TOOLS 14	How to design viable maize based rotations
	Systems

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WHAT IS…	Maize based crop rotation systems are crop rotation systems reliant on significant **maize production in time** (i.e. continuous maize production is common) **and space** (maize production is significant in the region).
WHY	In some regions maize is the **most important economic crop** or, due to **environmental factors**, such as relief, environmental surroundings or precipitation, there is no alternative crop that can be produced. In these regions maize production is significant in time and space, and in some fields maize is produced continuously. However, in an increasingly large part of Europe, continuous maize production is endangered by pests, diseases and weeds, including western corn rootworm (*Diabrotica virgifera virgifera* LeConte), corn borer (*Ostrinia nubilalis*), eyespot (*Kabatiella zeae*) and leafspot (*Drechslera sp.)*. In areas where economic driving forces and specific local conditions do not favour the decision of farmers to rotate maize with alternative crops, maize based cropping systems have to be developed with intensive risk estimation and risk management.
HOW	There are three steps for designing viable, maize based crop rotation systems: **1. Agro-Ecosystem Analyses (AESA)** is observations of biotic (for example, plant, weeds, pests and diseases) and abiotic (for example, soil and weather) factors in the fields. The goal of an AESA is to assess what type of action will be needed to best produce a profit for the farmer, as well as to estimate the hazard of yield loss in the case of continuous maize production. **2. Risk estimation:** Based on data from the AESA, farmers should analyse the risks and benefits of continuous maize production. They should focus on: ► Pest population ► Weed management ► Subsidies ► Potential income ► Costs of plant production **3. Risk management:** Based on the result of the risk

	estimation, a decision should be taken on whether to grow crops in rotation or to grow maize continuously in each and every field. Continuous maize production should only be conducted in fields where the risk is low and the expected benefits high. The decision making process should focus not just on a single field, but on the whole farm. In the PURE project, innovative IPM solutions for maize-intensive productions will be identified, tested and validated both on-farm (in: FR, DE, HU, IT, SL) and on-station (in: FR, HU, IT, NL). Cost/benefit evaluation of relevant IPM solutions will play an important role. See "sources" for more info on PURE
SOURCES	► On the ENDURE website with deliverables: http://www.endure-network.eu/endure_publications/deliverables 'DR2.17 SWOT analysis of existing Maize Based Cropping Systems in four regions' 'DR3.7, DR1.18 & DR1.19 Final report on the Maize Case Study' ► On the ENDURE Information Centre: http://www.endureinformationcentre.eu/ Keywords: crop > maize ► On the PURE website: http://www.pure-ipm.eu/taxonomy/term/28