

Maisons-Alfort, 26 september 2006

## OPINION

**of the French Food Safety Agency (Afssa) on the predictable period of inactivity of potential vectors for bluetongue in the current restricted zones in Departments in north-eastern France, on the practical vector control measures to be put in place to control bluetongue and on the tests to be prioritised with a view to movements on a derogation basis**

LA DIRECTRICE GENERALE

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### **Terms of the referral**

The Agence française de sécurité sanitaire des aliments (Afssa) [French Food Safety Agency] received a mandate on 12 September 2006 by fax from the Direction générale de l'alimentation (DGAI) [Directorate General for Food] for an opinion on a draft order amending the Order of 21 August 2001 laying down the financial and technical aspects of the animal health measures for bluetongue, and on a draft protocol for the movement of week-old calves.

### **Opinion of the joint emergency expert group on "Bluetongue"**

The joint emergency expert group on "Bluetongue", appointed in a decision dated 09 September 2006, met on 21 and 25 September 2006 using telematic facilities and has issued the following opinion:

#### **"Context and previous referrals**

*In response to the mandate from the DGAI received on the morning of 12 September 2006 concerning a draft order amending the Order of 21 August 2001 laying down the financial and technical aspects of the animal health measures for bluetongue, an initial Opinion<sup>1</sup>, on Article 1 of the draft order amending Article 13 of the Order of 21 August 2001 and on the draft protocol for the movement of week-old calves, was issued in the early evening of 13 September. A second Opinion<sup>2</sup>, concerning Article 2 of the draft order, was issued on 21 September 2006.*

*Due to insufficient time to address all the issues in the request referred on 12 September 2006, it was not possible to respond to all the questions therein. The more general questions in the request are examined in this supplementary opinion.*

*In addition, in the Opinion of 21 September 2006, on Page 3/4, lines 7-8 of the last paragraph preceding the section Conclusions and Recommendations should read "the Commission Decision concerning bluetongue restricted zones..." and not "the Commission Decision concerning bluetongue surveillance zones ... ».*

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1 Afssa Opinion 2006-SA-0250 on a draft order amending the Order of 21 August 2001 laying down the financial and technical aspects of the animal health measures for bluetongue.

2 Afssa Opinion 2006-SA-0250 (a) on a draft order amending the Order of 21 August 2001 laying down the financial and technical aspects of the animal health measures for bluetongue..

## Questions

In view of the possible derogations from the ban on the movements of animals from the restricted zones, notably for grass-fed animals, the following points require examination:

- the practical vector control measures necessary to meet the conditions established in Commission Decision 2005/393/EC, notably in Annex II which defines those measures to be put in place for the movement on a derogation basis of animals from restricted zones to other parts of national territory (exemption from the "exit ban" from restricted zones for domestic movements, Article 3),
- the predictable period of inactivity of potential vectors for bluetongue in the current restricted zones in Departments in north-eastern France;
- the tests (type, test protocol, etc.) to be prioritised for animals likely to be the subject of movements on a derogation basis.

## Method

The joint review exercise was conducted on the basis of a draft opinion produced by the emergency unit supporting the joint emergency expert group on "Bluetongue" following the telephone meeting of 21 September 2006 which was discussed on 25 September and validated by telematic means on 26 September 2006.

The review was conducted based on the following documents:

- the Order of 21 August 2001 laying down the technical and financial aspects of the animal health measures for bluetongue, amended by the Orders of 05 and 14 September 2006;
- Commission Decision 2005/393/EC of 23 May 2005 on protection and surveillance zones in relation to bluetongue and conditions applying to movements from or through these zones, in its consolidated form following the amendments resulting from successive decisions up to 1 September 2006;
- a new draft Commission decision amending Decision 2005/393/EC, following the assent of the Standing Committee on the Food Chain and Animal Health (SCFCAH) on 6 September 2006;
- the available data on the epidemiological situation in the Netherlands, Belgium, Germany and France as at 25 September 2006;
- OIE alerts up to 25 September 2006.
- the press release from the Ministry of Agriculture and Fisheries of 20 September 2006 confirming a single case of infection in cattle originating from Belgium;
- the reports of bluetongue entomological missions, "transect culicoides inventory" from 24 to 26 August 2006 and "longitudinal monitoring of culicoides BTV-8 foci in France", from 05 to 06 September 2006 (T. Baldet and C. Delécolle);
- Paweska J., Venter G., Mellor P. (2002). Vector competence of South African *Culicoides* species for bluetongue virus serotype 1 (BTV-1) with special reference to the effect of temperature on the rate of virus replication in *C. imicola* and *C. bolitinos*. *Med Vet Entomol.* **16**(1):10-21.
- Mullens B., Tabachnick W., Holbrook F., Thompson L. (1995). Effects of temperature on virogenesis of bluetongue virus serotype 11 in *Culicoides variipennis sonorensis*. *Med Vet Entomol.* **9**(1):71-76.
- Rieb P. (1987). L'estivo-hibernation et le contrôle de la dynamique du cycle évolutif dans le genre *Culicoïdes*. *Vie milieu*, **37**(1):23-37.
- Wittmann E., Mello P., Baylis M. (2002). Effect of temperature on the transmission of orbiviruses by the biting midge, *Culicoides sonorensis*. *Med Vet Entomol.* **16**(2):147-56.

## Examination of the issues

### 1. Vector control:

As emphasised in Opinion 2006-SA-0250 regarding the assessment of the draft protocol for managing the movement of week-old calves from the French restricted zones to fattening units situated within the French protection zone, the effectiveness of any disinsectisation treatment of the animals, transport vehicles, collection centres and fattening units is impossible to assess. The main reasons for this difficulty lie in the diversity of the potential vectors and of the entomological situation in the restricted zones.

Studies currently underway should be able to provide additional information on the species of potential vectors and their dynamic in the relevant zones.

The active ingredient of pyrethroid insecticides is effective against all insects, including culicoides, as long as these have not developed any resistance to those products. On the other hand, the bioavailability of the active products on the market has not been tested specifically on culicoides. For this reason, the overall effectiveness of pyrethroid insecticides against culicoides is not yet fully known.

The insecticide effect of the products usually used by farmers to control flies (mainly cypermethrin and deltamethrin based) should therefore be tested on culicoides. Moreover, destruction of the larvae is made more difficult by the fact that breeding sites have yet to be properly defined for a number of species, notably *C. imicola* and *C. obsoletus*.

### 2. Period of inactivity of the potential vectors for bluetongue:

The activity of adult culicoides, responsible for inoculating animals with the bluetongue virus, is temperature-dependent. It diminishes progressively through the autumn, as the ambient temperature falls.

It is accepted that once maximum temperature is below 10°C, adult culicoides activity is low enough to consider their vector role as negligible.

However, it is impossible to predict the date on which this temperature will be achieved and stably maintained in north-eastern France. It can be assumed that this situation is most likely to occur in late November-early December.

The information currently available implies that adult culicoides are killed during the winter by periods of frost. However, the eggs and larvae survive the winter and contribute to the adult population during the following spring. The adults probably become active in April.

In view of the disappearance of adult culicoides from northern Europe during the winter, the fundamental issue is to establish whether, in the species of culicoides responsible for transmission of the serotype 8 of the bluetongue virus in northern Europe, there is any transtadial transmission of the virus, and if so, how frequent this is. The information currently available permits the assumption that the probability of this eventuality is very low, but in view of the uncertainty surrounding the identity of the vector species, no firm conclusions can be drawn.

### 3. Tests to be prioritised with a view to movements on a derogation basis:

The available epidemiological information on the spread of the bluetongue epizootic in northern Europe in August and September 2006 shows a centrifugal diffusion from the epicentre (Maastricht region) and the appearance of accidental cases associated with animal movements.

The virus is mainly spread by the active and passive (on the wind) movement of adult culicoides, and secondarily by the movement and transport of infected ruminants.

There are practically no options for action on the movement of adult culicoides, either active or passive, and this mode of diffusion of the virus must therefore be endured. It is possible, however, to restrict the movement of animals likely to be carriers and multipliers of the virus

during the period of activity of the adult culicoides, to prevent the creation of "erratic" outbreaks.

The principles on which these prevention measures can be based (and any derogations from these measures) are as follows:

- in absolute terms, a ban on ruminant movements in the zones where the virus may be present prevents the creation of erratic outbreaks;
- in view of the centrifugal diffusion described above, the assumption can be made that, overall, the possibility of encountering a ruminant infected with bluetongue decreases in inverse proportion to the distance separating the ruminant's home holding from the nearest identified focus;
- the possibility of a ruminant becoming infected varies depending on its species, age and management conditions;
- the date of movement in relation to the level of activity of adult culicoides is of prime importance; the introduction of an infected ruminant into a bluetongue-free zone in the days preceding the period of inactivity of adult culicoides has no adverse effects in the short term since, even if this ruminant is bitten by one or more non-infected adult culicoides, the probability of the virus multiplication reaching a sufficient level for the insect to become an effective vector is negligible.

The risk assessment of a derogation from a movement ban on animals in a potentially infected zone is only possible when the precise details of the envisaged derogation are known: type of zone of origin, type of zone of destination, species and age of the animals, period of travel, approximate number of animals, etc.

This information will be required for the risk assessment of specific derogations considered in the future.

### Conclusions and recommendations

In view of (i) the data currently available on the relative effectiveness of insecticide treatments against potential vectors for bluetongue, (ii) the difficulty of evaluating the dynamic of culicoides populations in which periods of larval diapause play an important role, (iii) the impossibility of proposing test protocols for animals with a view to movements on a derogation basis from restricted zones without knowing the principal characteristics of the flows which could thereby be created, the joint emergency expert group on "Bluetongue" recommends that the different types of derogation envisaged should be the subject of a risk assessment based on the specific elements to be taken into consideration for each one.

The Joint emergency expert group wishes to emphasise the many uncertainties concerning the conditions of the emergence and development of this episode and the difficulty of predicting its evolution in time and space. It notes that these uncertainties will only be lessened by a better understanding of the actual development of the situation on the ground, both in France and in the other Member States.

Finally, it notes the importance of undertaking studies of the effectiveness of commercial pyrethroid insecticides against adult culicoides.

### Key words:

bluetongue, cattle, sheep, movements, derogation, culicoides "

### Opinion of the Agence française de sécurité sanitaire des aliments

These are the additional points of analysis of the practical vector control measures to be put in place and the tests to be prioritised with a view to movements on a derogation basis which Afssa is in a position to provide in response to the request from the Direction générale de l'alimentation regarding a draft order amending the Order of 21 August 2001 laying down the

technical and financial aspects of the animal health measures for bluetongue, and the associated questions.

Afssa again recommends that the proposed measures, submitted for its opinion now and in the future, should form part of an overall animal health strategy for this exotic serotype with, if possible, clearly expressed objectives and management options.

The Director General of the Agence française  
de sécurité sanitaire des aliments

**Pascale BRIAND**