

**Tocopherol (vitamin E) content in invasive browse species
on underutilized Appalachian farmland**

by

Gabriel Wilmoth

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J. L. Hess, Chair

J. G. Foster

E. M. Gregory

A. O. Abaye

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(Abstract)

The tocopherol (Vitamin E) content of forage from three invasive shrub species was measured to assess the value of the shrubs as a source of vitamin E for goats browsing on overgrown Appalachian pastures. Plant leaf clusters were collected from multiflora rose (*Rosa multiflora* Thunb.), autumn olive (*Elaeagnus umbellata* Thunb.), and Morrow's honeysuckle (*Lonicera morowii* Gray) in replicated plots at a site in southern West Virginia during the 1999 growing season. Alpha-, beta-, gamma-, and delta-tocopherol were extracted with hexane, separated by high performance liquid chromatography on a normal-phase diol column, and quantified. Significant differences ($P < 0.001$) in concentration were found among species for all forms of tocopherol. Alpha-tocopherol predominated, accounting for more than 90% of the total tocopherols in all three species. Alpha-tocopherol levels increased in all species with maturity; however, the magnitude of the increase was not the same in all species. At the end of the growing season, autumn olive had the highest levels of alpha-tocopherol (1270 ± 55 ppm dry matter [DM]), followed by Morrow's honeysuckle (840 ± 55 ppm DM), and multiflora rose (610 ± 55 ppm DM). Goats grazing on mature browse may obtain adequate intake of vitamin E. High nutritive value and/or low concentrations of antiquality factors may not coincide with the high levels of vitamin E found in mature tissue, and the actual vitamin E intake will depend on the feeding behavior of the goat.