

FEEDING PINE TO GOATS

Reproduction and Deworming Effects

BY CHERRIE NOLDEN, SWTC DAIRY GOAT ACADEMY, 9/26/2020

Pine leaves are a common fodder plant for pregnant goats in the Middle East, and a study by the USDA showed that sheep and goats don't abort when fed Ponderosa pine needles at 0.5 kg/hd/day AF starting at day 121, but cattle and bison do abort. Pine needles have a greater effect in cattle and bison at the end of gestation than at the beginning. According to Short et al. (1992), "There have been field reports of abortions caused by PN in goats and sheep, but experimental data do not agree with those observations." A Korean study showed that pine browse feeding at 0.28 kg/hd/day AF caused 20% incidence of abortion when the pine needles were 38% of the goat diet AF. This study only looked at five goats per treatment (one aborted out of five) and had no control group, so the results could very well be due to a cause other than the treatment. Small sample sizes and no control group results in unreliable data. The common reason why people are typically considering feeding pine trees to goats in Wisconsin is a ready supply after Christmas and the claim of a parasite control effect.

Pine tree (*Pinus sylvestris*) leaf extract was shown to interfere with the exsheathment of L3 gastrointestinal parasites (*Haemonchus contortus* and *Trichostrongylus colubriformis*). It thus provided an anthelmintic effect in the GI tract. Plant tannins in browse impair nematode larval development and viability, although their anthelmintic properties depend on the quality as well as concentration. Besides a deworming effect, Min et al. (2012) showed that feed efficiency in goats increases when they are fed pine bark, up to 30% of their diet. The authors attributed the benefit to the decrease in ruminal acetate to propionate ratio in high pine bark diets. Acetate, isovalerate, and ammonia nitrogen levels decreased in the rumen fluid with increased pine bark feeding. Fir and spruce species are also common Christmas trees in Wisconsin. They have similar compounds to pine, and goats relish eating them. I haven't found studies specifically on these

species and goats, but they have been fed to our goat herd without issue. Our goats also love to eat red cedar.

Here in Wisconsin, the most cost-effective and natural approach that we've found for providing tannins and their anthelmintic benefit to our grazing goats, sheep, horses, cattle, pigs, and chickens is interseeding our pastures and hay ground with birdsfoot trefoil, chicory, and plantain. Marley et al. (2002) showed that birdsfoot trefoil and chicory were effective at reducing worm load in lambs grazing these forages, and Villalba et al. (2014) reviewed the effectiveness of ruminants self-medicating against gastrointestinal nematodes. Our herds also have access to oak, hickory, and walnut-containing woodlands, where they consume the leaves, bark, and nuts of these tannin-containing species. We have fed our Christmas trees to our pregnant goats with no effect on pregnancies, but since most parasites are dormant during winter, the effect on worm load is questionable when fed at this time of year in this part of the country. Fecal egg count is not a reliable indicator of adult worm count in the host. I haven't found any studies that counted worms in goats fed evergreens during winter at latitudes that experience freezing winter temperatures.

For a complete list of references, see our Goat Notes download page at <https://backyardgoats.iamcountryside.com/goat-notes/feeding-pine-to-goats>. 🐐

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