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# IMPACT OF SOIL AND CANOPY MANAGEMENT PRACTICES ON PESTICIDE USE IN VITICULTURE IN FRENCH REGIONS

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To face the negative impacts of pesticides on human health and biodiversity, France adopted in 2008 an action plan aiming at decreasing pesticide use by 50% within 10 years. This is a major challenge, particularly for viticulture, which consumes a very large quantity of pesticides, as vineyard is very sensitive to pests and diseases. Different methods (eg IPM) have been proposed for a more integrated production. Among them, prophylactic practices such as fertilization management, soil surface management and pruning management (shoot thinning, de-budding, leaf thinning, green harvesting...), aim at regulating production (especially for wine quality), but also contribute to limit pests and diseases development. Thus these practices can be considered as levers for reducing pesticide use. We used a statistical analysis to explore the relationships between the use of these practices and the level of pesticide use. The analysis was based on two surveys carried out by the French Ministry of Agriculture on the cropping practices in vineyards in 2006 (5217 fields) and 2010 (6007 fields) throughout the country. Several indicators were used to evaluate the correlations between these *a priori* prophylactic practices and the intensity of pesticides use. Indicators on the use of pesticides (Treatment Frequency Index) and fertilizers were calculated, and indicators on canopy and soil surface management, were designed based on variables available in the database. The analysis was conducted for ten regions (NUTS2) and for the two available years, which corresponded to medium vintages in terms of climate and pest pressure. Results showed that the nature and the number of assumed prophylactic practices varied between and within regions. We found a significant reduction of herbicide use between 2006 and 2010 at the national scale, which was not observed for all regions. At the regional scale, this decrease was correlated with a change in the type and proportion of soil management practices (chemical weeding, permanent grass cover, tillage...). However, combinations of other practices commonly used to reduce vine vegetative vigour (reduced fertilization, green pruning) did not lead to a reduction of pesticide use at the regional scale. These relationships should be further studied, as some information were missing in the survey, such as biophysical field characteristics (soil type, vine vegetative vigour ...) or farmers' protection strategies. To this end, individual surveys will be performed to explore in detail these relationships.

