



More than economic incentives needed to reduce pesticide use

A new study from Denmark has indicated that a substantial proportion of farmers may place professional values above cost savings when making decisions about how much pesticide to use. This implies that agricultural policy should consider a broad array of policy instruments to reduce pesticide usage.

Previous research has found that agricultural policy instruments that depend on economic drivers do not produce the predicted results. For example, taxes on pesticides and subsidy schemes to reduce pesticide use in Denmark have not been as effective as expected. These policies tend to be based on economic theory, which assume that agents such as firms or farmers are interested only in maximising profit when, in reality, many farmers are likely to be motivated by non-economic incentives as well.

The study investigated what is behind decisions on pesticide usage amongst 1164 Danish farmers. In order to focus on farmers who do use pesticides, it excluded organic farms and small farms (less than 30 hectares). The researchers issued a comprehensive survey that asked the farmers how they make their decisions on pesticide use by rating a number of factors, including price, yield and environmental concerns. It also explored farmers' attitudes towards different policy instruments.

The results suggest that the farmers could be placed into distinct groups. The largest group (about half the farmers) tended to focus on pesticide price and yield price in their decisions.. These were termed the 'economically-orientated group'. However, it should be noted that these farmers also placed importance on crop yield and environment, but were just more price-orientated.

Approximately a third of the farmers were very attentive to maximising yield, they were above average in their attention to 'clean fields', and conversely, paid relatively little attention to pesticide prices. These were termed the 'production-orientated group'. Further analysis indicated that this group was driven by a professional motivation to do a 'good job'. A third smaller group of farmers did not appear to prioritise either price or productive yield very highly.

In general, the farmers seemed to prefer policies offering positive incentives, such as subsidies, rather than negative incentives, such as taxes. Farmers in the economically-orientated group indicated that they would respond more strongly to economic instruments than did the production-orientated group. A total of 16% of the economically-orientated group indicated that a significant increase in the pesticide tax would encourage them to reduce their pesticide use 'to a very high degree', whereas this was the case for only 9% of the production-orientated group.

In terms of subsidies, 35% of the economically-orientated farmers indicated that increased subsidies would encourage them to reduce pesticide use to a very high degree compared to just 16% of the production-orientated group.

This implies that policymakers should consider implementing a range of instruments to match the different motivations of farmers. As well as economic-based instruments, command-and-control instruments could be considered, which apply rules on the use of pesticides, or policies that work with farmers' professional motivations by ensuring good agricultural standards.

Source: Pedersen, A.B., Nielsen, H.O., Christensen, T. & Hasler, B. (2012) Optimising the effect of policy instruments: a study of farmers' decision rationales and how they match the incentives of Danish pesticide policy. *Journal of Environmental Planning and Management*. 1-17.

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