

Feeding Preferences in Greylag Geese and the Effect of Activated Charcoal

DIEDERIK W. VAN LIERE,¹ *Cabwim Consultancy in Animal Behaviour and Management, Gansmessen 33, 9403 XR Assen, Netherlands*

NICK J. M. VAN EEKEREN, *Louis Bolk Institute, Department of Organic Agriculture, Hoofdstraat 24, 3972 LA Driebergen, Netherlands*

MAARTEN J. J. E. LOONEN,² *Koeman en Bijkerk bv, P.O. Box 14, 9750 AA Haren, Netherlands*

ABSTRACT Greylag geese (*Anser anser*) can cause serious damage to agricultural fields near wetlands that are attractive for resting and nesting but not for feeding. Alternative plantings or spraying fields may prevent goose damage. We randomly designed 64 plots in spring 2004 and prepared plantings of white clover (*Trifolium repens*), white clover with perennial ryegrass (*Lolium perenne*; mixture), fertilized perennial ryegrass (grass), or unfertilized perennial ryegrass. We measured goose-dropping densities in plots as a measure of feeding preference in autumn 2004 (7 weeks), spring 2005 (6 weeks), and autumn 2005 (7 weeks) following removal of a protective fence and vegetation sampling for content analysis in 2004. We also sprayed activated charcoal (20 kg/ha) in a suspension on 32 plots (8/planting) to deter geese in autumn 2004 only. In a second experiment we examined pairs of greylag geese in cages for preferences between grass treated with or without activated charcoal. Charcoal did not deter geese in either experiment. However, dropping density averaged highest for clover (1.01/m²), followed by the mixture (0.65/m²), then fertilized (0.23/m²) and unfertilized grass (0.16/m²). Preferences were consistent in all 3 experimental periods. Fertilized grass reached 31.8 cm in height on average in spring, whereas clover measured 15.4 cm. Crude protein and water-soluble carbohydrate content (g/kg dry matter) was 294 and 49, respectively, in white clover and 183 and 139, respectively, in fertilized grass. We found a positive partial correlation independent of vegetation type between dropping densities and crude protein and a negative correlation with water-soluble carbohydrate content. Thus, to prevent grazing damage to agricultural fields, we recommend planting white clover, strongly preferred by feeding geese, in areas (fallow agricultural or nonagricultural) adjacent to their habitat and not in agricultural fields under production. (JOURNAL OF WILDLIFE MANAGEMENT 73(6):924–931; 2009)

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Populations of Canada goose (*Branta canadensis*), snow goose (*Chen caerulescens*), Ross's goose (*C. rossii*), and white-fronted goose (*Anser albifrons*) in North America and brent goose (*Branta bernicla*), greylag goose (*A. anser*), and pink-footed goose (*A. branchyrhynchus*) in Europe have expanded during the last 30 years (Ankney 1996, Van Eerden et al. 1996, Jefferies et al. 2003, Tombre et al. 2005, Wisz et al. 2008). Typical reasons include increased availability of grasses and grains of cultivars with improved yield, increased application of nitrogen fertilizers, and conversions of natural feeding sites to farmland (Van Eerden et al. 1996, 2005; Jefferies et al. 2003; Tombre et al. 2005; Van der Jeugd et al. 2006). Moreover, migrating geese have changed their staging sites from nonagricultural to agricultural regions. These changes have caused conflicts with agricultural interests in Europe and North America (Ankney 1996, Madsen 2001, Jefferies et al. 2003, Tombre et al. 2005, Hauser et al. 2007). Destruction of habitat and subsequent concentration of geese in remaining habitat have led to comparable conflicts in East Asia and Japan in particular (Amano et al. 2004). Management strategies to address these conflicts include shooting large numbers of geese (Amano et al. 2004, Hauser et al. 2007), scaring geese from fields with inter-alia, gas guns, scarecrows, tapes strung across fields, human bird-scarers (possibly augmented by shooting some geese), and managing agricultural land as

alternative feeding areas (McKay et al. 2001; Amano et al. 2004, 2007).

Dutch authorities promote alternative feeding areas for geese by paying farmers who voluntarily tolerate geese on their land, but only between 1 October and 1 April. This measure is aimed at staging geese that feed in the Netherlands during migration, but resident geese also benefit from this tolerance. However, if they want to be compensated for damage that either migrating or resident geese may cause, farmers must apply shooting and scaring measures before 1 October and after 1 April. This compensation rule also applies for farmers who do not tolerate geese in the October–April period. Thus, the Dutch policy is ambiguous for geese, because half the year they are reinforced for foraging in some agricultural fields but chased and killed in others and the other half the year they are chased and killed in all agricultural fields. Such local shifts from tolerance to intolerance are particularly inconsistent for resident geese, such as the greylag goose. The greylag goose is the most common breeding goose in the Netherlands and accounted for 55% to 73% of annual agricultural damage from 2000 to 2004 (Van der Jeugd et al. 2006). However, crop damage by greylag geese occurs in all northwestern and in some central European countries as well (Van der Jeugd et al. 2006).

Greylag geese find excellent feeding habitat in Dutch pastures (Van Eerden et al. 1996, 2005), which are mostly planted with fertilized perennial ryegrass (*Lolium perenne*). In addition, nearby wetlands may provide good habitat to rest or breed, in particular if dominated by tall grasses, shrubs, and trees (e.g., willow [*Salix* sp.], birch [*Betula* sp.],

¹ E-mail: dvanliere@cabwim.com

² Present address: Arctic Centre, University of Groningen, P.O. Box 716, 9700 AS Groningen, Netherlands