

Bio-Indicator Plants – Signposts for Soil Conditions

Special points of interest:

- Oxeye daisy smells like sage, give it a sniff before you control it.

A bio-indicator is a living organism that can be used to indicate issues in the environment. Using plant species as bio-indicators, especially when it comes to soil health conditions is a great first step in identifying problems that may be affecting your yields, whether you are raising crops or livestock. Keep in mind that, while these plants can indicate specific issues, it is always important to get your soil tested before you add any fertilizer or other soil conditioner. The soil test will let you

know just how low, or high the mineral content of your soil is, so that you can apply just the right amount to correct the problem.

Some of the soil condition indicator plants in Kansas are common, everyday weeds that we have all cursed and tried to control year after year.

Curly dock is often an indicator of compacted soil as well as low calcium and extremely high magnesium, phosphorus and potassium.

Broomsedge bluestem can

show that your soils have low pH or low phosphorus. Oxeye daisy may be a sign of low phosphorus, high potassium and high magnesium soils.

Burdock (*Artium lappa*) indicates low calcium, high potassium soils

While treating the soil will help solve the problem the plants are indicating, it may not immediately solve your weed issue. You will still want to control the weeds using integrated weed management techniques.

Soil Testing -

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A healthy soil is as important to livestock and crop production as is getting enough rain. We all know about the need to add the usual NPK (nitrogen, phosphorous, potassium) fertilizer regularly but to know how much should be added and when is an important question. And what about the other minerals that are very important but usually only found in small amounts? The only way to get those questions answered is to have your soil tested.

Luckily there is a local, easy, and inexpensive way to get this done. Your local county extension agent can help

you collect the sample and then send it to the KSU Soil Testing Laboratory. The lab will conduct whichever test you request, which can include for pH, phosphorus (P), potassium (K), nitrate (NO₃), and organic matter. However, other analyses are performed on a daily basis including calcium (Ca), magnesium (Mg), sodium (Na), and other important minerals and compounds.



You do not have to be a farmer to take advantage of this service. Homeowners are welcome to submit samples to find out why their grass, vegetables or flowers are not doing well.

To have the lab test your soil, go to <https://www.agronomy.k-state.edu/services/soil-testing> to find out how to properly collect a soil sample, where to submit your sample and how much the test you need will cost. You could also call 785-532-7897 and ask them questions directly.



Mapping Apps - Location, Location, Location

A key aspect of noxious weed control is to know where the weeds are growing. Not only does this help in managing infestations, it allows people to know how close populations are and whether they are spreading in their direction. This helps a landowner to prepare and to keep an eye out for a new invader.

There are several apps out there that can help map existing populations and keep an eye on potential invaders. I will review three of them and allow you to download the one you think will work the best for you.

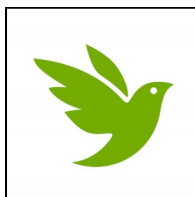
The first is the Midwest Invasive Species Network's MISN app. It allows you to report a variety of different invasive plants and animals from a pre-set list. This list includes some, but not all of



our noxious weeds, and some of the noxious species it does allow, are listed by different common names than we use.

The iNaturalist app allows you to report any species you observe, plant, animal or other, whether it is invasive or not. You can also participate in local projects by reporting species within a certain area in which a person or group is interested. This app is unique in that it requests your permission to license your content so scientists can use your data as part of their research.

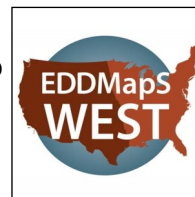
The EDDMapS app provides an extensive list of invasive species that includes all but our native noxious weeds, as well as non-invasive plants. This app is used widely in



ern United States so the data is fairly inclusive and provided and the maps are always up-to-date. Once you report the presence of a species, EDDMapS will send it to a state verifier to ensure the identity of the species. This app, developed by the University of Georgia, has become the de facto "official" mapping app of many invasive species organizations.

All three apps require you to register an account and give certain permissions on your phone, but none of them send intrusive junk mail. They each ask a few simple questions about the size of the infestation, and will all collect your GPS location when you are reporting a sighting and allow you to take pictures of the species you are mapping to help you, and others, identify them correctly.

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Control Corner: Certification, Licensing & Registration

Do I need to be licensed? What is certification? How does registration fit in? These are common questions asked by those needing to apply pesticides in Kansas. I will do my best to help you understand the differences.

Certification: Someone who plans on applying Restricted Use Pesticides (RUP) needs to be certified. What is a Restricted Use Pesticide? Believe it or not, it is defined by the Environmental Protection Agency as a pesticide that can only be used by someone who is certified, or under their supervision. There are two types of certification in Kansas, commercial and private. To become a commercial certified applicator you need to take, and pass, a general examination and a category exam offered by KDA's Pesticide and Fertilizer Program. They offer exams in 22 differ-

ent categories, which restrict where or how you will be able to apply the pesticides. Private applicator certification is required for application of a RUP in the production of an agricultural commodity.

Licensing: A Pesticide Business License is required for anyone who is planning to apply pesticides on someone else's property and accept payment. In fact, a pesticide business license is required to advertise, offer for sale, sell, or perform a service for the control of a pest on another person's property. Keep in mind, this license does not substitute for a Commercial Applicator's certification. To obtain a pesticide business license at least one employee in the business must be commercially certified. Private farm applicators are exempt from the requirement for a

pesticide business license if the application is performed without compensation other than trading of personal services between producers of agricultural commodities, on the property of another person.

Registration: There are two registrations in pesticide field. The first is a Government Agency Registration which allows the employees of cities, townships, counties and government agencies to apply pesticides as part of their jobs without having a Pesticide Business License. The other is a Pesticide Dealer Registration. This allows a person or business to distribute pesticide products for someone to apply. This is a very quick and dirty explanation to a fairly complex topic, so if you would like more information, go to http://www.ksda.gov/pesticides_fertilizer/.



Plant Protection and Weed Control

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Plant Protection and Weed Control staff work to ensure the health of the state's native and cultivated plants by excluding or controlling destructive pests, diseases and weeds. Staff examine and analyze pest conditions in crop fields, rangelands, greenhouses and nurseries. Action taken to control potential infestations of new pests, whether they are insects, plants diseases or weeds, is beneficial to the economy and the environment.

Our mission is to:

- Exclude or control harmful insects, plant diseases, and weeds;
- Ensure Kansas plants and plant products entering commerce are free from quarantined pests;
- Provide customers with inspection and certification services.

Visit our website at:
agriculture.ks.gov



Invasive Species Spotlight

Oxeye daisy (*Leucanthemum vulgare*)

The oxeye daisy is one of many similar looking flowering plants in Kansas. The only problem is that this one is not only an introduced species but an invasive one as well.

It is a perennial forb that is native to Eurasia and can be found growing in roadsides, pastures, and prairies where it is often an indicator of overgrazing. It slowly spreads from its roots, underground stems, or rhizomes, and by seed until dense stands take over the area. It can produce more than 200 seeds

per plant and those seeds can survive for almost 40 years in the soil.

It is an escaped ornamental plant that is still sold in some nurseries and online. While its flower is commonly thought to be white and yellow, the yellow center is really a bunch of tiny flowers (400 – 500) surrounded by white bracts. The yellow center is larger than other daisies, hence the name. The leaves are long and narrow with irregular teeth along the edges. The lower leaves have short

stems while the smaller upper leaves do not.

Control options are limited because of its perennial life cycle. Aminopyralid,



imazapyr and metsulfuron are effective herbicides. Mowing before flowering can prevent seed production but it can also stimulate shoot production. Intensive cultivation can kill the shallow root system, but new plants can grow from root fragments and repeated cultivation is bad for the soil.

Remember, early detection is important to prevent an infestation from becoming established and always read and follow herbicide label instructions.