

## Practice abstract #4.7

# Intercropping and Food Safety



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Introducing a new crop in the rotation or the management system may influence the safety of the subsequently produced foods. Some compounds, like toxic alkaloids and allergens, are produced by the food plants themselves.

### LUPIN

The legume, lupin, produces **toxic alkaloids** to fight pests, like fungi and insects. Therefore, the quantity and profiles of toxic alkaloids produced depend on the lupin cultivar and on stress during growth, such as soil type, drought or neighboring plants as in intercropping systems. People can experience severe toxic reactions in response to **allergens** in lupin.

### FABA BEAN

Analogous to lupin, the legume, faba bean, can produce **toxic alkaloids** and their quantity and profile depend on external factors too. Some persons experience a condition called '**Favism**' after consumption of faba beans. It is unknown which compound causes this condition.

### OATS

The gluten present in oats can cause severe **allergenic** reactions to people.

## FOOD PROCESSING

**Soaking** of lupins and faba beans in water will leach out part of the alkaloids. Overall reduction of toxicity will depend on the initial quantity present. Food processing conditions, such as **heat** or **fermentation**, do not change the amount and effects of alkaloids or allergens present.

All actors in the food production chain must be (made) aware of the possible food safety risks when crop management changes to intercropping systems.

## INTERCROPPING CHALLENGE

When applying intercropping, **cross contamination** with alkaloids and allergens can occur during growth and harvest. Lupin or faba bean get contaminated with gluten from oats and oats with allergens and alkaloids from the legumes. Physical cleaning of the separated seeds will significantly eliminate small parts of the other crop but their presence cannot be excluded.



### 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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