



Introduction:

- Oklahoma Cooperative Extension Service staff have fielded an increasing number of inquiries requesting information on availability of non-grass, turf-type plant materials for use in Oklahoma lawns. While inquiries remain well below those concerning grasses, responsiveness to all stakeholder-needs is essential. The largest number of inquiries concerning broadleaf turf-type plant materials involve availability and culture of white clover (*Trifolium repens* [L.]) and frogfruit (*Phyla nodiflora* [L.] Greene, Synonym *Lippia nodiflora*) for use as monostands and in mixes with turfgrass grass species.

Long-term Goals:

- Development of and increased availability of well-adapted, turf-type frogfruit and white clover plant material for purchase in the Oklahoma green industry.
- Development of educational materials on production, installation, and management of select adapted frogfruit and white clover for use in Oklahoma lawns.

Objectives:

- Identify existing plant material resources for consumer purchase and producer production/sale.
- Develop accession collection of non-encumbered, non-proprietary, well-adapted, turf-type frogfruit and white clover plants from lawns around Oklahoma.
- Characterize accessions for turf-type phenotypic traits including transplant shock, establishment rate, live green cover, winter hardiness, leaf firing resistance under drought, establishment water requirements, leaf shape characterization, leaf and flower color, flower number and timing, nectaring and foraging use by invertebrates, unmowed canopy height, mowing height tolerance, sod tensile strength, sod handling quality, earliness of greenup, frost tolerance, and herbicide tolerance.
- Determine consumer and plant producer preferences and acceptance of frogfruit and white clover plant material.
- Determine if population improvement is necessary to meet consumer and producer needs.

Identified Stakeholder Needs:

- Based upon 1-on-1 consultations initiated by stakeholders with Oklahoma State University Turfgrass Program personnel, stakeholder interest includes but is not limited to a need for ready availability of both seeded and clonally propagated types; value for purchase price; ease of establishment; desire for paired low fertility needs-low irrigation requirements-infrequent mowing; tolerance of environmental extremes including frequent droughts, extreme heat and cold temperatures; tolerance to both full-sun and some amount of shade; and service as iconic pollinator habitat. The requirement that the plant material be native to Oklahoma was expressed by several but not all stakeholders. Native status as a qualifier would exclude the use of white clover in Oklahoma by some stakeholders.

Achievements To Date

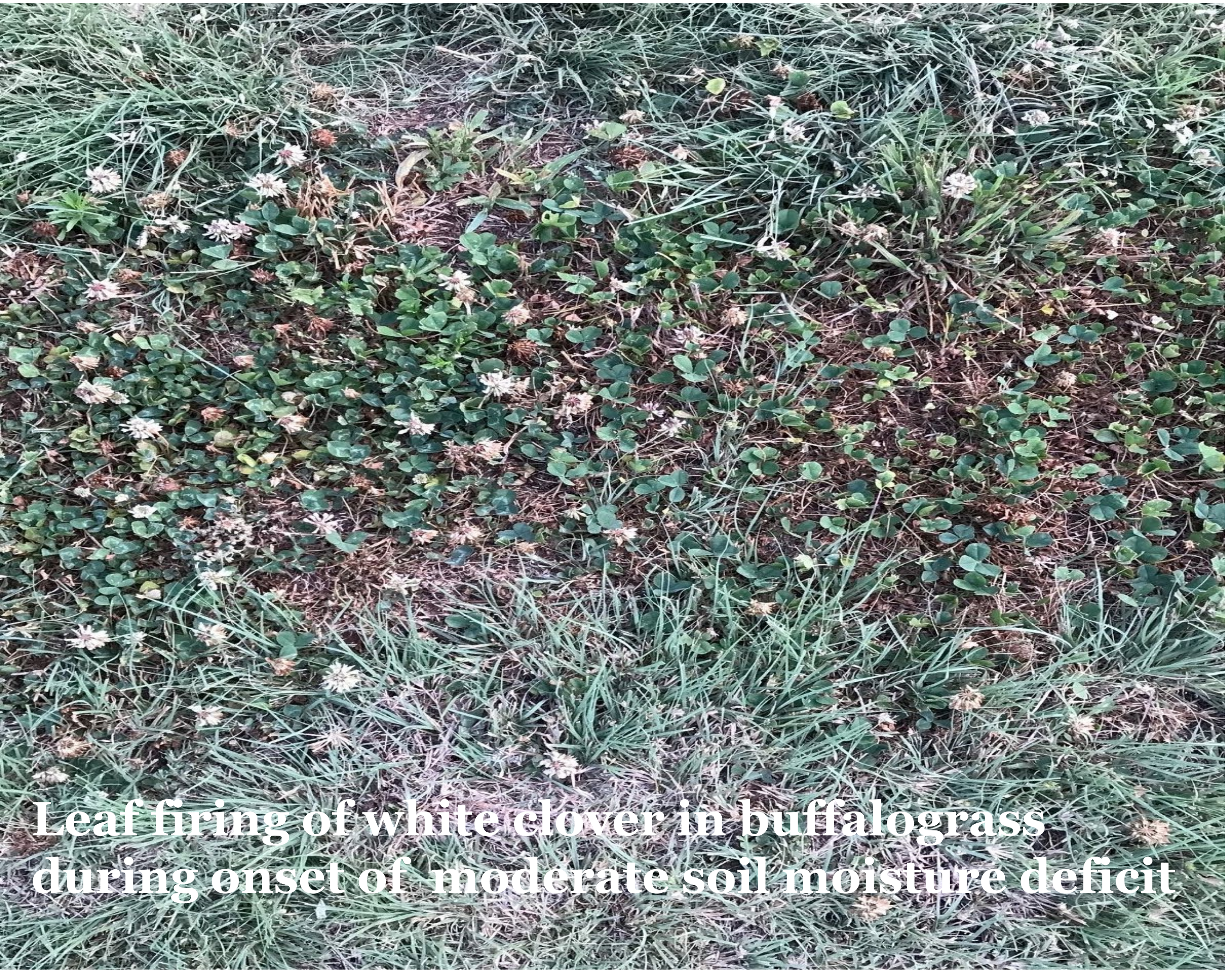
- Preliminary literature review conducted (data not shown)
- US Patent & Trademark Database shows at least three Phyla plants are protected by U.S. Plant Patents indicating the value and receptivity of pursuing intellectual property rights on frogfruit.
- 11 accessions of promising white clover (*Trifolium repens*) obtained.
- Collection of white clover accessions has initially been deprioritized in favor of focus on frogfruit.
- 110 accessions of promising frogfruit (*Phyla nodiflora*) obtained.
- Establishment of single space plant nursery of 44 promising frogfruit on highly eroded, non-fertilized, non-irrigated, non-mowed B-horizon cut-slope to provide severe selection pressure/screening.
- Identification of 12 lines with presumed advanced drought resistance.

Planned 2024 – 2025 Actions:

- Graduate Research Assistant to begin research upon accessions.
- Establishment of replicated field trials using advanced frogfruit selections.
- Begin collection of standard qualitative and quantitative turf-type performance traits in managed, replicated field trials.
- Evaluate sod tensile strength and handling quality of most promising lines.
- Assess invertebrate use of materials in replicated field trials and native stands of frogfruit.
- Assess consumer and producer perceptions towards performance of frogfruit plants in replicated field trials.

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Select References:

Oklahoma Vascular Plants Database.
<https://www.oklahomaplantdatabase.org/>

TORCH – Texas/Oklahoma Regional Consortium of Herbaria. <https://www.torcherbaria.org/>

USDA Plants Database.USDA-NRCS.
<https://plants.usda.gov/home/plantProfile?symbol=PHYLA>