



Assessment of plant health risk regarding potato brown rot and ware potato import from Egypt

Prepared by: The Scientific Panel on Plant Health, Plant Protection Products and Their Residues

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ASSIGNMENT FROM THE NORWEGIAN FOOD SAFETY AUTHORITY

The Scientific Panel on Plant Health, Plant Protection Products and their Residues (Panel 2) of the Norwegian Scientific Committee on Food Safety (VKM) was 2 July 2004 given the following assignment from the Norwegian Food Safety Authority:

To do an assessment of the risk of introduction and establishment of the potato brown rot bacterium (*Ralstonia solanacearum*) in Norway

1. as a consequence of a possible import of ware potato from Egypt
2. as a consequence of ongoing import of ware potato from other countries where the disease exists

The assessment should give an opinion on risk through ware potato import from each of the countries, and it should also consider countries outside the European Economic Area.

ANSWER TO THE NORWEGIAN FOOD SAFETY AUTHORITY

Panel 2 responds with the following assessment to the Norwegian Food Safety Authority:

1. Panel 2 concludes that there is a risk for introduction (entry + establishment) of *R. solanacearum*, the causal agent of potato brown rot, through ware potato import from Egypt. The probability for entry of the pest is estimated to be

approximately 25 entries per 10 000 consignments¹ imported without import control and 13 entries per 10 000 consignments imported with import control. The consequence of a possible introduction of the pathogen is considered as severe, since this represents a threat to the Norwegian potato production. *R. solanacearum* will be able to establish itself in the best agro-ecological zones of Norway. Furthermore, if Norway loses its status as a Pest Free Area for *R. solanacearum*, the export markets for tomato plants could be lost, use of surface water for irrigation could be prohibited, and resource-demanding eradication programmes and disease surveys would have to be put in action.

2. Panel 2 will undertake an assessment of the risk of introduction of *R. solanacearum* to Norway through ongoing import of ware potato from other countries where the disease exists, as soon as the Norwegian Food Safety Authority has provided all the necessary data.

BACKGROUND

Norway has since 1996 temporarily prohibited potato importing from Egypt. The ban is explained by the fact that the risk for introduction of the plant disease potato brown rot, caused by the bacterium *R. solanacearum*, is considered as significant through such an import. Based on this fact Norway has also temporarily prohibited potato import from The Netherlands. The Norwegian Crop Research Institute has earlier performed a risk assessment on *R. solanacearum* (Sletten 1998). In this assessment it was concluded that potato brown rot has a potential to become a highly damaging disease for the Norwegian potato production. The pathogen has never been found in Norway despite surveys during the last three years. Commissioned by the Norwegian Food Safety Authority, the Norwegian Crop Research Institute has analyzed for *R. solanacearum* in 111 water samples and 394 samples of seed potatoes in 2003 and 2004. All the samples were negative.

Data from field experiments in Sweden and establishment of the bacterium in Sweden, United Kingdom and The Netherlands indicate that in the best agro-ecological zones of Norway *R. solanacearum* will be able to develop during the growing season and survive the winters in potato tubers/groundkeepers, soil, water and the weeds *Solanum dulcamara* and *S. nigrum*. The distribution of the alternative host plant *S. dulcamara* in Norway is regarded as a key ecological factor in the establishment of the pest.

During the last few years Egypt has implemented major efforts to improve the situation related to potato brown rot disease in the country, to ensure that potatoes exported to the EU are free of the potato brown rot pathogen. The measures are taken in close collaboration with the EU. Among these efforts are the establishment of so called Pest Free Areas (PFAs), the establishment of a set of rules and a comprehensive control- and traceability programme. Egypt has the last few years had a comprehensive export of fresh potatoes to the EU. In spite of those measures there have been several interceptions of *R. solanacearum* in consignments from Egypt each season.

¹ One consignment = 25 tons

Norwegian authorities have since 1998 received a number of enquiries from Egypt for import of potatoes from Egypt. Norway imports ware potatoes from several EU countries where brown rot has been introduced and eradication measures implemented. According to regulations of plants and phytosanitary measures, potatoes imported from these countries should be produced in PFAs.

PROCEDURE

In a meeting on 23 August 2004 Panel 2 decided to assign the Norwegian Crop Research Institute to produce a report as basis for the Panel's assessment. The report should give a scientific description of the probability for introduction of the potato brown rot bacterium (*R. solanacearum*) through fresh potato import from different exporting countries, and the consequences of a possible establishment in Norway. The rapport deals only with potatoes from Egypt; "Quantitative pest risk assessment for the potato brown rot bacterium *Ralstonia solanacearum* (race 3 biovar 2) in fresh potato imports to Norway from Egypt". The supplementary rapport "Addendum and update to: Quantitative pest risk assessment for the potato brown rot bacterium *Ralstonia solanacearum* (race 3 biovar 2) in fresh potato imports to Norway from Egypt" is an update that considers recent data and information in Janse et al. (2003) and PBRP/ARC (2004). Furthermore, it gives an assessment of a possible import control. The Panel 2's conclusion, based on this work, is given in the following text. As agreed with the Norwegian Food Safety Authority an assessment of the risk due to import from other countries in which *R. solanacearum* exists will be performed during the summer of 2005, given that the necessary data are provided in due time.

SCIENTIFIC REPORTS

Panel 2 refers to the Norwegian Crop Research Institute's reports "Quantitative pest risk assessment for the potato brown rot bacterium *Ralstonia solanacearum* (race 3 biovar 2) in fresh potato imports to Norway from Egypt" (<http://www.vkm.no>) and "Addendum and update to: Quantitative pest risk assessment for the potato brown rot bacterium *Ralstonia solanacearum* (race 3 biovar 2) in fresh potato imports to Norway from Egypt" (<http://www.vkm.no>).

MAIN CONCLUSIONS OF THE REPORTS

It is concluded that brown rot has the potential to become a devastating disease for potato growers in Norway. *R. solanacearum* will be able to develop in the best agro-ecological zones of Norway during the growing season and survive winters in potato tubers/groundkeepers, soil, water and the weeds *Solanum dulcamara* and *S. nigrum*. The distribution of the host plant *S. dulcamara* in Norway is regarded as a key ecological factor in the establishment of the pest. In the model simulation of establishment of *R. solanacearum*, the assumption has been made that only potato cropping areas within the distribution limits of *S. dulcamara* are considered endangered areas.

Based on published data on number of *R. solanacearum* interceptions in the importing EU countries during the season 2003/2004, the expected part of Egyptian potato lots found infested with *R. solanacearum* is estimated to be on average 25 entries per 10 000 consignments imported (for calculations see Rafoss and Sletten 2004, Appendix). The

sensitivity of the internationally recognized and used IF testing procedure (Anonymous 1998) is reported to be on the average 70 per cent. The efficiency of the phytosanitary sampling procedure for *R. solanacearum*, with 200 tubers per 25 tons (Anonymous 1998), is also reported to be on the average 70 per cent. This efficiency level corresponds to an approximate infection level of 0.6 per cent in infested potato lots, given that the infested tubers are evenly distributed in the consignments. Assuming a possible import control following this procedure, and independency of sensitivity of the test and the efficiency of the sampling procedure, the probability of an entry of an infested lot to Norway is $0.0025 - 0.0025 \times 0.7 \times 0.7 = 0.0013$, that is, 13 infested lots per 10 000 lots/consignments imported.

Single introductions of *R. solanacearum* to Norway, i.e. entry of the bacterium, establishment on suitable host, and dissemination of the bacteria downstream the watercourse to the coast, will on average affect 90 hectares of potato growing land. Geographical variation in damage potential has the effect that the consequence of a single introduction of *R. solanacearum* to Norway varies from a worst case of more than 900 hectares potato-cropping land affected, to a best case of less than 90 hectares affected by a single introduction.

The calculation of risk in connection with introduction of the pest to Norway is based on model simulations and therefore relies on a number of assumptions. One of the assumptions made is that only potato cropping areas within the distribution limit of *S. dulcamara* are considered endangered areas. The uncertainty present in such assumptions has only been accounted for in the current risk estimates when documentation has been available.

CONCLUSION OF PANEL 2

Panel 2 concludes that there is a risk for introduction (entry + establishment) of *R. solanacearum*, the causal agent of potato brown rot, through ware potato import from Egypt. The probability for entry of the pest is estimated to be approximately 25 entries per 10 000 consignments imported without import control and 13 entries per 10 000 consignments imported with import control. The latter could, in other words, theoretically mean on the average one entry per 4th year or 19th year given a yearly import of 5000 or 1000 tons, respectively. This calculation is based on data covering one season (2003/2004) and seven countries. The consequence of a possible introduction of the pathogen is considered as severe since this represents a threat to Norwegian potato production. From climatic conditions *R. solanacearum* will be able to establish itself in the best agro-ecological zones of Norway.

R. solanacearum is defined as a quarantine pest to Norway. This means that Norway is compelled to take actions to control and eradicate the bacterium in case of an outbreak. The costs of control and eradication that will accumulate in case of an outbreak will be substantial, both for growers and the authorities, as was the case in Sweden in the 1970's.

Spread of *R. solanacearum* to surface water can happen through sewage effluent from potato processing industry in Norway and result in prohibition on use of surface water for irrigation of susceptible cultures. Today this is the case in the UK and The Netherlands. Such a prohibition would incur additional costs for the involved parties.

R. solanacearum also has the potential to be established in tomatoes. Particularly in some districts in Norway this is a very important production, and the economic impact of a disease outbreak could be substantial. During the last years, there has been built up an important export of tomato plants from Norway. The export markets for tomato plants could be lost if Norway loses its status as a Pest Free Area for *R. solanacearum*.

DOCUMENTATION PRESENTED TO PANEL 2

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MEMBERS OF PANEL 2

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