

## Practice abstract #4.8

# Assessing food safety hazards in oat-lupin intercropping: insights from GFSA application



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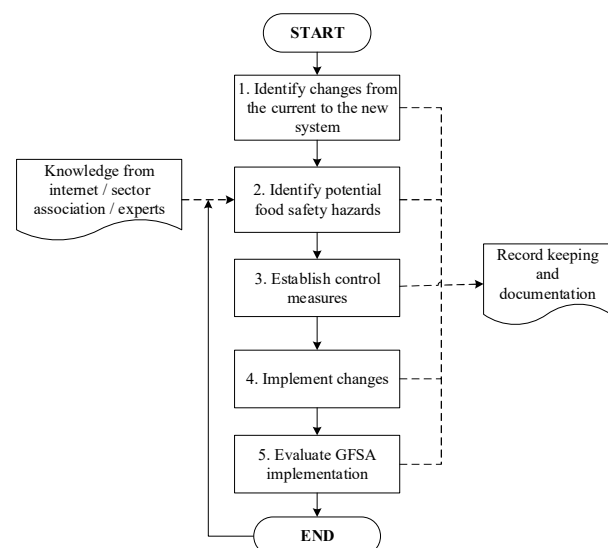
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Changes in the primary production system can affect food safety hazards along the supply chain. This highlights the need for a framework that enables primary producers (i.e., farmers) to assess changes in potential food safety hazards in their production system and to implement control measures, if necessary.

Given the limited resources available at the farm level (e.g., time, manpower), the ideal approach would be simple and straightforward, yet structured enough to capture any emerging, increasing, decreasing, or eliminated hazards. As primary production systems vary greatly, the framework should be generic to facilitate its use across different farming systems. The proposed Generic Food Safety Assessment (GFSA) consists of five steps (see below).



## Case study: Transition from sole cropping of oats to intercropping of oats and lupins

This case study identified four food safety hazards that could be affected by the shift in crop production system: pesticide residues, quinolizidine alkaloids (QAs), mycotoxins, and allergens. Intercropping oats and lupins is expected to reduce pest prevalence, leading to lower pesticide use and consequently lower pesticide residues.

However, this shift introduces new hazards, such as, QAs and lupins allergens which are not present in sole-cropped oats and lupins. Field mycotoxin levels are expected to decrease in an intercropping system. Despite this, as the limited empirical data and the high toxicity and persistence of mycotoxins makes it crucial to minimize their levels.

Our case study shows that applying the GFSA framework effectively evaluated the

potential changes in food safety hazards resulting from this transition. GFSA framework's straightforward structure was proven to be valuable in identifying potential hazards which might otherwise be overlooked, such as the unintended presence of lupin allergen in oats, and in establishing appropriate control measures.

### Challenges

Implementing GFSA practices can be challenging for smallholder or individual farmers often requiring coordinated action. A key challenge is the lack of quantitative data on food safety hazards, particularly for practices like intercropping. Effective collaboration among all stakeholders along the food chain is, therefore, strongly advised to provide the necessary data as a prerequisite for the future application of GFSA.

### About CROPDIVA

CROPDIVA wants to put 6 underused arable crops back in the fields: oats, hull-less barley for human consumption, triticale, buckwheat, faba beans and lupins.

27 European partners are joining forces to enhance agrobiodiversity in Europe. They will achieve this by focusing on crop diversity and creating local value chains.



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