RAPID AGRICULTURAL DISASTER ASSESSMENT ROUTINE
(RADAR)

Environment and Natural Resources Service
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1. General description

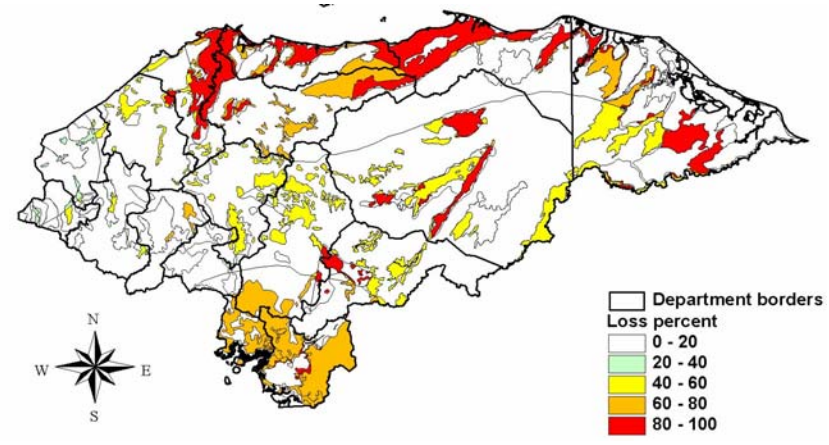
Agricultural disaster impact analyses are based mainly on empirical in situ analysis, and largely dependent on access to the area affected and expert professional experience. Evaluation of disaster impact follows no defined methodology in most cases. This due to several factors, among others the fact that disaster impacts are difficult to model, and because emergency situations prevent sufficiently detailed and georeferenced information to be collected, that would allow the calibration of impact models. Somehow, the urgency of relief operations prevents necessary normative tools to be developed.

RADAR proposes to move from empirical assessments towards model approaches.

Once an event strikes a region, the user of the procedure should rapidly collect all available georeferenced and quantitative data on the event and the region. Then, using a Disaster Information Management System (DIMS), the short- and long-term agricultural impact of the event can be assessed with the help of a conceptual model for structuring the impact assessment.

The procedure combines model analysis, based on physical simulation of the disaster, and empirical analysis, using the people's record of the environmental disruption after the event. Both analyses may be used alone or concurrently; they can be updated in real time to improve the assessment.

The output of the analyses is the **map of the intensity of the event**, which is then used to compute the impact (the loss) to agriculture produced by the disaster.



This tool is very powerful as a support to decision-making during an assessment. Full implementation of the assessment procedure in a DIMS should allow rapid and accurate

assessment of the impact of disastrous events on agriculture. Impact forecasting and updating using on-ground and satellite remote sensing data inputs are also resorted to. Accumulated information and in-depth analysis should also provide, in the medium to long term, a significant contribution towards disaster preparedness and minimizing of potential risks through (i) early warning strategies, and (ii) preparation of development plans that incorporate resilience to such disasters.

The general approach was tested by the example of the impact evaluation of Hurricane Mitch on the Honduras agricultural production system. Combining information derived from historical disasters with current remote sensing data input improves anticipation of tropical cyclone system impact, and support special actions to be taken both during and immediately following an event.

2. Methodological approach

RADAR is based on the observation that a disaster is the "product" of an extreme factor and a vulnerable agricultural system. Particularly for extreme factors of geophysical origin, detailed quantitative and georeferenced data about their characteristics are known almost immediately after the event. Some pre- and post-impact data are also rapidly available through remote sensing. If operational impact models were available, this knowledge could be used to model impacts and to generate preliminary assessments very rapidly.

The first step of the RADAR methodology is to establish an operational database to systematically collect

(1) detailed georeferenced "physical" information about the extreme factor

(2) detailed georeferenced data about pre-disaster situations

(3) detailed georeferenced data on impacts.

Once the database has been assembled, several disaster cycles are needed in order to develop the "functions" (models) that permit the above-mentioned "product" to be computed very rapidly in operational mode.

Not only does RADAR permit to assess impacts rapidly, it will also systematically collect quantitative information using modern techniques (such as remote sensing, GIS and modelling) that can be used for a number of related purposes, from disaster risk management to impact assessment to the planning of relief operations.