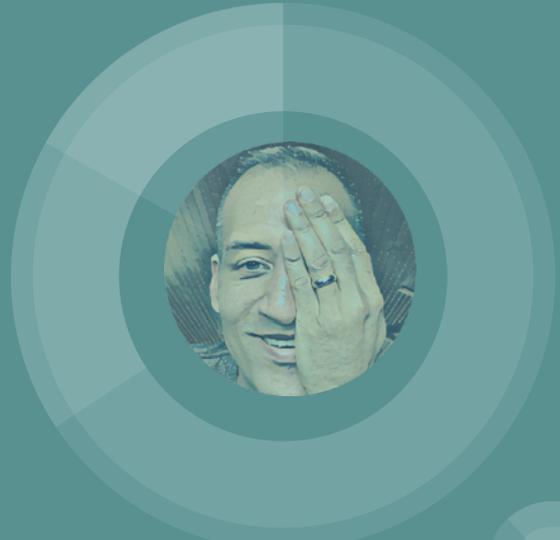
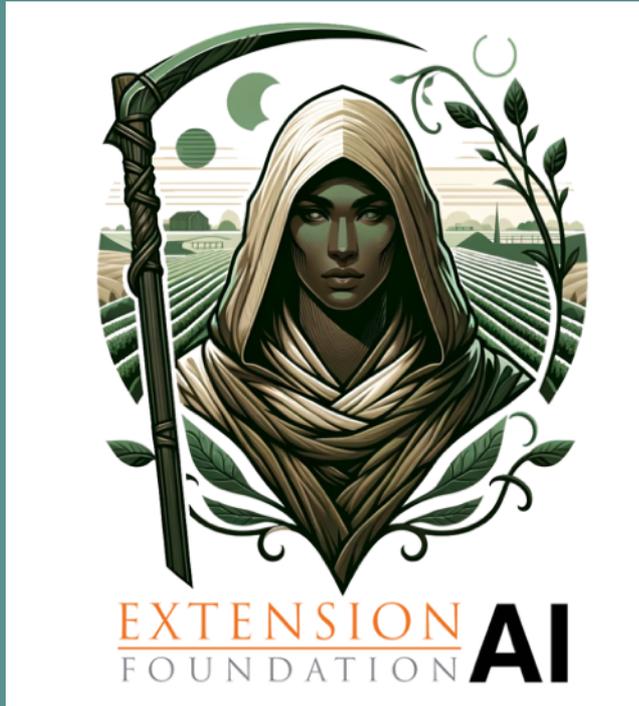


Extension Bot



J. Mark

extensionlocklear

locklear.me

@marklocklear

Augmented Intelligence
...aims to improve human
intelligence and capabilities, rather
than replace it.



What is Extension Bot?



Domain specific conversation AI tool
trained on Cooperative Extension Data

Try it out at: extension.org/chat

ChatGPT

You

Why are there brown spots in my bermudagrass?

ChatGPT

Brown spots in bermudagrass can be caused by several factors:

- Fungal Diseases:** Common fungal diseases like Dollar Spot, Brown Patch, or Leaf Spot can cause brown patches. These are often exacerbated by excessive moisture and inadequate air circulation.
- Insect Damage:** Pests like grubs, armyworms, or chinch bugs can damage the roots or the foliage of the grass, leading to brown spots.
- Drought Stress:** Bermudagrass requires consistent moisture. Prolonged dry conditions can cause the grass to turn brown.
- Improper Mowing:** Cutting the grass too short can stress it, making it more susceptible to diseases and environmental stress.
- Chemical Burn:** Over-fertilization or misuse of herbicides and pesticides can cause chemical burns, leading to brown spots.

To determine the exact cause, closely examine the grass and soil. Look for patterns of damage, signs of pests, and consider recent care practices. Sometimes, adjusting watering practices, ensuring proper fertilization, and aerating the soil can help resolve these issues. If a disease or pest infestation is suspected, treatment with appropriate fungicides or pesticides might be necessary.



Extension Bot

Why are there brown spots in my bermudagrass?

Brown spots in bermudagrass can be caused by a variety of factors, including diseases such as Helminthosporium or Bipolaris, which is a common disease in bermudagrass. This disease attacks roots, crowns, stems, and leaves, causing long reddish-brown to purplish-black spots that eventually kill the leaves, resulting in frosted or tan circular areas in the field. Low potassium levels and spittlebug injury can increase the susceptibility of bermudagrass to this disease [3]. Additionally, Rhizoctonia, a disease caused by soil fungus, can infect stems and leaves in hot, wet weather, leading to brown circular patches [6]. To manage these diseases, it is recommended to keep potassium levels up, burn fields before green-up, control spittlebugs, and harvest grass on a regular schedule [6].

Localization
References

If you are in Oklahoma, it's important to note that Spring Dead Spot (SDS) is a common disease of bermudagrass, but rarely of buffalograss or zoysiagrass in the state. Symptoms include dead and bleached white areas of turf, which may expand in size or disappear over time, and affected plant parts, such as rhizomes, crowns, roots, or stolons are dark black and rotted when removed from the soil [2].

Answer reflects
Extension

If you are experiencing brown spots in your bermudagrass, it would be beneficial to have a soil test to determine if there are any nutrient deficiencies, particularly in potassium, which can be a contributing factor to these issues [1].

Reference
links

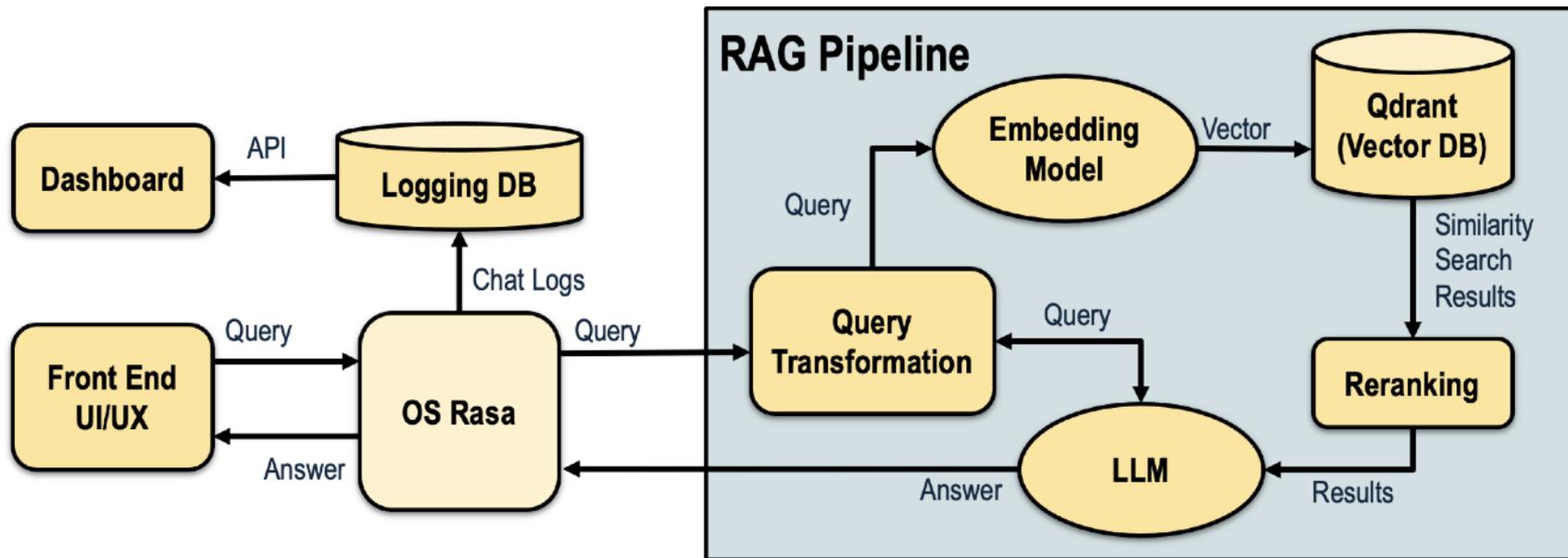
Learn More: 1. extension.okstate.edu, 2. extension.okstate.edu, 3. www.aces.edu

Follow up
question

How can I improve the potassium levels in my bermudagrass to prevent these diseases?

Technology Behind it...





Data Sources

Publications and “Fact Sheets”

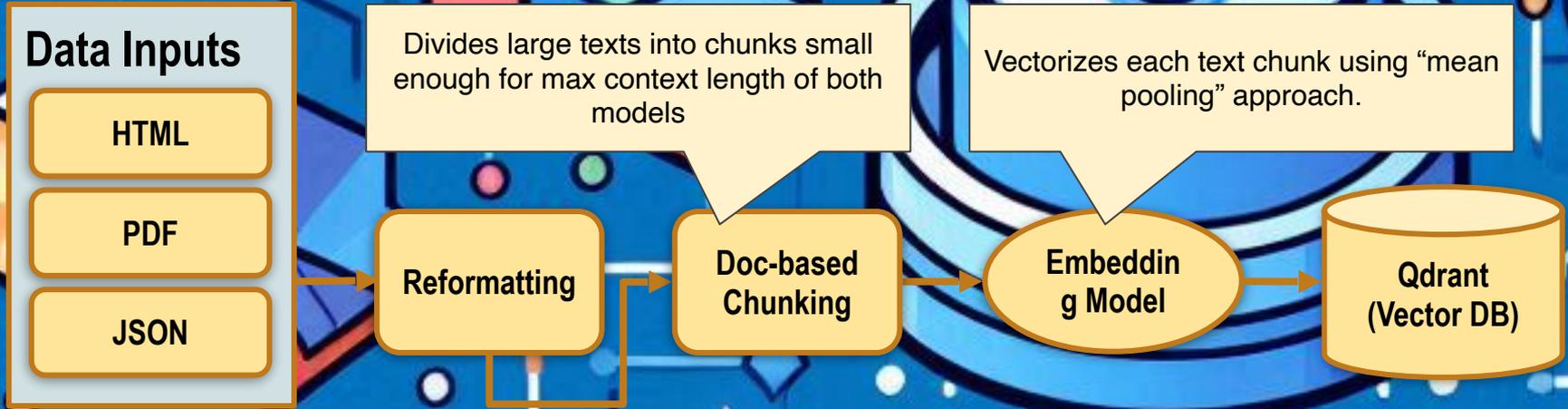
Two Pronged approach:

- Working with Land Grant Institutions to provide data sets
- Web crawling



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```

ExtensionBot - Data Ingestion Process



Credit: Jeff Yarbro

Data acquisition

Implementation



Full screen or “widget” version

+ New Chat

extension.org/chat

ExtensionBot



How can I help?

Lawn and Garden

What is the best fertilizer to use on my lawn?

Find a local office

I would like to speak with my local extension agent.

Crop Management

What is the ideal temperature range for growing sweet corn and how can I ensure optimal growth?

Pest Management

Can I use *Bacillus thuringiensis* and spinosad together in a non-chemical form?

Type your question...



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more effective control of woody plant encroachment [1]. This can be particularly beneficial in areas with high woody plant encroachment, as goats can increase rangeland productivity and potentially increase the stocking rate of cattle [2].

In general, two goats can be added per head of cattle without decreasing cattle stocking rate, so in an operation with 20 cows, 40 goats can be added while maintaining the same number of cattle [1].

Learn More: [1. extension.okstate.edu](https://1.extension.okstate.edu)

What are some other benefits of using mixed-species grazing with cows and goats?

Type your question...

Front-end implementation

- Two versions – full screen and slide-out widget
- Embedded JS code
- Configuration options – ability to downweight sources and resources
 - "client": "general",
 - "search_size": 100,
 - "list_of_states": [],
 - "state_downweight": 0.99,
 - "source_downweight": 0.99,
 - "cut_off": 0.8,
 - "max_return_amount": 10
- See example at <https://askhelp.extension.org/>
- More details at <https://extension.org/extbot/>

Challenges

- Data gathering
 - Institutional “politics”
 - Web crawling
- Location based answers
- Naming/synonyms of plants and insects
- Cost



Questions?

