



Buijs Agro-Services



AN EXAMINATION OF POSSIBLE RELATIONSHIPS BETWEEN THE REDUCTION OF MEADOW BIRDS AND THE PRESENCE OF PESTICIDES AT LIVESTOCK FARMS IN GELDERLAND (THE NETHERLANDS)

Summary

In this study the presence of 664 pesticides and 21 anti-parasitic drugs was investigated in concentrated feed, manure and soil on 24 Gelderland livestock farms (15 conventional and 9 organic). Furthermore, a tree nursery participated in this study, from which the soil was examined. In the three substrates, 134 different fungicides, herbicides, insecticides and biocides were found in ecologically relevant concentrations. No sample was free of pesticides. A total of 116 different pesticides was found on 16 conventional farms and 71 on 9 organic farms. Pesticide residues in organic concentrated feed were on average 3.7 times lower than in conventional concentrated feed. The levels in the soil and in the manure were much less different between conventional and organic. On 20 of the 24 cattle farms studied, no anti-parasitic agents were found above the detection limit in the manure. These were found at three conventional farms and at one organic farm.

In this study data were collected (at the National Database Flora and Fauna) which breeding birds (number of species and number of individuals) were found on the farms during 20 years from 1998-2018. The trend of population development of those birds was studied and the possible correlation with the presence of pesticides on the farms. The predominant tendency of the populations of most breeding pairs of meadow birds was negative. The skylark has completely disappeared and also the lapwing and black-tailed godwit have a negative tendency of the population size on most farms, with the exception of one organic farm on the Randmeer coast. At the majority of the (conventional and organic) farms meadow birds have become very scarce. More than half of the breeding pairs of meadow birds of all 25 farms surveyed were found on two organic farms.

In order to assess the possible effects on the ecosystem of the substances found, the levels of pesticides found were linked to the existing (often contradictory) standards. On the basis of VR (Negligible Risk) and LR50 (Lethal Rate for 50% of test organisms), it appeared plausible that a large number of individual pesticides found have a substantial influence on the ecosystem of the pasture area. This fact is even more worrying, because the effects of all substances taken together, their synergistic interactions and their cumulative effects on the ecosystem are unknown. Furthermore, the time-dependent effects (of the action of most pesticides) are unknown, plus the fact that the majority of the pesticide metabolites are unknown and could not be measured.

With the collected information we cannot conclude otherwise than that the ecosystem of the livestock farms is seriously threatened by the multiplicity of pesticides that are present there. This was further confirmed by the fact that in fresh manure of the cows no, or hardly any, Coleoptera (beetles) were found on most farms. In the manure of farms where concentrated feed and hay with relative high concentrations of insecticides were used, the occurrence of beetles in fresh manure was significantly lower. On the basis of the figures found, it must be considered plausible that the ecosystem on pasture farms can only function properly if the standards for individual insecticides in

Summary

feed are reduced by a factor of 1000 and if a standard for the total amount of pesticides in different types of concentrated feed and fodder will be introduced as well. Standards for residues in straw, hay and other roughage should also be established. These standards are missing in European legislation. In addition, livestock farms must switch to a non-chemical control of pest insects.

This study makes it plausible that it is pointless seeking for protection of meadow birds on land that is exposed to such large quantities of pesticides, including many highly toxic insecticides which threaten the entomofauna seriously. At only one conventional farm the concentrated feed contained less than 1 microgram insecticides per kg. On two organic farms no insecticides were found in a barley sample and in dried alfalfa granules. No residues of insecticides were found in the manure of one conventional and of one organic cattle farm; herbicides and fungicides were however found in all samples.

The input of pesticides enters the farms mainly via concentrated feed, via conventional cereal straw that is used as litter in stables and via substances used for the control of pest insects in stables and manure cellars. All these substances are spread out on the land via the manure. Other sources of contamination that are plausible are deposition, contaminated surface water, sludge from ditches and pesticides that have ended up on farms in the past and circulate there. Furthermore, large amounts of very harmful pesticides were found in silage and hay. Veterinary medicines, which are used on livestock farms, sometimes contain strong insecticides. The contamination of the soil of organic farms is slightly smaller, but organic concentrated feed and manure also still contain too many pesticides to protect adequately the ecosystem in the long run. The many pesticides in concentrated feed can originate from the cultivation, as well as from storage facilities, as well as from modes of transport. The measures needed to protect the pasture ecosystem against an overdose of pesticides are fairly simple:

1. For livestock farms, it must be made clear what is in the feed they wish to purchase. This would give the farmers a freedom of choice.
2. Organic farms in particular should not buy conventional straw as litter
3. The MRL (Maximum Residue Limit) standards for animal feed must be revised on the basis of ecological research.
4. Better information for farmers is needed about the ecological consequences of pesticides that they use in stables and on livestock against parasites and possible alternatives to them.

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