Optimal allocation of pesticides use in France: spatial integration with Data Envelopment Analysis method (DEA).

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Résumé

In agricultural sector, pesticides reduction is among the major challenging issues. Through efficiency measures with DEA method, we computed a two-stage radial efficiency to measure the potential reduction of pesticides on farms in the Meuse department: the technical efficiency realized at the firm level and the reallocation efficiency realized at the industry level, with spatial integration at four levels. These levels made from the smallest to the largest enabled us to introduce the concern of agricultural land management strategies in regard to the land sharing-land sparing model. Results show that most of farms in Meuse have inefficiency in pesticides use. With pesticides reallocation at the largest scale, a pesticides contraction of 46.8 % from the observed value can be reached with no change in outputs and other inputs. For farms, pesticides reallocation is more effective in the land sharing strategy than in the land sparing one.

Mots-Clés: Pesticides use, reallocation efficiency, Data Envelopment Analysis method, land sharing, land sparing, Meuse department

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