

Ruminal degradability of leaves of *Morus alba* and *Fraxinus excelsior* managed as pollards or high stem trees

Delagarde R.¹ (remy.delagarde@inra.fr), Lamberton P.¹, Novak S.², Emile J.-C.²

¹Pegase, INRA, Saint-Gilles, France; ²FERLus, INRA, Lusignan, France

The effect of tree management (pollard vs high stem tree) on ruminal effective degradability of dry matter (DM) and nitrogen (N), for common ash (*Fraxinus excelsior*) and white mulberry (*Morus alba*), was studied. Leaves of common ash were collected in Lusignan (France), and leaves of white mulberry were collected in Le Pradel (France), in August 2016. Trees were pollarded since 2 years in Lusignan (1 m height) and 12 years in Le Pradel (0.8 m height). Duplicate leaves samples were collected from three trees, dried (60°C) and ground (0.8 mm sieve). Fractional rate kd (%/h) and ruminal effective degradability (ED) were determined for DM and N, from *in situ* leaves degradation in 3-g nylon bags samples, replicated on 3 dry cows, after 2 to 48 h of incubation (INRA, 2018). Leaves CP concentration ranged from 129 to 177 g/kg DM. There was no species by management interaction for kd or ED. The kd(DM) was unaffected by tree species or management, while ED(DM) was greater by 5.1 points on white mulberry than on common ash, and greater by 4.3 points for high stem trees than for pollards (Table 1). The kd(N) was greater by 0.015 for high stem trees than for pollards. Finally, ED(N) was greater by 6.5 points for white mulberry compared to common ash, and greater by 4.3 points for high stem trees compared to pollards. It is concluded that leaves of both species have a good protein nutritive value. Unexpectedly, ruminal degradability was lower for the leaves of the pollarded trees.

Table 1 : Effect of tree species and management on fractional rate (kd, in %/h) and ruminal effective degradability (ED, in %) of DM and N in fresh leaves collected in summer.

| Sp | White mulberry | | Common ash | | RSD | Effects (P <) | | |
|---------|----------------|---------|------------|---------|--------|---------------|-----|-------|
| | High stem | Pollard | High stem | Pollard | | Sp | Ma | Sp×Ma |
| kd (DM) | 0.118 | 0.114 | 0.137 | 0.099 | 0.0369 | ns | ns | ns |
| ED (DM) | 75.8 | 70.8 | 70.0 | 66.3 | 1.54 | *** | *** | ns |
| kd (N) | 0.105 | 0.098 | 0.116 | 0.093 | 0.0173 | ns | * | ns |
| ED (N) | 66.1 | 61.5 | 59.2 | 55.4 | 2.56 | *** | ** | ns |

Sp : species ; Ma : management; RSD, residual standard deviation

Keywords: degradability, fodder tree, leave, pollard, high stem.

References:

1. INRA, 2018. INRA feeding system for ruminants. Wageningen Academic Publishers, Wageningen, 640 pp.