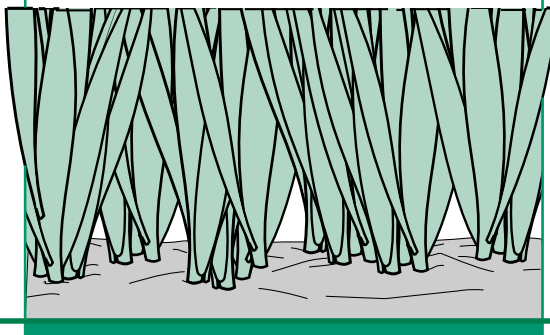


ZOYSIA LAWNS

Turfgrass



Zoysia is a warm season grass that is adapted to many Kansas lawns. It forms a dense sod from aboveground and underground runners. Zoysia is heat- and drought-resistant and also winter hardy. One objection is that it greens up later in the spring than bluegrass or tall fescue and turns brown in the fall after a hard frost. This is a trade-off for its heat tolerance during the summer.

In Kansas, zoysia is used mainly for home lawns and golf courses where a dense, low-cut turf is desired. Meyer is the strain of zoysia that is most widely used and best adapted to Kansas.

Zoysia grows best in full sun. It will tolerate moderate shade, but the turf will be thinner in the shady areas. Zoysia becomes a chlorotic yellow color when grown on alkaline soils, which limits its adaptability in much of western Kansas.

Advantages of Zoysia

- Heat-tolerant — thrives under high summer temperatures.
- Drought-tolerant — requires less water than many other turfgrasses if thatch is not allowed to build up.
- Dense and tough; resists wear and weed invasion.
- Requires less nitrogen fertilizer than most other turfgrasses.
- Will grow in light to moderate shade.
- Requires less mowing because of slow growth habit.

Disadvantages

- Greens up late and turns brown early.
- Grows slowly; may require several seasons to establish a solid turf.
- More expensive to establish than seeded grasses.
- Produces heavy thatch, which causes problems unless controlled.

- Difficult to mow because of its tough, dense foliage.
- Does not tolerate wet or poorly drained soil.
- Cool season weeds often invade zoysia in early spring and late fall while it is dormant.
- Recovers slowly after damage.
- Will invade flower beds, vegetable gardens and adjacent turf.

Planting

Zoysia is usually planted by plugs, sprigs, sod, or strips of sod. Zoysia seed has recently become available, but it is questionable if a quality lawn can be produced. Zoysia does not reproduce true to type from seed, and seedlings are variable.

Plugging. Home lawns are usually planted with plugs of sod. Plugs should be at least 2 inches in diameter with 2 to 3 inches of soil and roots. They are set into the lawn surface at 6- to 12-inch intervals. The closer spacings will give more rapid coverage, but will be more expensive. Plugs should be firmed into the soil so the tops are level with the soil surface.

Sprigging. Sprigging is less expensive than plugging and may give a faster rate of cover, but is more work and requires more initial care. A sprig is a 4- to 6-inch piece of zoysia plant that includes runner, roots and leaves, but not soil. Sprigs are obtained by tearing apart or shredding established sod. Sprigging into an existing lawn usually is not as successful as plugging due to competition from existing grass. Approximately 2 to 3 square yards of mature zoysia sod will be needed to sprig 1,000 square feet of lawn surface.

To prepare soil for sprigging, till and level the soil as you would for planting a garden. Make shallow trenches 2 inches deep and 6 inches apart. Use fresh sprigs, do not allow them to get dry, and plant 4 to 6

inches apart in the row. When planted, one end of each sprig must be at least 2 inches below the soil surface, but part of each sprig must be above the ground. Attention to watering, fertilizing, weeding, and mowing is vital to success after planting.

Sodding. Sod is established grass cut with a thin layer of soil attached and rolled out on the site—much like laying carpeting. Sodding gives an instant lawn and erosion control, but costs much more than plugging or sprigging. Good soil preparation is necessary for sodding. Laying sod over a compacted clay soil will eventually cause turf decline and problems. Newly laid sod needs to be irrigated frequently until it roots into the soil, then less often.

When to plant. Zoysia should be planted early in the growing season so it will have time to develop a good root system before frost. Late plantings may winterkill while early plantings may be damaged by a late freeze. Plugs and sprigs should be planted between late April and June. May is usually the best time for planting. Sod may be laid somewhat later in the season, as long as there is enough time for the sod to knit into the soil before the end of the growing season.

Converting to zoysia. Lawns can be converted to zoysia by plugging or adding narrow strips of sod into the existing grass. Keep the lawn mowed short (1 inch) to facilitate spreading of the zoysia. Fertilize on a schedule to favor the zoysia. It will take two to five years for the zoysia to completely take over under normal circumstances.

Mowing

Correct mowing is the most important part of lawn management, and regular mowing is essential for a quality zoysia lawn. Frequency of cutting is the most important aspect of mowing: no more than one-third of the grass should be removed at one time. Otherwise, the grass becomes stemmy, thatchy, and weedy. If you are maintaining a 1½ inch mowing height, for example, do not take off more than one-half inch of grass during any mowing.

Zoysia is mowed shorter than bluegrass or tall fescue because it is a creeping grass with a different type of growth than cool-season grasses. Mowing height can be adjusted according to type of turf use and level of maintenance. The shorter the grass is maintained, the more frequently it must be mowed.

Watering and fertilizing will increase mowing frequency. A satisfactory balance must be achieved between the three cultural practices.

Mowing height and frequency	
Mowing height	Mowings per week
½"	4
¾"	3
1"	2
1½"	1

Zoysia is a tough, thick, fibrous grass requiring a sharp blade and a heavy-duty lawnmower. Blades need to be inspected and sharpened frequently. A reel mower is preferred for zoysia, especially for close-cut turf, but the grass must not be allowed to grow tall between mowings. A rotary mower can be used for 1½-inch-high turf. Vary the direction of mowing each time the grass is mowed.

Clippings may be caught for a neat appearance, but catching clippings does not prevent thatch (see section on thatch). Mowing height and frequency are more important for thatch prevention than clipping removal.

Watering

Zoysia is relatively drought tolerant and does not need frequent watering. Older lawns that need frequent watering probably have excessive thatch. Watering too often causes shallow roots, thatch, and disease. It is much better to water thoroughly every week or two than to water several times per week. Regular watering will be needed only during hot, dry weather. Variable weather and soil conditions are important factors affecting watering. Good judgment is better than watering on a fixed schedule.

Morning is the best time to water. Late evening and night watering can favor disease development. If evening watering is most convenient for your work schedule, turn the water off 30 minutes before sundown so the grass can dry off before nighttime. Use a sprinkler that does not apply water faster than the soil can absorb it. Water that runs off is not only wasteful and costly, but does not benefit the grass.

Soak the soil to a depth of 6 to 8 inches and then wait as long as possible before watering again. This encourages deep rooting and helps prevent thatch and disease. It takes two to four hours to soak the soil, depending on soil conditions. Pushing a screwdriver into the soil is an easy way to determine how deep the soil is soaked.

Newly planted or sodded lawns may have to be watered more frequently than established lawns. But after the first week, begin changing to a less frequent watering schedule to encourage deeper rooting. Zoysia sod will not root into water-saturated soil.

Zoysia does not grow well in wet or poorly drained soils. Clay soils present a special problem because they do not drain well. Zoysia roots may rot away in waterlogged soils and then only surface roots remain.

Fertilizing

Fertilizer helps produce a thick, green lawn, but too much fertilizer, the wrong kind, or fertilizing at the wrong time may do more harm than good. Zoysia should not be fertilized as much as other lawn grasses or it will produce excessive thatch.

Because zoysia is a warm season grass, it is fertilized during the warm months—May through August. It should not be fertilized in the fall or early spring.

Fertilizing in early spring benefits weeds and promotes premature topgrowth before the roots begin to grow. Late fertilization may delay the natural dormancy before winter.

Nitrogen is the most important fertilizer element for turfgrass, but is not supplied in sufficient amounts by the soil. Nitrogen increases a lawn's green color, density, and growth. Zoysia home lawns should receive no more than 2 to 3 pounds of actual nitrogen per 1,000 square feet per growing season. It is best to space several 1-pound applications four to six weeks apart. Even less may be applied for low-maintenance lawns.

Phosphorus and potash should be applied only if indicated by the results of a soil test. Since little phosphorus is used by grass, it often accumulates to excessive levels in established lawns that have been routinely fertilized with this element. Potash is used in larger amounts than phosphorus, but most Kansas soils contain adequate amounts.

Lime or sulfur should never be added to the soil unless their need is determined by a soil test. Lime makes the soil more alkaline; sulfur makes it more acidic. Using either element without a soil test increases the risk of making a minor problem more serious. The ideal soil pH of zoysia is 6 to 6.5, which is slightly acidic.

Thatch

Thatch management is vital for a zoysia lawn, as zoysia is more thatch-prone than other lawn grasses. Thatch is a hidden layer of dead surface roots, runners and stems between the soil surface and the grass leaves in established lawns. Thatch accumulates gradually over the years and usually is undetected until it becomes a serious problem. More than 1/2 inch of thatch is excessive and can be detrimental. It restricts water, fertilizer, and air movement into the soil and favors disease development and insect activity. The roots retract from the soil into the thatch layer as it builds up over the years. Zoysia then loses much of its heat- and drought-resistance. To determine how much thatch a lawn has, cut out a small plug of turf, including some soil, with a knife or plugger. Look for a brown, compressed layer of organic matter.

A common misconception is that thatch is caused by clippings. Thatch builds up at the ground level mostly from surface roots, stems and runners that are not cut off by the lawnmower. Clippings decompose more readily than roots, stems and runners because they are 90 percent water.

Infrequent mowing, mowing too high, frequent watering, and over-fertilizing with nitrogen accelerate thatch accumulation. Good management will help, but will not completely prevent thatch.

A thick layer of thatch in an older lawn cannot be removed all at once because most of the live roots will be in the thatch layer. Complete thatch removal will result in severe thinning of the turf. The thatch must be gradually reduced over a period of several years by a series of renovations.

A heavy-duty dethatching machine with solid slicing blades is used for zoysia. The blades must be thin so they cut the live runners rather than yank them out of the thatch. The machine should be set so it cuts through the thatch, thinning rather than removing all of the thatch layer. Dethatching at the wrong time can result in a serious setback of the zoysia. June dethatching results in the least shock and the grass recovers most rapidly at that time because rhizome and stolon growth is most rapid. Fertilizing after dethatching also speeds recovery.

Core aerators are being used more today for thatchy lawns. Coring machines remove a core or plug of thatch and soil and leave it on the surface. The small holes they leave in the thatch and soil aid in root, water, and air penetration into the soil. Cores can be left to be broken up by mowing and watering; the soil added to the surface aids in thatch decomposition.

Some people set their lawnmowers very low and scalp off all vegetation in early spring before growth begins. This seems to work if it is done every year from the time the zoysia is established. Do not attempt it on lawns when most of the roots are in an old thatch layer. Scalping is a dusty job that is hard on a mower and produces a lot of debris to be removed.

Weed Control

A thick, well-managed zoysia lawn has good weed resistance during the growing season, but cool season weeds can be a problem in early spring and late fall when the grass is dormant. Weeds usually invade turf after it has been damaged or weakened by insects or disease. Improper mowing, watering or fertilizing can also lead to weed problems.

Cool season broadleaf weeds such as dandelion, chickweed, and henbit should be controlled in the fall rather than in the spring when they bloom.

Crabgrass, foxtail, and other warm season grassy weeds are not usually a problem in

Zoysia Fertilization Programs

<u>Applications</u>	<u>Months</u>	<u>Pounds Actual Nitrogen/1,000 sq. ft.</u>
One	May	1
Two	May, July	1 + 1
Three	May, June, August	1 + 1 + 1

* The number of applications depends on your level of maintenance and quality expectations.

dense, well established zoysia lawns. Crabgrass preventers applied in early spring prevent annual grassy weeds while new lawns are becoming established. After establishment they should not be needed on a routine basis.

Cool season perennial grassy weeds such as tall fescue can be unsightly while zoysia is dormant. A few clumps can be dug out; more severe infestations can be controlled with a nonselective herbicide such as Roundup if zoysia is completely dormant.

Insects

Grubs, chinch bugs and, bill bugs can devastate zoysia if they are not controlled. Early detection and control are essential in preventing serious damage. Proper timing is as important as selecting the right control. Most insects are not a problem every year. Apply insecticides only when you are sure that there are enough insects to cause damage.

Insects cause more damage to turf under stress. Thatch also can contribute to certain insect problems,

and it impedes penetration of insecticides to soil-active insects. Your county Extension office can help you identify insect problems and select the proper control.

Disease

Zoysia is not especially susceptible to disease, but some kinds of disease do attack zoysia. Diseases are strongly influenced by both environmental factors and cultural practices, especially over-watering and over-fertilizing. Thatch also may contribute to certain disease problems.

A routine spray schedule for disease is not recommended for home lawns, but early detection and prevention are advised when disease problems occur. By the time extensive damage is noticed, it is often too late for control.

The best defense against disease is proper cultural practices, especially mowing, watering, fertilizing, and thatch control.

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Kansas State University Agricultural Experiment Station and Cooperative Extension Service

MF-683 Revised

September 2001

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File Code: Horticulture and Landscaping-7