



## **Specificity of damage to agriculture due to storms: Recommendations to produce flood damage functions**

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In France, flood damage functions have been developed for the main asset categories (households, economic activities, agriculture, public infrastructure) in the context of fluvial flooding. But, in the context of flooding by saline water, flood damage functions only exist for household and economic activities. Damage functions for agriculture are still missing although those assets represent an important share of areas concerned by potential submersion and also an important share of potential benefits generated by protection programs. Uncertainty on damage estimation may have critical consequences on the results of Cost Benefit Analysis for those programs. However, developing flood damage functions is a long time process. Then identifying the adequate methodology to develop damage functions to agriculture in the context of saline flooding appeared critical.

In this presentation, we aim at presenting on going research on flood damage evaluation on agriculture due to saline water. Based on existing literature, we decided to carry out interviews with experts and farmers in the area which has been impacted by Xynthia storm. Our approach falls in what Flood Hazard Research Center calls synthetic approaches in which expert knowledge is used to collect damage data.

The storm Xynthia which occurred in France in 2010 severely impacted agriculture areas. Durant et al (2018) proposed an estimation of damage related to Xynthia on an experimental farm in Vendée department by following variations in products and expenses on the various activity the farm has. While it cannot be directly extrapolated to produce damage functions, this detailed analysis is very worthwhile. To complete this analysis, two different interview guides have been developed: one for the experts and one for the farmers. In total, 15 interviews have been conducted and transcribed. From this empirical data, we found out that flood damage related to saline water on agriculture are really specific. We analyze this specificity through three themes on several crop types representative of the case study area: i) relevant flood parameters for damage analysis, ii) specific actions to recover, iii) time needed to recover. For each themes and for every crop type studied, we will present the results obtained from the interviews and analyze the specificity of saline context compared to fluvial context. As an example, due to the salinity of water, gypsum have been applied on land plots. This action is very specific and highly costly (around 1 000 €/ha).

As a conclusion, we will discuss the feasibility to adapt flood damage functions to agriculture to saline flooding at national scale and we will give recommendations.