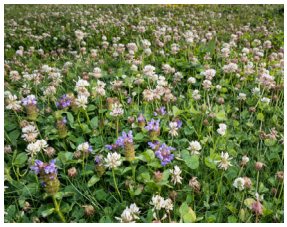

Photo: Anne Readel, Sierra Club

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Is a bee lawn for your client?

Yard used heavily for recreation (sports, pets, high traffic)

Yard used lightly for recreation / don't want a lot of work / like manicured look

Native plant aficionado; flower or veggie gardener

Traditional lawn is best

Bee lawn!

Little to no lawn

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Residents' thoughts on bee lawns

- Survey of Twin Cities residents (256 respondents) with an interest in alternative lawn management in 2023
- Part of the MSP-LTER project (Meghan Klasic, Kristen Nelson, others)

Photo: Anne Readel, Sierra Club

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Survey results

1. 38% had a bee lawn, 26% were unsure whether they had one
2. Survey respondents reported making lawn management decisions based on pollinators
3. Neat and orderly lawns not a high priority
4. 64% reported promoting “pro-pollinator” lawn management in the past five years

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Characteristics associated with choosing “pollinator-friendly” lawns

- Annual income over $50K
- At least an undergraduate degree
- Have lived in their house for over 10 years

Photo: James Wolfin

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Potential needs of bee lawn customers

- **Help establishing**
- Some help maintaining from those knowledgeable about low-input maintenance
- Manage expectations

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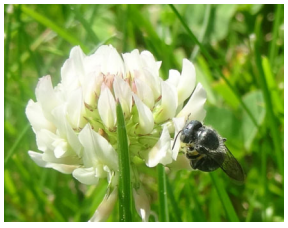
Common bee lawn questions

- Do bee lawns grow in shade?
- Will I get stung by bees?
- How long will it take to see flowers?



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Ways to save money?

- With a healthy existing lawn, you could overseed just the forbs
- Start with smaller area and allow self-sowing seed to disperse and/or plants to “creep” into adjacent areas
- Even adding just white clover is beneficial to pollinators

Photo: Kristine Moncada

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Best bee lawn picture ever taken

Photo: Anne Readel, Sierra Club

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Funding acknowledgments

- Minnesota Environment & Natural Resources Trust Fund as recommended by the Legislative-Citizen Commission on Minnesota Resources (LCCMR, MN)
- University of Minnesota - College of Food, Agricultural and Natural Resource Sciences (CFANS, UMN)
- Minneapolis-St. Paul Metropolitan Area Long Term Ecological Research Program (MSP-LTER, NSF)

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Thanks also to:

- UMN Bee Lab esp. Marla Spivak
- UMN Extension
- UMN Forestry Resources esp. Kristen Nelson
- UMN Turfgrass Science esp. Eric Watkins, Andy Hollman, Ryan Schwab
- Graduate students Ian Lane, Hannah Ramer and esp. James Wolfin

UW-Madison Extension for inviting me
All of you for listening to this talk!!!

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