Assessing agricultural risk in Lebanon combining retrospective and community-based approaches with temporal dimensions implementation

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The agriculture sector, main source of livelihood for most of the rural population and an important source of income, is one of the most affected sectors by natural hazards, especially hydro-meteorological ones. Lebanon's agricultural sectors have always been threatened by many hazards like floods, heavy rainfall, wind storms, cold waves, snow storms, wildfires, drought and heat waves, along with earthquakes, tsunamis, landslides/erosion, and biological hazards. This paper reveals Lebanon agricultural Risk Profile, ascertained through an agricultural risk assessment as part of the Food and Agriculture Organization (FAO) efforts to make the Lebanese agricultural sectors more resilient. In this study, all four agricultural sectors i.e. plant production, animal sector, forestry sector, and aquaculture/fisheries were taken into consideration. Information from archived Lebanese newspapers since 1930 until recent and the UNISDR DesInventar database were combined under GIS environment and integrated with community-based risk assessment in order to establish risk profiles, risk maps and seasonal agricultural risk calendars. Moreover, potential losses were calculated for animal, forestry and aquaculture/fisheries sectors using direct estimating costs method by total /partial damage. While for the plant production sector, a temporal scale utilizing seasonal growth curves of each plant type in each agro-climatic zone was established and integrated into fully automated system. Results helped to prioritize and rank agricultural risks in Lebanon. Accordingly, Floods (330 million USD of economic losses in worst-case scenario) is considered to be the most damaging disaster on agricultural sectors, followed by cold wave (241 million USD), winter storms (212 million USD), heavy rainfall (177 million USD) and heat waves (149 million USD). The established automated systems can be used for accurate and instantaneous aftermath damage loss estimation for more adequate compensations, whereas created risk maps and seasonal agricultural risk calendars enable to raise awareness among farmers \ stakeholders and serve as prevention and preparedness material.