

[^{F1}ANNEX I

TEST SCHEME FOR DIAGNOSIS, DETECTION AND IDENTIFICATION
OF THE RING ROT BACTERIUM, *CLAVIBACTER MICHIGANENSIS* (Smith)
Davis *et al.* ssp. *SEPEDONICUS* (Spieckermann et Kotthoff) Davis *et al.*
SCOPE OF THE TEST SCHEME

Textual Amendments

- F1** Substituted by [Commission Directive 2006/56/EC of 12 June 2006 amending the Annexes to Council Directive 93/85/EEC on the control of potato ring rot.](#)

2. VISUAL EXAMINATION FOR RING ROT SYMPTOMS**2.1. Potato plants**

Under European climatic conditions symptoms are rarely found in the field and often only at the end of the season. Moreover the symptoms are frequently masked or confused by/with other diseases, senescence or mechanical damages. Therefore it may be easy to miss symptoms in field inspections. Wilting symptoms are very different from those of brown rot; wilting is usually slow and initially limited to the leaf margins. Young infected leaves often continue to expand although, less so in the infected zones. This creates odd shaped leaves. Leaves affected by blocking of the vascular tissues further down the stem often develop chlorotic, yellow to orange, intercostal areas. Infected leaflets, leaves and even stems may eventually die. Often leaves and tubers are simply reduced in size. Occasionally plants are stunted. Coloured pictures of a range of symptoms can be found on the web site <http://forum.europa.eu.int/Public/irc/sanco/Home/main>

2.2. Potato tubers

The earliest symptoms are a slight glassiness or translucence of the tissue without softening around the vascular system, particularly near the heel end. The vascular ring at the heel end may be slightly darker in colour than normal. The first readily identifiable symptom is one whereby the vascular ring has a yellowish coloration and when the tuber is gently squeezed, pillars of cheese-like material emerge from the vessels. This exudation contains millions of bacteria. Browning of the vascular tissue may develop and tuber symptoms at this stage are similar to those of brown rot caused by *Ralstonia solanacearum*. At first, these symptoms may be restricted to one part of the ring, not necessarily close to the heel end and may gradually extend to the whole ring. As the infection progresses, destruction of the vascular tissue occurs; the outer cortex may become separated from the inner cortex. In advanced stages of infection, cracks appear on the surface of the tuber, which are often reddish-brown at their margins. Recently in Europe several cases have occurred where the central cortex rots at the same time as the vascular ring resulting in secondary invasion with internal hollowing and necrosis. Secondary fungal or bacterial invasion may mask the symptoms and it may be difficult, if not impossible, to distinguish advanced ring rot symptoms from other tuber rots. Atypical symptoms may be possible. Coloured pictures of a range of symptoms can be found on the web site <http://forum.europa.eu.int/Public/irc/sanco/Home/main>]