

# National Turf Evaluation Program: A System for Testing Turfgrass Germplasm Across Multiple Environments

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## INTRODUCTION

The National Turf Evaluation Program, or NTEP, is one of the most widely known turf research programs in the world. The collected data describes the quality of many different turfgrass species and gives breeders, researchers, extension personnel, government departments and normal consumers the ability to make informed, economic decisions on turfgrass utility in different climates. NTEP sends experimental varieties to university research facilities across 40 states and Canada to be established, maintained and evaluated using standardized testing protocols.



Plots are laid out with nails and string to ensure that they are square and to indicate where to paint dots.

## OBJECTIVES

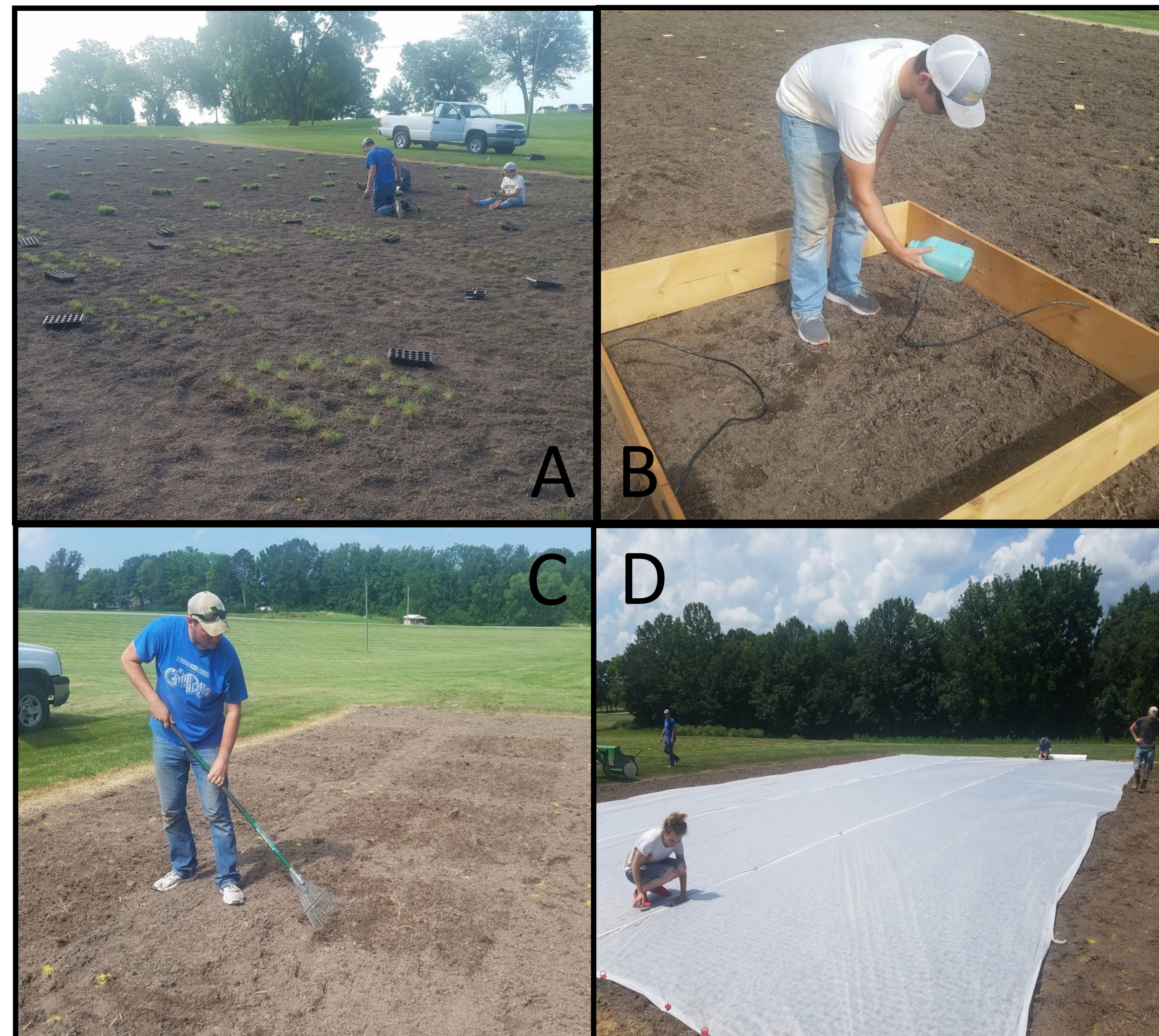
The NTEP objectives are to develop and coordinate uniform evaluation of trials of turfgrass varieties and experimental selections. At MU, we conduct nine NTEP trials on varieties of warm and cool season species to reduce inputs for turfgrass use in this tough transition zone climate.



Plot preparation included terminating living vegetation with application of a herbicide and tilling the ground to create a good seed bed.

## MATERIALS AND METHODS

- Two studies to evaluate warm-season turfgrass use in Missouri were initiated at the University of Missouri South Farm Turf Research Center on July 2, 2019 in a 'Mexico' silt loam.
- Zoysiagrass (39 varieties) and Bermudagrass (35 varieties) were established in a randomized complete block design with three replications. Plots are 6 x 6 ft with a 1-foot alley between plots.
- For vegetatively propagated varieties, 24 plugs were planted evenly in each plot.
- Seeded bermudagrass entries (n = 13) were established with 21.6 grams of unhulled seed spread evenly throughout the plot and raked over to improve soil contact.
- Seeding covers were used on the seeded varieties to prevent washout from rain events.
- These studies will be evaluated monthly during the growing season over a five-year period to assess pest resistance, drought tolerance, climate stress, color, percent ground cover, establishment, recovery from stress, fertilizer use efficiency and other quality characteristics.



A: Zoysiagrass entries were divided and laid out according to the plot map to ensure accurate placement and planting.

B: Seeded bermudagrass varieties were spread evenly inside a 5' x 5' seed box to prevent cross contamination.

C: Bermudagrass seed was raked over after being spread to improve seed-soil contact.

D: Seeding covers were pinned into the ground to prevent wind and rain from carrying the seed to undesired areas.

## RESULTS

Previous NTEP tests have successfully identified turfgrasses with the following characteristics:

- Improved insect and disease resistance
- Improved drought, heat, traffic and cold tolerance.
- Increased density, enhanced color, slower growth.
- Rapid establishment, recovery from damage by various pests and stresses.
- Maintains performance under reduced fertilizer, water and pesticide use.
- Improved performance under lower cutting heights.



Endophyte enhanced perennial ryegrass (left) reduces damage from chinch bug



Kentucky bluegrass, in center is susceptible to summer patch disease

<https://www.ntep.org/ntep/images/results1.jpg>

## CONCLUSIONS

Public and private sources are constantly releasing new turfgrass varieties which sparks the interests of breeders, consumers and extension agents. NTEP provides standardized procedures for every organization involved in testing the varieties to improve the accuracy and organization of data collection and variety assessment. According to NTEP, "Growers and consumers use NTEP extensively to purchase drought tolerant, pest resistant, attractive and durable seed or sod. It is the acceptance by the end-user that has made NTEP the standard for turfgrass evaluation in the U.S.A. and many other countries worldwide".

## ACKNOWLEDGEMENTS

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## REFERENCES

NTEP Test Impact and Results. (n.d.). Retrieved July 16, 2019, from <https://www.ntep.org/ntep/contents2.shtml>