

The Belgian tomato sector: in urgent need of control strategy for Pepino mosaic virus.

Pepino mosaic virus (PepMV) poses a severe threat to tomato producers in Belgium. The infection pressure in the leading tomato producing EU member states is extremely high with percentages of about 50 to 100 % of the area under cultivation being infected, depending on the density of the tomato greenhouses in the production area. The virus was first discovered in Belgium in 2002 and in only a few years time, it spread significantly in tomato cultivation. By means of surveys and experiments the damage to the Belgian tomato sector is estimated at 10 million Euros a year.

Since 2005, our auction organization LAVA* is (co-)financing the Belgian research on PepMV (IWT 04018; IWT 60669; IWT 080501). Tomato is the most important culture in LAVA's range of produce. The objectives of this co-financing were numerous. First of all, LAVA wanted to gain an insight into the problems and to determine the fundamental causes of the outbreak. Secondly, the obtained results would enable us to advise producers in order to limit the risk of contamination. The third objective of the co-financing aimed at the development of a viable control method for the tomato growers of the LAVA producer organisations.

In what follows, the chronology of the different steps is being unfolded.

The first results of the research revealed that the virus population in Belgium is dominated by the Chilean strain CH2 and not by the European (EU) strain as initially assumed. The CH2 strain appeared to have a biological advantage over the EU strain, which gradually led to the suppression of the EU strain. Sometimes both strains occur together in which case the damages were significantly higher.

Initially the research concentrated intensely on hygiene, as a way to prevent contamination, but after a few years, both the scientists and our producer organisations came to the conclusion that the worldwide infection pressure is too high and that even a very strict observance of hygiene procedures often does not give solace. This led to the decision to examine the possibility of cross-protection or vaccination with a mild isolate of the CH2 strain, further called 'CH2 mild 1906'. The meaningful results of the first trials encouraged the researchers - in close collaboration with the growers and the producer organisations - to make every effort to further substantiate, optimize and evaluate this vaccination strategy. Numerous trials have been done with 'CH2 mild 1906', in various growth conditions and seasons, using a whole series of tomato varieties and different aggressive *challenge* isolates and time and again, the results were very convincing. The isolate 'CH2 mild 1906' appears to offer full protection against the more aggressive isolates of the CH2 strain and, on top of that, it offers a partial protection against the EU strain. An extensive application of this isolate 'CH2 mild 1906' can protect the Belgian tomato culture against the more aggressive

CH2 isolates, but also against mixed infections and against the introduction of new CH2 isolates from neighboring countries.

In the meantime we, as a sector, have been confronted with a less substantiated and riskier vaccination method which is being promoted in the Netherlands without an official license. According to our sources more than 600 hectares of tomatoes have been artificially inoculated with a mild EU-like isolate and with a mild CH2 isolate in the Netherlands this year, with the intention of vaccinating the plants against both strains. The mild EU-like isolate is introduced at the nursery (seedling production facility) whereas the mild CH2 isolate is introduced after planting at the tomato production site. The application takes place at the expense and the responsibility of the tomato grower. However, many times already, our researchers have shown that mixed infections can be very damaging. Moreover, a similar approach using the combination of two mild isolates (EU-like and CH2), is currently the subject of a trial taking place at the Research Station for Vegetable Growing (Sint-Katelijne-Waver) and here also, the damage on the tomato fruits is considerable. It speaks for itself that for this reason we absolutely need to avoid that Belgian growers would apply this illegal strategy by lack of alternatives. Because of the large-scale application in the Netherlands the pressure is increasing and more and more of our growers are facing the dilemma: applying the Dutch strategy or making great efforts to keep the virus out by following strict hygiene measures, all the while knowing that the chances of success are very small.

In contradiction to the Dutch strategy, the Belgian consortium of growers associations, research institutes and experimental stations has always argued in favor of cross protection or vaccination, only if the strategy is based on a reliable scientific background in addition to which the theoretical techniques and findings are put on trial.

Based on the elaborate scientific research, our aim is to provide the vaccination strategy, with the Belgian mild CH2 isolate as a scientifically substantiated and strongly evaluated methodology, to the Belgian tomato growers as soon as possible. If a legal control method fails to materialize, a rampant growth of non-substantiated vaccination methods will flourish. This would be devastating for the Belgian tomato industry, in particular because substantially more 'beef tomatoes' (bigger fruit type) are being grown in Belgium than in the Netherlands. These beef tomatoes generally face more problems with quality losses caused by PepMV than the finer varieties.

On September 27th 2011 an informative meeting has taken place to which the tomato growers of all our producer organisations and growers associations were invited. On the one hand, the intention of this meeting was to inform producers about the potential dangers of an uncontrolled use of cross protection techniques (re: the Netherlands) and on the other

hand to give them a better understanding of the different steps of the research executed in Belgium between 2005 and 2011.

A survey conducted during the informative meeting in order to assess the interest vaccination for the coming season revealed that about half of the Belgian tomato production showed interest in the developed vaccination strategy with isolate 'CH2 mild 1906' and declared in fact their wish to apply it if legal means were available.

The outline above clearly shows that the availability of legal means for the Belgian tomato culture is extremely urgent. The growers' associations want to avoid that an uncontrolled vaccination strategy – such as in the Netherlands – would lead to enormous quality and production losses with devastating consequences for the market position and the image of the Belgian tomato on the export markets.

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LAVA cvba

*LAVA stands for "Logistic and administrative auction association", in short, the umbrella organization or co-operation of 6 vegetable and fruit producer organisations in Belgium.