

Evaluation of:

Pest Risk Assessment of *Ralstonia solanacearum* in Norway – limited to the pathway of ware potatoes from the Netherlands. Opinion of the Panel on Plant Health of the Norwegian Scientific Committee for Food Safety, 09/906-3, ISBN 978-82-8259-001-3. VKM, Oslo, Norway

Plant Protection Service, the Netherlands

Introduction

The PRA assesses the risk of introduction of *Ralstonia solanacearum* by import of ware potatoes from the Netherlands and impact for Norway after introduction. The PRA concludes that there is a medium risk of introduction of *R. solanacearum* in Norway through import of ware potatoes from the Netherlands. Here we comment on that part of the PRA where this probability of introduction has been assessed.

Assessment of the probability of arrival of an infected potato lot

The authors assess that 1 to 6 out of 100,000 ware potato lots will be infected with *Ralstonia solanacearum*. The estimate of 6 out of 100,000 lots is based on a model in which the average yearly number of infected lots is almost 15. This model estimate is, however, based on several assumptions which may not be true. The estimate of 1 out of 100,000 lots is based on the survey results where 3 infected lots have been found during a period of 5 years. The survey results indicate that the 6 out of 100,000 lots based on the model is an overestimation and that the 1 out of 100,000 lots is a more likely value for the frequency of infected ware potato lots.

The PRA indicates an export volume of Dutch ware potatoes of 3.5 million tons. The export volume of ware potatoes is, however, lower according to data from Dutch Databases available at <http://www.aardappelinfol.nl/> (accessed 3 September 2010). Since 1994/1995, the export volume of ware potatoes is about 1 million tons per year. During the period 2003 - 2007, the production volume of ware potatoes varied between 3.1 and 3.8 million tons and was on an average 3.4 million tons per year (Information from databases available at <http://www.aardappelinfol.nl/>, (accessed 3 September 2010). Assuming a total production of 3.4 million tons of ware potatoes per year and an average size of 20 tonnes per lot (as assumed in the PRA), there will be $3.4 \text{ million} / 20 = 170,000$ lots. Assuming that 1.8 infected lots escape the survey (since only 25% of growers are included in the survey), this means on an average that 1 out of 100,000 lots are infected ($1.8 / 170,000 \approx 0,00001$). This corresponds according to the calculation method used in the PRA to approximately one infected ware potato lot in 60 years arriving in Norway. (We agree with the remark made in the PRA that there is a low probability that some lots with very low infections levels may have passed the testing procedure unnoticed because of the limitations of the sampling procedure).

Assessment of the probability of transfer and infection

The authors indicate that no data are available to assess the probability of transfer and infection after import of an infected consignment and that expert judgement is needed to give estimates (page 28). The authors assume the following pathways for transfer:

- (1) risk of effluents of potato peeling
- (2) risk of planting as seed potatoes
- (3) risk from waste potato peel

The probability of transfer from consumer's places is estimated 5 times higher than from the potato industry (p. 28). The probability of transfer and infection through pathways (1) and (3) is, however, considered very low by the Dutch Plant Protection Service for the following reasons:

- Water used to wash knives used for potato peeling by consumers will not be directly drained off to surface water but will follow a purification process which *Ralstonia solanacearum* does not survive (we assume that in Norway, like in the Netherlands, waste water will not be directly drained off to surface water but will be first purified).
- We do not know how potato peel is treated or discarded in Norway but the bacterium will not survive composting nor burning. Survival of the organism in experimental, pilot-scale anaerobic sewage digestors at 35-38 °C did not exceed 48 hours and it was therefore, concluded that a two week digestion process would remove any risk of pathogen dissemination (Elphinstone, 2001, 2005). Only in those situations where infected potato peel is placed directly adjacent to surface water there is a risk of transfer to surface water.

It should also be noted that the few findings of *Ralstonia solanacearum* in ware potatoes in the Netherlands were all latent infections with low infestation levels since about the last 5 years.

Pathway (2), although forbidden in Norway as stated in the PRA, can lead to an introduction but the assessment that in 5 out of 10 cases the import of an infected lot would lead to an introduction of *Ralstonia solanacearum* in Norway (page 28 in the PRA) seems to overestimate the risk:

- Potatoes will only be planted during a short period of the year. Thus, assuming that potatoes are imported throughout the year and only 3 months during the year are suitable for planting of potatoes, this decreases the chance of introduction by a factor $12/3 = 4$.

An indication for the probability of transfer and infection by incidental import of infected ware potatoes may be derived from experiences in the past. *R. solanacearum* is present in the Netherlands at least since 1992 (Janse *et al.*, 1998; Wenneker *et al.*, 1999). Assuming an average size of 20 tonnes per lot (as assumed in the PRA), about 50,000 lots (total export volume is about 1 million tons) have been exported annually since 1992. Thus, totally $18 \times 50,000 = 900,000$ lots have been exported since *R. solanacearum* was detected in the Netherlands for the first time. Thus, since the first detection of *R. solanacearum* in the Netherlands, about 560 times more ware potato lots have been exported from the Netherlands than Norway would import during one year. No reports are known from any introduction of *R. solanacearum* that could be related to import of Dutch ware potatoes and it is also plausible that not only Norwegian consumers will incidentally use ware potatoes as seed potatoes. It should also be noted that the frequency of infected potato lots was much higher in the 1990s than during recent years (more than a factor 10) and the probability that a potato lot infected with *R. solanacearum* is exported from the Netherlands is nowadays much lower than in the 1990s. Thus based on experiences from the past together with the decreased frequency of infected potato lots, the estimation in the Norwegian PRA that in 5 out of 10 cases an infected lot would lead to an introduction most likely overestimates the risk to a large extent.

Conclusion

We do agree with the conclusion of VKM that the conditions in Norway (the climate and the availability of host plants (*Solanum dulcamara*, *S. nigrum*, *S. tuberosum*) are suitable for establishment of *R. solanacearum*. However, we disagree with the conclusion in the PRA that there is a medium risk of introduction of *R. solanacearum* in Norway through import of ware potatoes from the Netherlands because of the very low percentage of infected lots and the very low probability of transfer and infection.

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