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Christmas trees: green and poisonous?!

“O Christmas tree, O Christmas tree! Of all the trees most lovely!” goes a well-known German Christmas carol. Unfortunately, the evergreen tree is also favoured by pests such as lice, mites and fungi. Its needles are powerless against them, despite the terpenes and pinenes they contain as protection against pests. Plant protection products are therefore sometimes used in the cultivation of Christmas trees. In this context, every year, the question arises (sometimes with more, sometimes with less concern): does the “boughs” of our evergreen Christmas companion not only provide “comfort and strength”, but is it possibly a hazard to our well-being? Do possible residues of pesticides on Christmas trees pose a health risk to humans?

The German Federal Institute for Risk Assessment (BfR) has examined the topic of “residues of plant protection products in ornamentals”, which also includes Christmas trees, several times, most recently using the example of cut flowers. Although not necessarily obvious, the approach to risk assessment is certainly comparable here. As with cut flowers, it is unlikely that Christmas trees pose a health risk to consumers based on the current scientific knowledge, assuming that authorised plant protection products are used correctly. This is due to the strict authorisation procedures, in which the occurrence of small quantities of residues is already assessed, and to the fact that exposure is usually assumed to be low, as ornamentals are generally not consumed either as a whole or in parts. In this sense, from the point of consumer health protection, the Christmas tree can continue to be “most lovely”!

Pesticide residues on ornamentals (e.g. cut flowers, Christmas trees) are the subject of frequent public debate. As residues are detected on ornamentals, the question arises as to whether this poses a risk to the health of consumers. The detection of residues on ornamentals is not unexpected, as their use is part of horticultural cultivation practice.

In the European Union, there are no legal regulations on pesticide residues when placing ornamentals on the market. Maximum residue levels are therefore not set. However, Regulation (EC) No. 1107/2009 stipulates that the expected operator exposure to the plant protection product need to be assessed in the authorisation procedures. In addition, it is also

assessed whether and to what extent workers may be exposed during or after the application of plant protection products and uninvolved persons next to the treatment area. The underlying exposure scenarios can be regarded as a realistic worst case, which also covers potential health risks for consumers, both via skin and inhalation exposure to indoor air. Accordingly, in a recent study, the commissioning NGO came to the conclusion that *“an acute health risk for consumers is not to be assumed due to the low concentrations in the trees”*.

From a scientific point of view, there is no need for health concerns with regard to pesticide residues on Christmas trees according to the current scientific knowledge. Neither based on the currently circulating study nor in general (when used as directed) due to the low concentrations. This is particularly true in view of the fact that Christmas trees are not usually consumed when used as intended. Moreover, the consumption of large quantities of conifers would probably be questionable from a toxicological point of view, if only because of the terpene and pinene mixtures they usually contain naturally. These substances are produced by the trees, among other things, to protect them from pest and are therefore rather harmful to health in terms of their biological function. As with most plants, the same applies to the Christmas tree: *“All things are poison, and nothing is without poison; it is the dose alone that makes a thing not poison”*, even without residues.

With this in mind, the BfR wishes you a happy festive season and enjoy the lovely tree!

Further information on the BfR website on this topic:

<https://www.bfr.bund.de/cm/349/assessment-of-health-risks-from-pesticide-residues-on-cut-flowers.pdf>

About the BfR

The German Federal Institute for Risk Assessment (BfR) is a scientifically independent institute within the portfolio of the Federal Ministry of Food and Agriculture (BMEL) in Germany. The BfR advises the Federal Government and the States ('Laender') on questions regarding food, chemical and product safety. The BfR conducts its own research on topics that are closely linked to its assessment tasks

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Publisher:

Federal Institute for Risk Assessment

Max-Dohrn-Strasse 8-10

10589 Berlin

T +49 30 18412-0

F +49 30 18412-99099

bfr@bfr.bund.de

bfr.bund.de

Institution under public law

Represented by the President Professor Dr Dr Andreas Hensel

Supervisory authority: Federal Ministry of Food and Agriculture

VAT number: DE 165 893 448

V.i.S.d.P.: Dr Suzan Fiack



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