

Forage Quality of Common Weeds

David Russell, PhD, Assistant Research & Extension Professor, Department of Crop, Soil, & Environmental Sciences

In production agriculture, weeds are generally viewed negatively. One of the most common questions is usually, “What is this weed and how do I control it?” In forage production however, you may have noticed cattle grazing plants that we’ve often considered unacceptable. While cattle may graze some beneficial herbaceous plants, there are true weeds out there that can be detrimental to livestock production. Therefore, it is important to understand some of the factors that affect forage quality and grazing potential. This is a brief attempt discuss those attributes and how forage quality of some common weeds compares to our improved forages.

Typically, we can use the maintenance requirements of a dry cow to establish a benchmark for forage quality parameters that are necessary for her and the rest of the herd to maintain proper body weight and condition. Therefore, forages that average 56% total digestible nutrients (TDN), around 11% crude protein (CP), and are palatable are considered adequate. Beef cattle obviously will perform better and more efficiently with supplements and by grazing forages that exceed these levels, but factors such as plant maturity and soil fertility have a large influence on quality.

This table highlights common parameters like energy (TDN and IVDMD), crude protein, and common minerals (Ca and P) developed for improved forages. Quality parameters represent plants from early vegetative through early reproductive stage of growth, on average. Table modified from Bosworth et.al, (1980), (1985), and Marten & Andersen (1975).

Average Nutrients of Common Forages and Weed Species of the Southeast

Forage Species	TDN ¹	CP	IVDMD	Calcium	Phosphorus
Alfalfa	65	26	72	1.2	.22
Bahiagrass	48-51	6-7.5	50-60	.45	.24
Bermudagrass	52-56	10-13	51-58	.49	.20
Corn silage	70-86	7-9	50-70	.24	.23
Tall fescue hay	53	9-15	50-65	.58	.23
Annual Ryegrass	65	13-24	60-75	.62	.40
Crabgrass	58-63	11-15	72-79	.33	.85
“Weed” Species					
Yellow foxtail	60	12	74	.50	.40
Redroot pigweed	22	24	79	.27	.45
Pennsylvania smartweed	-	23	62	1.6	.45
Common ragweed	-	26	80	2.7	.4
Sicklepod	-	13-21	76-84	1.3	.12
Morningglory	-	13-20	76-82	.72	.16
Prickly sida	-	17	70-80	1.0	.14
Buckhorn Plantain	67	17	-	1.2	.20
Curly dock	-	17-28	51-73	.49	.17
Canada thistle	58-61	7.5-21	-	2.4	2.5

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¹TDN: total digestible nutrients; CP: crude protein; IVDMD: in-vitro dry matter digestibility.

While these forage quality parameters may look promising for some weed species, this does not take into account palatability. There are currently no systematic metrics for palatability; instead, palatability is determined by observations of herd preference. Most all thistle species are considered a weed in production agriculture, so it may come as a surprise to know that they generally range between 10-18% in crude protein. The obvious reason that most are left uneaten in cattle pastures is that palatability is likely the limiting factor.

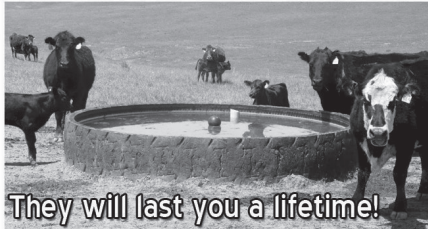
Furthermore, if we only consider these quality and palatability measures, we ignore the potential toxic properties of some weed species. For cattle, differentiating between “good” vs. “bad” plants may be a learned behavior, so young cattle or those moved to a new area are at a higher risk of toxic plant ingestion. For example, biomedical and pharmacology sources cite the benefits of perilla mint for human use, stating that “the entire plant of Perilla is very useful and nutritious as it contains fat, protein, vitamins, minerals, and phytochemicals,” (Dhyani et.al, 2019). Leaves and seed of perilla mint average 6% and 20-25% crude protein, respectively. However, cattle producers should know that perilla mint is one of the most acutely toxic plants to grazing livestock and there are records of cattle deaths within 48 hours following consumption.

Forage quality, palatability, and potential toxicity can also change throughout the growing season and across stages of plant maturity. We know from grass hay production, that harvests need to

occur at a certain frequency to capture plants prior to the reproductive stage to maximize quality. For example, a second hay cutting in June might contain numerous weed species and still retain high forage quality because of the young vegetative and highly palatable dry matter content. That same field harvested in early fall may consequently yield very poor forage quality and include an additional risk of toxic properties despite any added fertility, simply because of the increased plant maturity.

In conclusion, not all “weeds” are necessarily bad in regard to measurable forage quality. We recognize the producers who may not have access to weed management equipment, but still manage a successful cattle operation. After all, a weed, by definition is a plant out of place and this can be highly subjective. Be aware of your cattle and the plants they’re grazing. Their performance will be directly related to their diet, which may include a few non-traditional species.

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