

ADVISORY COMMITTEE ON ANIMAL FEEDINGSTUFFS

ADVICE CONCERNING THE ADVENTITIOUS PRESENCE OF GLYPHOSATE TOLERANT OILSEED RAPE IN SEED STOCK

BACKGROUND

1. On 12 May the Committee was asked for urgent advice on the implications for the use of oilseed rape and its by-products for animal feed, given that seed containing 1% or less of a glyphosate tolerant variety (RT73) had been imported for use in this country. We were asked:
 - (a) whether, focusing on science-based safety considerations, the situation posed a threat to human health and the environment? ; and
 - (b) given that any response must be proportionate and measured relative to the risk, were there any (realistic) risk management measures that should be taken?

Similar questions had been asked of the Advisory Committee on Releases to the Environment (ACRE). We were asked to concentrate on whether there could be a threat to human health through use in animal feed.

2. In view of the urgency, ACAF members were sent summary information. On the basis of this information, we responded on the 26th May that we saw no reason to disagree with the views of the ACRE and the Food Standards Agency, that the presence of the GM variety did not pose a risk to the environment or human health. However, ACAF had not had the opportunity to study a technical dossier on the RT73 product which had been considered by the ACRE and the Advisory Committee on Novel Foods and Processes (ACNFP) before ACAF was established. Since at that time (late May), the oilseed rape in question was not due to be harvested for some weeks, Ministers agreed that time should be taken by the Committee to examine the more detailed information. On 31 May, the dossier in question, plus references, was sent to certain members for their observations.
3. The advice that follows not only reflects their comments but also those of other members before 26 May.

ASSESSMENT

4. In addressing the questions arising from the adventitious presence of RT73 oilseed rape in the seed stock, three factors of importance have been taken into account:
 - the use of oil seed rape and its products for animal feeding in the UK;
 - the level of adventitious presence of RT73 in the seed stock; and
 - the dossier information on the RT73 product.

Oilseed rape and its by-products

5. Oilseed rape is grown widely in the UK for the production of oil for human consumption and as an animal feedingstuff. The seed is the valuable, harvested component of the crop, the remainder of the plant being ploughed back into the soil or used as bedding.
6. Processing of rape seed for oil production yields *extracted rapeseed meal* as a by-product. This is a high-protein animal feed in which the anti-nutritional factors naturally present in rape (secondary plant metabolites) have been partially deactivated by heat during processing.
7. Extracted rapeseed meal is the main form in which rape seed is used in animal feeding, some 570,000 tonnes being used annually by feed manufacturers in the UK. However, full fat oilseed rape (produced by heating but without oil extraction) is also employed in the feeding of broiler chickens, and ruminant livestock and some unprocessed oilseed rape (subject only to cracking or grinding) is used in farm mixed rations for pigs, at levels of up to 10%. These latter feeds are increasing in popularity, based on current feed values, but no figures are available for the amounts of rape presently used in these forms.
8. The available evidence suggests that the processing involved in the production of extracted rapeseed meal will severely disrupt DNA, whilst the less stringent processing which results in expelled meal, will lead to less extensive but significant DNA fragmentation. DNA will be fully intact where there is no processing.

Adventitious presence of RT73

9. Our understanding is that adventitious contamination with RT73 was at a level of less than 1% of the affected batches of seed, and that the total

seed affected was less than 1% of the UK crop planted. Thus on any measure, the levels of RT73 to which livestock in the UK could be exposed are extremely low, well below the 1% levels that have been considered by the EC as the limit for designation of human foods as non-GM.

Composition of RT73

10. Compositional data making comparisons between RT73 and corresponding unmodified rape seed were reviewed by ACNFP at the time of the product's approval as a source of extracted oil for human food consumption. In almost all respects, the RT73 product was demonstrably equivalent to unmodified rapeseed product. This was reflected in the ACNFP's report, with which ACAF concurs.
11. Nonetheless, there were compositional differences, most notably in total alkyl glucosinolates (anti-nutritional factors), which were found in higher levels in the RT73 line than in the control (~11 and 8 $\mu\text{mole/g}$ defatted meal respectively). Whether this reflected any difference in the make-up of the glucosinolate fraction was not recorded. However, glucosinolates are comparatively unstable in plant material and levels of individual metabolites can vary significantly, making comparisons of glucosinolate profiles of limited value
12. Whether the higher levels of glucosinolate in the RT73 line were an artefact of differences in crop cultivation conditions or resulted from an unintended modification effect, they appeared to be consistent. Moreover, there was evidence from studies carried out with growing rats that the higher anti-nutritive levels in the modified line exerted detectable effects on nutritive value. However, the levels of glucosinolates in the RT73 product were well within the range found in existing cultivated strains of oilseed rape which are accepted as safe. They therefore do not represent a safety issue.

Antibiotics

13. The dossier provides indirect evidence that the gene conferring resistance to antibiotics including streptomycin and spectinomycin that was used as a marker gene during the development of the GM strain is not present in RT73. This evidence relied on selective PCR amplifications.

CONCLUSIONS ON RISK

14. On the basis of the information outlined above, we have concluded that the adventitious presence of RT73 oilseed rape in rape seed stock, at the

levels reported, presents no threat to human or animal health via use in animal feed. Within this sphere there are therefore no risk management issues to consider. This takes full account of the known uses of oilseed rape and its products in animal feeding, the very low level of RT73 in the seed stock and the compositional information on RT73 presented in the dossier on the product that we have now seen. We accept that a further, more specific dossier would be provided if the developers were to seek full marketing consent for the variety in question.

FURTHER REMARKS

15. Members have commented that the problem of adventitious mixing, which has been subject to widespread public unease, is more than a scientific matter. There was strong disappointment that such contamination had occurred, and recognition that those people who did not wish to consume GM crops or products derived from them must be very concerned at what happened. We consider it most important to avoid further such challenges to the purity of seed stocks in order to safeguard the various claims made as regards the GM status of seed, animal feed and foods. In this regard we believe that the authenticity of seed sold to farmers should be assured by appropriate surveillance and traceability. The Committee would be grateful to receive a detailed report on the source and route of contamination of the oilseed stock, and also updates on the effectiveness of surveillance measures now in place to prevent such incidents in the future.

**Advisory Committee on Animal Feedingstuffs
July 2000**