

Sod Source Selection, Installation, Maintenance, and Producers in Virginia

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Why Sod?

Sodding provides many advantages over seeding. For example, sodding

- Creates an instant green lawn or recreational surface (figs. 1 and 2).
- · Gives immediate erosion control.
- · Eliminates dust and mud.
- · Eliminates weed control during establishment.
- · Can be used quickly.
- · Can be established year-round.
- · Can get the best turfgrass varieties from producers.
- Can be used for total installation or repair of smaller areas.



Figure 1. This property is scheduled to receive a new lawn by way of installation of 'Sovereign' bermudagrass sod. (Photo courtesy of Jeff Everhart, Woodward Turf Farms.)



Figure 2. An almost immediate improvement in landscape quality and potential use of the lawn is realized after the sod installation. (Photo courtesy of Jeff Everhart, Woodward Turf Farms.)

What Type of Sod Do You Need?

The basic types of sod being grown in Virginia are Kentucky bluegrass blends, tall fescue (*Festuca arundinacea* L. Schreb) blends or tall fescue-Kentucky bluegrass (*Poa pratensis* L.) mixtures, fine-leaf fescue (*Festuca* spp.) mixtures, bermudagrass (*Cynodon* spp.), and zoysiagrass (*Zoysia* spp.). Each type is best suited to particular uses and geographic areas in Virginia.

Some sod is grown in the Virginia Crop Improvement Association (VCIA) sod certification program. This sod must meet established standards of quality, which also qualifies the sod to be marketed under the Virginia Department of Agriculture and Consumer Services' Virginia's Finest program. Current certified growers and turfgrasses can be found at www.virginiacrop.org.

VCIA-certified sod or Virginia's Finest is sod of high quality, meeting rigid standards requiring preplanting field inspections, prescribed varieties and mixtures

www.ext.vt.edu

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per the annually updated Virginia Turfgrass Variety Recommendations that can be accessed at www. pubs.ext.vt.edu, periodic production inspections, and a final preharvest inspection. This program serves as a marketing tool and provides the consumer with guaranteed standards of quality. Consumers purchasing VCIA-certified sod receive a VCIAcertified sod label with each load of sod.

While high-quality sod is available outside of the VCIA-certified sod program, the consumer is encouraged to be aware of factors that are important in determining sod quality. Quality sod contains excellent turf varieties with good sod strength (i.e., easy to handle for both harvest and installation) and has no serious insect, weed, or disease problems.

Advantages of Blends and Mixtures

It is typical that most of the cool-season sod grown in Virginia will be either a blend (two or more varieties of the same species) or a mixture (two or more varieties from different species). Blends and mixtures promote genetic diversity and improve the tolerance of turfgrass stands to extremes in use, environment, or pest pressure.

Blends and mixtures must be compatible in their appearance (for instance, uniform color and leaf texture) and performance (persistence of one or more varieties/species) for a sod to be both commercially appealing and successful in its long-term performance. For instance, mixtures of Kentucky bluegrass and tall fescue that emphasize greater percentages of bluegrass over the fescue have inherent advantages to the producer in terms of rate of crop production (i.e., how fast a sod can be lifted), the ability to harvest more rapidly without the use of reinforcement netting (discussed later), and possibly for the end-user if they desire a grass mixture with more recuperative potential from the aggressive spreading habit of the rhizomatous (i.e., creeping) Kentucky bluegrass(es). However, sod that contains mixtures that emphasize Kentucky bluegrass might have higher maintenance requirements due to the higher maintenance needs of bluegrass (e.g., more intensive fertilization, irrigation, and disease management programs than tall fescue).

In general, blends and mixtures of compatible coolseason turfgrasses are highly desirable for both producers and consumers because of the diversity in plant populations. However, it is important that consumers are aware of the differences in anticipated maintenance requirements and long-term performance expectations of specific mixtures. Warm-season turfgrasses (bermudagrass and zoysiagrass) are typically established as monostands (single variety) for both sod production and general use because of concerns in uniformity of appearance, different maintenance requirements of the varieties and/ or species, and differential responses based on the varying climate zones of Virginia.

The Primary Turfgrass Sods Marketed in Virginia

Kentucky Bluegrass Blends

Kentucky bluegrass blends contain two or more varieties of Kentucky bluegrass. They are best suited for the north central Piedmont region and areas along and west of the Blue Ridge Mountains, requiring moderate to full sunlight, periodic fertilization and irrigation, and good soil drainage in order to provide quality turf. Kentucky bluegrass is an aggressive creeping species that produces rhizomes (belowground stems). It responds well to more aggressive irrigation and nitrogen fertilization programs. Kentucky bluegrass blends can provide high levels of turf quality on lawns, athletic fields, recreational areas, and in situations where erosion control is necessary and moderate to high maintenance is possible.

Tall Fescue Blends

Tall fescue sod is moderately drought- and shadetolerant and performs well throughout Virginia. It is adapted to a wide range of soil conditions and management programs. In general, tall fescue is not well-suited to heavily trafficked areas but it performs well on lawns, moderately trafficked recreational areas, and in situations where low maintenance erosion control is necessary. Its use on lower maintenance athletic fields is ever increasing in Virginia, but tall fescue blends are still not typically recommended for a sports surface. Intensive breeding efforts in the selection and development of tall fescues have resulted in varieties with leaf textures comparable to Kentucky bluegrass (leading to their ability to be mixed for sod production). Also, the first generation of rhizomatous tall fescues is now commercially available, and future improvements in these varieties will no doubt impact both sod production systems and the use of these varieties.

Tall Fescue/Kentucky Bluegrass Mixtures

The most popular sod production system in Virginia is a mixture (combinations of different varieties from two or more species) of tall fescue and Kentucky bluegrass. Typical mixtures are 85 to 90 percent tall fescue and 10 to 15 percent Kentucky bluegrass (by weight). Due to a large difference in seed size (tall fescue seed being much larger than bluegrass), a 90/10 percent seed mixture results in a 50/50 plant population of tall fescue/Kentucky bluegrass at establishment. As previously detailed, the higher the percentage of Kentucky bluegrass in the original seeding mix, the more likely the Kentucky bluegrass will dominate the stand over time. This might or might not meet desired long-term performance and maintenance goals, so consider this in their selection. Research by Virginia Tech researchers Jeff Derr and Matt Cuttelle at the Hampton Roads Agricultural Research and Extension Center in Virginia Beach found that seeded combinations of turf-type tall fescue and hybrid bluegrass (Poa pratensis x P. arachnifera) provided very desirable enhancements in turfgrass quality and less disease pressure than individual plantings of either hybrid bluegrass or fescue alone. However, the hybrid bluegrass did tend to dominate over time, and it was recommended that tall fescue seed be periodically introduced into the stand in order to try to keep a mixed population of the two species. It is anticipated that this will also occur with most commercially available mixtures of fescue and bluegrass purchased as sod.

Bermudagrass

Bermudagrass is a very aggressive warm-season turfgrass that turns straw-colored at the first frost and is dormant in the winter in Virginia. It is best adapted for areas in the south central Piedmont and Coastal Plain regions, but with the introduction of coldtolerant varieties, its use has now expanded all across Virginia, particularly on golf courses and athletic fields. It is very drought- and traffic-tolerant, requires full sunlight, and grows most actively in summer. It functions well on lawns, golf courses, athletic fields, and other areas where excessive winter traffic does not occur. It can be overseeded with ryegrass (Lolium spp.) for winter color, but the ryegrass will compete with the bermudagrass the following spring. Many bermudagrass varieties do not produce viable seed and can only be vegetatively established from sod,

sprigs (shredded stems), or plugs. In a state that spans from the mountains of western Virginia to the Atlantic Ocean in the East, it is important to consider the cold tolerance of various bermudagrass varieties. Sod producers will vary their bermudagrass offerings based on their locations and that of their primary customers.

Zoysiagrass

Zoysiagrass is a warm-season grass that turns strawcolored at the first frost and is dormant in the winter in Virginia. It is much slower growing than bermudagrass; hence, it is usually a more expensive product as sod because it takes longer to produce a harvestable crop. It is best adapted for areas in the south central Piedmont and Coastal Plain regions, but because zoysiagrass as a rule has better cold tolerance than bermudagrass, it can be used as a lawn grass or a golf fairway turf just about anywhere in the state. Due to its slow growth rate, it is not currently used on athletic fields. It is drought-tolerant and slightly more shade-tolerant than bermudagrass. It is not recommended that zoysiagrass be overseeded with ryegrass for winter color due to its stand density and slow growth rate. It can be established from sod, sprigs, or plugs. Very few seeded varieties are available. Sprigs and plugs generally require more than one growing season to provide complete cover. In general, zovsiagrasses have superior cold tolerance to bermudagrasses, but producers will vary their zoysiagrass offerings based on their farm locations.

Fine-Leaf Fescue

Fine-leaf fescues are in the same genus as tall fescue but they look nothing alike. As its name implies, fine-leaf fescues offer some of the finest-textured leaf blades available. There are actually three species of fine-leaf fescue grown in Virginia: creeping red (Festuca rubra L.), chewing's [Festuca rubra L. ssp. Fallax (Thill.) Nyman] and hard (Festuca brevipila Tracey). Sods produced in Virginia are usually a combination of at least two of these species. Fine-leaf fescues are best adapted in the coolest climates of the state but can persist in the shade in the warmest regions. Fine-leaf fescues are the most shade-tolerant of the cool-season turfgrasses and have very low fertility, mowing, and irrigation requirements. These slow-growing species are gaining in popularity as lowmaintenance turfs where there is limited traffic and soils are well-drained.

Before Contacting Growers

If time permits, submit a soil test to your county Extension office or to a private soil testing lab one month prior to preparing the soil so you can follow the lime and fertilizer recommendations before sodding (fig. 3). There are major advantages in both short- and long-term sod performance if the required nutrients and lime are incorporated into the soil prior to establishment. Information on how to conduct a soil test and interpret soil test reports can be found at www.pubs.ext.vt.edu/vt.ext.



Figure 3. A soil test examining a 4- to 6-inch depth of soil provides crucial information for amending the soil with lime and/or nutrients prior to sod installation. (Photo by author.)

Measure the area to be sodded in square yards or square feet. Many of the websites for the Virginia sod producers listed in the directory at the end of this publication have easy-to-use area calculators.

1 square yard = 9 square feet 111.1 square yards = 1,000 square feet 1 acre = 43,560 square feet

1 acre = 4,840 square yards

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Determine whether you have the proper vehicle to transport the amount of sod you need and how many trips you will need to make. A pallet of standard rolls of sod (rolled pieces that are approximately 10 square feet in size) usually contains from 450 square feet (i.e., 50 square yards) to 700 square feet (78 square yards) of sod (fig. 4). The safe carrying capacity of vehicles varies, but these general guidelines should help (table 1).



Figure 4. Small roll sod requires no special equipment for handling and installation and can be hauled with the right size vehicle as either individual pieces or as a pallet containing up to 700 square feet of sod. (Photo by author.)

Table 1. Estimated vehicle size required to haul various amounts of harvested sod.

Vehicle	Square yards
Medium-size car	5-10
Half-ton pickup	25-50
One-ton truck	150-200
Two-ton truck	300-350
Tandem (10-wheel)	500-600
Tractor trailer (18-wheel)	1,000-1,100

If the soil is wet, less sod can be carried. Dry sod weighs about 20 to 25 pounds per square yard, whereas wet sod can weigh 30 to 40 pounds per square yard.

Big roll harvesters allow for single pieces of sod that are typically in widths of 42 to 48 inches and lengths of 80 to 100 feet (fig. 5). These single pieces usually start out at a weight of at least 2,000 pounds per piece for the smallest "big roll" and get heavier as the size increases. Specific trucking, installation equipment, and labor are obviously required for handling such large pieces of sod.



Figure 5. Single rolls of big roll sod can cover up to 400 square feet, thus requiring large equipment for transport and installation. (Photo by author.)

When Contacting Growers

Know how many square yards or square feet of the particular type of sod you want to purchase.

Remember that some sod has polypropylene netting incorporated into the soil/grass that is harvested because the netting was installed at seeding (fig. 6). The netting installation ultimately produces a crop that can be harvested several months sooner than nonnetted sod and has outstanding handling characteristics for both harvest and installation. However, netted sod might not be desirable if you anticipate cleated traffic on the sodded area (e.g., athletic fields in particular). Be sure to inquire about the availability of non-netted sod if this is important for your project. Big roll sod often has net installed at harvest (fig. 7) in order to optimize handling and stability during delivery and installation. This netting remains on the outside of the cut soil and is removed as the sod is installed (fig. 8).

Determine what services each grower you contact can provide and the cost of those services (e.g., pallet charges).

Sod farm services and prices vary and can include any of the following:

- · Cut your own sod, generally sold by the acre.
- · Pick up sod on pallet at farm.
- · Delivery to site.
- · Site grading, fertilization, installation.
- · Post-installation lawn service programs.

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Figure 7. This sod was netted at harvest in order to improve its handling characteristics. Be sure to find out whether or not a sod is netted in order to best meet project needs. (Photo by author.)



Figure 8. Netting installed for transport and installation of big roll sod is removed at installation. (Photo by author.)

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field after seeding to improve the tensile strength and the

rate of harvest of the pending sod crop. (Photo by author.)

Once you select a grower, call as far ahead of installation time as possible to ensure that the sod will be available when you need it.

Also be aware that many sod growers also offer sprigging (planting shredded stems harvested from the sod) of bermudagrass or zoysiagrass as a customized service, or they will subcontract the installation of the sprigs with a professional installer (fig. 9). This type of establishment method is often used on large-scale plantings such as golf courses or athletic fields where the cost of completely sodding is prohibitive. While the price of the sprigs and their installation will be less than the cost of installing mature sod, the shelf life of sprigs is very short, and the irrigation, weed control, and grow-in requirements of sprigged establishments require much more attention than sod installations.



Figure 9. Shredded stems (sprigs) of creeping grasses like bermudagrass and zoysiagrass can be used as another means of vegetative establishment called "sprigging," where the stems are pressed into the ground of a prepared planting bed. (Photo by author.)

Soil Preparation

It is critical that the soil be adequately tilled, graded, smoothed, and firmed prior to sod installation (fig. 10). One of the most common mistakes in sod installations is inadequate soil preparation. Sod will certainly almost immediately mask a problem, but any limitation in the soil will eventually lead to poor or failed sod performance. Take the opportunity to add any soil-test-recommended amendments to the soil and incorporate them to a 4- to 6-inch depth. Rake or drag the area until smooth and remove debris or stones more than 1.5 inches in diameter within the turfgrass root zone (i.e., surface 4 to 6 inches).



Figure 10. Proper soil preparation is as critical for the success of a sod installation as it is for seed planting. (Photo by author.)

When Sod is Ready for Pickup or Delivery

Sod is perishable and should be installed within eight hours of harvest!

- Lightly water sod 12 hours prior to installation if the soil at the installation site is extremely dry.
- Wear work clothes. If you are buying sod by the roll and are concerned about keeping your vehicle clean, bring something to lay the sod on.
- · Do not overload your vehicle.
- Temporarily place the harvested sod in the shade if it is not possible to install sod within eight hours of harvest. Sod is a biological commodity and definitely has a shelf life.
- Use light, vented covers to reduce drying and heat build-up on hot days when sod will be transported for one hour or more.
- Request the certification labels with each load purchased if buying VCIA-certified sod.

When Installing Sod

- Lightly rake the area to be sodded just prior to installation. Sod survival is greatest when installed on relatively moist soil that is cool.
- · Do not install sod on grass, debris, or rocks.



Figure 11. Establish a straight line for sod installation using a sidewalk, driveway, or retaining wall and stagger the seams of the sod as much as possible during installation. (Photo courtesy of John R. Hall III.)

- Lay the first line of sod along a straight line such as a driveway, sidewalk, or string stretched between two stakes (fig. 11).
- Stagger the sod pieces in the adjacent rows in "brickwork" fashion.
- Push the sod pieces together tightly because they might shrink after installation.
- · Avoid stretching the sod pieces.
- Try to minimize soil compaction in the installation area by using wheelbarrows to move the sod. Plywood boards laid in heavy tracking areas will minimize compaction as well.
- Roll the sod with a heavy hand roller after you lay it to press roots to the soil, remove air pockets, and promote soil-to-sod contact (fig. 12).



Figure 12. A roller is being used to achieve both sod-tosoil contact and to smooth the playing surface of this baseball field. (Photo by author.)

Water is critical for success! Give the sod a thorough irrigation immediately after installation and keep the sod moist until significant root development has occurred (fig. 13). If a large area is being sodded, consider watering as soon as one section is installed. Do not wait until the entire area is sodded to begin watering. In hot weather (above 80 F) water the sod daily, wetting the soil thoroughly until the sod is wellrooted. Check the progress of sod rooting by gently tugging on a corner of the sod at seven days after installation, feeling for the resistance of the newly rooted sod, and checking for the appearance of new roots (fig. 14). There should be some resistance in lifting the sod at this time, and irrigation frequency and amount needs to be adjusted to a "deep and infrequent" schedule (discussed later).



Figure 13. Supplemental irrigation is crucial for successful establishment of a newly installed sod. (Photo by author.)



Figure 14. Check the advancement of rooting of newly installed sod at approximately one week after installation by tugging on the corner of a sod to check for resistance to lifting and for the visible signs of new roots. (Photo courtesy of John R. Hall III.)

Timing of Sod Installations

It is ideal to install sod during the primary growing season of the turfgrass(es) whenever possible. That would be the fall or spring for cool-season turfgrasses such as tall fescue or Kentucky bluegrass, or late spring through summer for warm-season turfgrasses like bermudagrass or zoysiagrass. However, only installing sod during the primary growing seasons negates some of the most important value of a sod by way of its instant groundcover and soil stabilization.

Sod can be installed just about any time of year as long as the soil is not frozen (for winter installations) and irrigation is available (important for any season). Dormant sod still has moisture requirements, and it is especially easy to forget that a straw-colored, dormant warm-season sod might still require supplemental irrigation, even in the dead of winter (fig. 15). Quite often, Mother Nature will provide ample rain or snow events in a Virginia winter such that supplemental water is not required, but if it is an abnormally dry winter, irrigation might be necessary to prevent sod desiccation. This problem seems to be particularly acute for late-season sod installations where complete root development is not achieved before suboptimal growing temperatures arrive.

When Maintaining Sod

Begin mowing the sod with a mower with a sharp blade as soon as it is rooted and the soil is dry enough to support the weight of you and the mower. Mow frequently enough so that you never remove more than one-third of the existing green tissue.

Mow Kentucky bluegrass and tall fescue sods at 2 to 3 inches for home lawns and 1 to 2 inches for sports and golf turfs. Bermudagrass and zoysiagrass should be mowed at 1 to 1.5 inches for lawns but can easily tolerate a regular cutting height of 0.5 inch for highmaintenance golf and sports turfs. (These turfgrasses can easily tolerate regular clipping to 0.5 inch, but such a low clipping height requires a reel mower).

Adjust maintenance watering for established sod to a "deep and infrequent" schedule. The rule is to make sure the soil is moist to a 3- to 4-inch depth for these infrequent irrigation events.

Annual maintenance fertility and aeration programs for your newly sodded lawn depend a great deal on the type of turfgrass you are growing, your location,



Figure 15. The dormant zoysiagrass sod being installed around this bunker face requires periodic moisture just like the tall fescue/Kentucky bluegrass sod in the foreground. Dormant sodding can be successful if the soil is not frozen at installation and the sod is kept from desiccating. (Photo courtesy of Jeff Everhart and Woodward Turf Farms.)

its use, and your expectations. Following the soil test recommendations gets your sod off to a great start. Consult the variety of written and digital media publications for assistance in developing management programs for the various turfgrasses on the Virginia Cooperative Extension website, www.pubs.ext.vt.edu/.

About This Directory

Although the information presented in this directory was believed to be current at publication time, variety availability and the services offered by producers will likely change over time.

Retail nurseries not specializing in either sod production or sod sales were intentionally excluded from this directory. These businesses typically buy their sod for resale from the producers listed in this directory, and they might not stock sod throughout the year. In addition to locating sod sources in this directory, home consumers might wish to contact their local retail nursery center to determine turfgrass sod varieties available locally.

Every effort was made to include all known sod producers in the state of Virginia and to provide current production and contact information for all farms. For updates on products offered or new sod producers or other business entities specializing in the production or sale of turfgrass sod not listed in this directory but who wish to be included in the next update of this directory, please contact Mike Goatley at goatley@vt.edu or by phone at 540-231-2951.

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Directory of Virginia Sod Producers, Contact Info, and Grasses Available

Virginia sod producers, addresses, contact information, and grasses produced (certified sods within specific grass categories are designated by *).

Bass Sod Farm

8250 Brookneal Highway P.O. Box 157 Gladys, VA 24554 Ph: 434-219-BASS (2277) bsf@basssodfarm.com http://basssodfarm.com/ B, TF, TFKBM*, Z*

Brookmeade Sod Farm Inc.

14328 Medley Grove Lane Doswell, VA 23047 Ph: 804-883-6338 Fax: 804-883-6377 rose@brookmeadesod.com http://brookmeadesod.com/ B, TF, Z Centreville Sod Inc. 11806 Bristow Road Bristow, VA 20136 Ph: 703-361-8338 centrevillesod@gmail.com http://centrevillesod.com/ TFKBM

Chantilly Turf Farms Inc.

41922 John Mosby Highway Aldie, VA 20105 Ph: 703-327-0908 Fax: 703-327-0454 chantillyturf@yahoo.com http://chantillyturffarms.com/ KB, TFKBM*

Daniel Sod Farm

2030 Davmunds Trail Sutherlin, VA 24594 Ph: 434-753-1165 Fax: 434-753-1781 DanielSodFarm@gmail.com www.danielsodfarms.com/ B, TFKBM

Enfield Sod Inc.

P.O. Box 177 Walkerton, VA 23177-0177 Ph: 804-769-4545 Fax: 804-769-1539 sod@enfield-sod.com http://enfield-sod.com/ B, TF

Farrar Sod Farm Inc.

996 Baskerville Road Baskerville, VA 23915 Ph: 434-689-2228 Fax: 434-689-2137 fsfinfo@farrarsodfarm.com www.farrarsodfarm.com/ B, TF

Franklin Turfgrass

408 River Road Franklin, VA 23851 Ph: 757-569-TURF (8873) www.franklinturf.com B*, TF

Frog Hollow Sod Farm

1220 Horse Landing Road King William, VA 23086 Ph: 804-769-3161 frogsod@gmail.com www.froghollowsodfarm.com/ TFKBM, Z*

Kettle Wind Farm

11261 Morla Lane Nokesville, VA 20181 Ph: 703-594-2709 TFKBM*

Kidwell Organics Inc. 9360 Buggs Island Road Baskerville, VA 23915 Ph: 434-689-3115 B

Lavery's Sod Farm 616 Alleghany Spring Road Shawsville, VA 24162 Ph: 540-268-1220 Fax: 540-268-1320 www.laverysodfarm.com/ B*, KB, TFKBM

Meadowspring Turf Farm LLC

17820 The Glebe Lane Charles City, VA 23030 Ph: 804-829-2696, 866-829-2696 Fax: 804-829-6140 info@meadowspringturf.com www.meadowspringturf.com/ B*, TFKBM, Z*

Noah Turner Landscaping

723 Brady Road Stanley, VA 22851 Ph: 540-743-7357 TFKBM*

NoVA Turf Farm

12005 Hazelwood Drive Nokesville, VA 20181 Ph: 703-594-3406 KB, TF, TFKBM*

Old Church Sod LLC

13101 Old Church Road New Kent, VA 23124 Ph: 804-381-3851 B*, TFKBM*

Premier Turf Farms

35172 Snickersville Turnpike Round Hill, VA 20141 Ph: 703-431-3385 orders@premierturffarms.com www.premierturffarms.com TFKBM*, FF

Remington Turf Inc.

7407 Summerduck Road Remington, VA 22734 **Ph:** 540-222-4357 Fax: 540-423-1247 www.remingtonturf.com TFKBM

Riverside Turf

18161 Sandy Point Road Charles City, VA 23030 Ph: 804-829-2608 http://riversideturf.com/ B, TFKBM, Z

Somerset Seed and Sod Inc.

9515 Jacksontown Road Somerset, VA 22972 Ph: 434-817-9679 Fax: 434-382-0657 Audrey@somersetsod.com http://somersetsod.com/ TFKBM

Virginia Beef Corporation

1215 James Madison Highway Haymarket, VA 20169 Ph: 703-754-8873 Fax: 703-754-0234 vabeefcorp@virginiabeef.com www.greenmaxturf.com TFKBM

Woodward Turf Farms Inc.

14206 Lewis Lane Remington, VA 22734 Ph: 540-727-0020 Fax: 540-727-0304 cindy.woodward@woodwardturf.com http://woodwardturf.com/ B, FF, KB,TF, Z

Notes:

*Certified sod B = bermudagrass FF = fine fescue mixture KB = Kentucky bluegrass blend TF = tall fescue TFKBM = tall fescue and Kentucky bluegrass mixture Z = zoysiagrass