

# Chemical requirements and nature of silage residues fit to the larval development of the *C. obsoletus/scoticus* complex (Diptera: Ceratopogonidae), main vectors of bluetongue

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## Abstract

Bluetongue is a viral disease that affects domestic and wild ruminants. Since its recent emergence in Northern Europe, this disease has caused considerable economic losses to the sheep and cattle. The biological vectors of BT virus (BTV) are midges of the genus *Culicoides*. Biotopes and chemical characteristics suitable for larval development of the main species involved in transmission of this virus are still relatively unknown. This study shows that the larvae of biting midges belonging to the *C. obsoletus* and *C. scoticus* species – forming the majority complex in Northern Europe and involved in the transmission of bluetongue – are able to grow in different types of silage residues (maize, grass, maize + grass & maize + pulp). The chemical composition of substrates strongly influences the presence of immature stages of these biting midges. The lignin thus seems to favor their presence, playing the role of physical support for these semi-aquatic larvae. Concentrations of calcium and potassium are on the other hand adverse to the presence of these two species. Knowledge of chemical requirements of species involved in transmission of the BT will help to locate and monitor their larval stages, while preventing creation of new breeding sites.

**Keywords:** *Culicoides*, breeding site, Bluetongue, chemical requirements, vectors, silage residues, *C. obsoletus*, *C. scoticus*