throughout the plant, including into the pollen and nectar. This may not be enough insecticide to be harmful to bees, because in Dr. Potter's study in Kentucky, turf with clover was not harmful to bees when it was mowed before spraying, even though the clover bloomed again a few weeks after clothianidin was spayed. Still, the safest approach is to apply imidacloprid, thiomethoxam or clothianidin, in July, after lindens and most flowering trees are done blooming. Also, landscapers should not use imidacloprid as a basal soil drench around linden trees or other trees that are attractive to bees. Some landscapers have used imidacloprid basal soil drenches for control of Japanese beetle, aphids, scale insects and borers.

Recent research has shown that all of the insecticides used to control grubs in lawns are more consistent when the lawn is irrigated immediately after application. So, regardless of what insecticide is used, irrigate with ½" of water immediately after application.

Another alternative to using a neonicotinoid insecticide for grub control is to grow a lawn with a dense root system that is tolerant of grubs. This can be done without the use of any insecticide. If homeowners set their mowers at the highest setting (clips turf at 3 to 4 inches in height), return their grass clippings to the lawn instead of collecting them, chop tree leaves into the lawn instead of raking, fertilize modestly, and water during dry periods, they will build a dense turf resistant to grubs. Tips on how to do this are available in the Michigan State University Extension Smart Gardening tip sheets: **Mow high**, **mulch leaves**, and **smart watering**.

Stop 14. Annual bluegrass Control in Athletic Fields

Aaron Hathaway and Dr. Thomas A. Nikolai

Annual bluegrass (ABG) continues to infiltrate Kentucky bluegrass (KBG) athletic fields. It not only becomes an aesthetic problem because it forms small and large, yellower patches, but does not tolerate traffic nor recuperate from traffic stress as well as KBG. If ABG is not controlled in a timely manner it proliferates from year to year becoming a bigger and bigger problem because it can produce plenty of seed even when regularly mowed low while KBG cannot. ABG builds its population above the ground but also builds its potential future population through an ever-increasing bank of seed in the soil. It is important to control ABG from the very beginning as maintaining control of small populations of ABG is much easier than mass control of a large population. Another hurdle to ABG control in KBG is that these two turfgrass species are very closely related and, so, it can be difficult to find a herbicide that effectively controls ABG, but is also adequately safe on KBG. A trial was initiated on a KBG athletic field mowed at one inch. Herbicides were first applied on June 6, 2014 and applied every two weeks thereafter.

Treatment List: Annual Bluegrass Control in Athletic Fields Trial

Treatment	Rate	Interval	# of apps
Velocity 17.6 WG	4 oz/A	Every 2 weeks	4 of 6
PoaCure	0.45 lbs ai/A	Every 2 weeks	4 of 6
PoaCure	0.45 lbs ai/A	3 apps in fall	0 of 3
PoaCure	0.45 lbs ai/A	1 app in late fall	0 of 1
Xonerate 70 WG	2 oz/A	Every 2 weeks	4 of 6
Trimmit 2 SC	0.5 lbs ai/A	Every 2 weeks	4 of 4
Xonerate + Trimmit	2 oz/A + 0.5 lbs ai/A	Every 2 weeks	4 of 4
Tenacity 4 SC	4 fl oz/A	Every 2 weeks	4 of 4
Untreated			

Stop 15. Ground Cover Sediment Movement Study

Dr. Thomas A. Nikolai, Jeff Bryan, Joe Fabbo, and Aaron Hathaway

In 2010 a sediment/fertilizer study was initiated in Flint, Michigan as an environmental portion of a social study gauging the impact of turfgrass on an urban environment. After three-years that study indicated, among other things, that well maintained lawns increase neighborhood interaction and increases feelings of security and trust. Additionally, turfgrass lots that were fertilized in Flint reduced sediment run-off compared to lots that were not fertilized.

The ground cover/sediment movement study at the Hancock Turfgrass Research center was also initiated in 2010. The objective of the study was to identify which turfgrass ground cover and fertility practices, if any, reduced the amount of sediment run-off while maintaining good turfgrass quality.

Ground cover treatments include perennial ryegrass, fine fescue, tall fescue, Kentucky bluegrass, a Scott's sun/shade grass seed mixture, and a wild flower prairie mix. All six ground covers received no nitrogen or approximately 4 lbs. of nitrogen per year in four applications. Additionally, since establishment the plots have had no pesticides or irrigation applied. Please stop in and see the site and discuss possible impacts for your business.