



Result Demonstration Report

Summer Food Plot Species Productivity and Whitetail Deer Preference for Polk County

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Summary

Summer food plots are an important tool in whitetail deer management in east Texas. Summer food plots provide supplemental nutrition during the months of June to August when native high-quality browse can be lacking. Whitetail deer experience increased stress during this period due to does lactating, fawns developing, and antler development. Additionally, during drought years there is increased stress from lack of availability of quality browse that can be mitigated through summer food plots. Food plot species selection is crucial to the success of a summer food plot. However, there is a lack of data for species regarding productivity and whitetail deer preference for east Texas. Five different species were selected that are commonly planted in summer food plots and are recommended by seed companies for east Texas. This included millet, lespedeza, cowpeas, sudan sorghum (hay grazer), and lab lab. A bottomland site was selected in western Polk County. This site was prepared using standard practices for food plots in Polk County and was planted on 6-25-21. The original targeted planting date was the last week in May, but due to excessive rainfall planting was delayed for nearly a month. 800 sq. ft. plots were planted. Each species was planted in two random plots for a total of 10 plots total. Woven wire cages with a diameter of 3 feet were placed in each plot. These cages provided a deer proof area for the plant species to grow without being browsed by deer. On 7-22-21, 8-17-21, and 9-16-21 a measurement of average height of vegetation inside and outside of cages were taken to help determine utilization. At the termination of the demonstration on 9-16-21 vegetation was clipped inside the cages and outside the cages (random 3 foot diameter circle) and vegetation was allowed to dry. Dry matter weight of the vegetation was then weighed to compare the weight of vegetation utilized during the demonstration. Cowpeas data is unreliable due to failure of the cages in the cowpeas plots. However, the determination of whitetail deer to reach cowpeas within the cages demonstrate high preference for cowpeas. Nearly 100 % of all standing vegetation was

browsed for cowpeas, lab lab, and millet. Preference of species varied throughout the demonstration depending on growth stage of the plant. A weighted score utilization summary concluded that deer preferred millet the most followed by lab lab, sudan sorghum, and lespedeza. Lack of accurate data for cowpeas resulted in cowpeas weighted score utilization summary to be invalid. It is recommended a mix of species is planted in summer food plots to ensure high quality browse is available throughout the summer months. The results from this demonstration suggest the following mix is recommended for Polk County: cowpeas 30%, millet 30%, lab lab 25%, sudan sorghum 10%, and lespedeza 5%.

Objective

To bring awareness of the importance of summer food plots for whitetail deer management in Polk County and in the greater east Texas region by developing recommendations for what species to plant in summer food plots. This was done by calculating species productivity and whitetail deer utilization, thus preference, for five different food plot species.

Materials and Methods

A site located on Hidden Valley Rd. in western Polk County was selected. This site showed high activity of whitetail deer. The site was adjacent to a perennial stream and the soils held moisture even during dry periods. Glyphosate was sprayed 3 weeks prior to planting to help with site prep and remove weed pressure. Applied 18-24-26, K-Mag, and pelleted ag lime at time of planting to fulfill soil fertility requirements based on soil test that was conducted 2 months prior. Fertilizer was applied and the ground was disced. Seed was then broadcasted by hand and then lightly disced to increase seed to soil contact. Planting occurred on 6-25-21 and seeding rate was based on seed company recommendation for broadcast plantings.

Plot size: 20'x40', 800 sq. ft.

Plot 1: Brown Top Millet, 18 lbs. per acre

Plot 2: Korean Lespedeza, 36 lbs. per acre

Plot 3: Iron Clay Cowpeas, 135 lbs. per acre

Plot 4: Sorghum Sudangrass, 72 lbs. per acre

Plot 5: Lab Lab, 44 lbs. per acre

Plot 6: Sorghum Sudangrass, 72 lbs. per acre

Plot 7: Lab Lab, 44 lbs. per acre

Plot 8: Brown Top Millet, 18 lbs. per acre

Plot 9: Iron Clay Cowpeas, 135 lbs. per acre

Plot 10: Korean Lespedeza, 36 lbs. per acre

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Woven wire cages with a diameter of 3 feet were placed in each plot. These cages provided a deer proof area for the plant species to grow without being browsed by deer. On 7-22-21, 8-17-21, and 9-16-21 a measurement of average height of vegetation inside and outside of cages were taken to help determine utilization. At the termination of the demonstration on 9-16-21 vegetation was clipped inside the cage and outside the cage (random 3-foot diameter circle) and vegetation was allowed to dry. Vegetation was allowed to air dry for one month before weighing. Dry matter weight of the vegetation was then weighed to compare the weight of vegetation utilized during the demonstration.



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Results and Discussion

1st check on 7/22/21, average height measured inside and outside of cages. Plots are ranked in bottom table based on difference in inches and percentage difference.

Species	7/22/2021			
	Inside Cage Height (in.)	Outside Cage Height (in.)	Difference (in.)	Difference (%)
Millet	26	6	20	77%
Lespedaza	4	2	2	50%
Cowpeas	15	8	7	47%
Sudan	30	15	15	50%
Lab Lab	22	22	0	0%
Sudan	23	12	11	48%
Lab Lab	25	23	2	8%
Millet	30	5	25	83%
Cowpeas	14	7	7	50%
Lespedaza	3	3	0	0%

7/22/2021			
	Inches		%
Millet	25	Millet	83%
Millet	20	Millet	77%
Sudan	15	Lespedaza	50%
Sudan	11	Sudan	50%
Cowpeas	7	Cowpeas	50%
Cowpeas	7	Sudan	48%
Lespedaza	2	Cowpeas	47%
Lab Lab	2	Lab Lab	8%
Lab Lab	0	Lab Lab	0%
Lespedaza	0	Lespedaza	0%

2nd check on 8/17/21, average height measured inside and outside of cages. Plots are ranked in bottom table based on difference in inches and percentage difference.

Species	8/17/2021			
	Inside Cage Height (in.)	Outside Cage Height (in.)	Difference (in.)	Difference (%)
Millet	48	7	41	85%
Lespedeza	9	0	9	100%
Cowpeas	0	6	-6	0%
Sudan	83	50	33	40%
Lab Lab	60	21	39	65%
Sudan	65	44	21	32%
Lab Lab	62	37	25	40%
Millet	51	5	46	90%
Cowpeas	12	8	4	33%
Lespedeza	8	3	5	63%

8/17/2021			
	Inches		%
Millet	46	Lespedeza	100%
Millet	41	Millet	90%
Lab Lab	39	Millet	85%
Sudan	33	Lab Lab	65%
Lab Lab	25	Lespedeza	63%
Sudan	17	Lab Lab	40%
Lespedeza	9	Sudan	40%
Lespedeza	5	Cowpeas	33%
Cowpeas	4	Sudan	32%
Cowpeas	-6	Cowpeas	0%

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3rd check and termination on 9/16/21, average height measured inside and outside of cages.
 Plots are ranked in bottom table based on difference in inches and percentage difference.

Species	9/16/2021			
	Inside Cage Height (in.)	Outside Cage Height (in.)	Difference (in.)	Difference (%)
Millet	43	8	35	81%
Lespedaza	4	2	2	50%
Cowpeas	0	0	0	0%
Sudan	96	75	21	22%
Lab Lab	51	21	30	59%
Sudan	101	74	27	27%
Lab Lab	62	29	33	53%
Millet	50	12	38	76%
Cowpeas	24	0	24	100%
Lespedaza	7	2	5	71%

9/16/2021			
	Inches		%
Millet	38	Cowpeas	100%
Millet	35	Millet	81%
Lab Lab	33	Millet	76%
Lab Lab	30	Lespedaza	71%
Sudan	27	Lab Lab	59%
Cowpeas	24	Lab Lab	53%
Sudan	21	Lespedaza	50%
Lespedaza	5	Sudan	27%
Lespedaza	2	Sudan	22%
Cowpeas	0	Cowpeas	0%

Overall difference for all three checks summed together. Plots are ranked in bottom table on difference in inches and percentage difference.

Species	Overall	
	Difference (in.)	Difference (%)
Millet	96	244%
Lespedaza	13	200%
Cowpeas	1	47%
Sudan	69	112%
Lab Lab	69	124%
Sudan	59	107%
Lab Lab	60	102%
Millet	109	250%
Cowpeas	35	183%
Lespedaza	10	134%

	Inches		%	%
Millet	109	Millet	250%	100%
Millet	96	Millet	244%	81%
Sudan	69	Lespedaza	200%	76%
Lab Lab	69	Cowpeas	183%	71%
Lab Lab	60	Lespedaza	134%	59%
Sudan	59	Lab Lab	124%	53%
Cowpeas	35	Sudan	112%	50%
Lespedaza	13	Sudan	107%	27%
Lespedaza	10	Lab Lab	102%	22%
Cowpeas	1	Cowpeas	47%	0%

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Weight of dry matter clippings inside and outside of cages. Vegetation was clipped at termination of demonstration. Plots are ranked in bottom graph based on difference in ounces and percentage difference.

Species	9/16/2021			
	Inside Cage Dried Weight (oz)	Outside Cage Dried Weight (oz)	Difference (oz)	Difference (%)
Millet	8.875	1.125	7.75	87%
Lespedaza	0.125	0.062	0.063	50%
Cowpeas	0	0	0	0%
Sudan	38.625	27	11.625	30%
Lab Lab	7.125	0.093	7.032	99%
Sudan	29.625	19.375	10.25	35%
Lab Lab	9.625	0.093	9.532	99%
Millet	12.5	1.125	11.375	91%
Cowpeas	2.125	0	2.125	100%
Lespedaza	0.093	0.062	0.031	33%

	oz.		oz. %
Sudan	11.625	Cowpeas	100%
Millet	11.375	Lab Lab	99%
Sudan	10.25	Lab Lab	99%
Lab Lab	9.532	Millet	91%
Millet	7.75	Millet	87%
Lab Lab	7.032	Lespedaza	50%
Cowpeas	2.125	Sudan	35%
Lespedaza	0.063	Lespedaza	33%
Lespedaza	0.031	Sudan	30%
Cowpeas	0	Cowpeas	0%

Difference in inches and ounces needs to be considered when determining deer utilization and thus preference. For example, lespedeza showed only .031 and .063 ounces were browsed during the entire demonstration or 30% and 50% of total production. This would suggest lespedeza was not preferred to any great extent compared to lab lab which 99% of all total production was browsed. However, lespedeza did not produce the same amount of production as lab lab so difference in inches is a better representation of deer preference for lespedeza. When looking at the lespedeza plots on the second check and difference in inches between inside and outside of the cage 100% and 63% of all lespedeza was browsed suggesting a higher preference for lespedeza.

Cowpea data was invalid due to lack of data. Whitetail deer were so determined to browse the cowpeas that they pushed the wire cages in to reach the cowpeas within the cage. At the end of the trial only one cowpea survived in both plots. This was both inside and outside the cages. This resulted in negative inches browsed or 0% utilization even though all the cowpeas have been browsed to the ground. Pushing of the wire cages did not occur in plots with other species. In fact, lab lab inside the cages could be easily browsed as the vine grew up the wire but no browsing occurred. For this reason, it can be assumed that the deer preferred the cowpeas more than any other species planted.

Weighted score was calculated for each species to determine deer utilization and thus preference. Ten categories were used to calculate this weighted score. These categories are: inches browsed and percentage difference in inches browsed on 7/22/21, 8/17/21, and 9/16/21; overall inches browsed and percentage difference in inches browsed from the three checks summed together; difference in ounces of weight of dry matter clippings and percentage difference in ounces of weight of dry matter clippings. If a plot ranked 1st in a category it received 10 points, if a plot ranked 2nd it received 9 points, and so on until if the plot ranked 10th it received 1 point. If a plot ranked 1st in all 10 categories it would receive a weighted score of 100 points. If a plot ranked 10th in all 10 categories it would receive a weighted score of 10 points. Since each species had two plots a maximum score for a species would be 190 and a minimum score would be 30.

Weighted Score Utilization Summary	
Millet	176
Lab Lab	114
Sudan Sorghum	107
Lespedeza	88
Cowpeas (invalid)	75

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Conclusions

Millet was utilized regularly during the first two months and then utilization stopped once maturity was reached in the final month of the demonstration. Lespedeza was browsed regularly during the demonstration but lacked in production of available browse. When looking at percentage of lespedeza browsed it was middle of the road when compared with the other species planted. Cowpeas appeared to be the number one preferred species by whitetail deer, however data was invalid due to failure of the wire cages in the cowpeas food plots. Cowpeas never became established as they were browsed to the ground within a few weeks of germination. Sudan sorghum was browsed regularly during the first 30 days but little to no browse occurred after the plants reached 24 inches in height. Whitetail deer showed little preference to lab lab until the plants were 2 months old. This could be a result of other species present in the food plot prior to 2 months that were preferred over lab lab or lab lab was not preferred until it reached a later growth stage. During the final month of the demonstration lab lab was the most preferred species. At the termination of the demonstration nearly 100% of all standing vegetation was browsed for cowpeas, lab lab, and millet. The data revealed that whitetail deer preference for species varied throughout the growth period of the plants. When considering the weighted score utilization summary and that all but one cowpea was browsed to the ground during the demonstration it can be concluded that deer preference is as followed from greatest to least: cowpeas, millet, lab lab, sudan sorghum, lespedeza. As a recommendation for food plots in Polk County a mixture of the five species planted in this demonstration should be planted. Based on species production and whitetail deer preference during different growth phases the following mix is recommended: cowpeas 30%, millet 30%, lab lab 25%, sudan sorghum 10%, lespedeza 5%.

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