TOOLS
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# Agroecosystem analyses (AESA)

## Theoretical

Date (25/07/2010)

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| WHAT IS | An ecosystem is a natural system based on interactions of biotic and abiotic elements. It is an open system which nevertheless has some self-regulation capacity. If this ecosystem includes crops, we call it an agroecosystem. An agroecosystem is based on ecological interactions between the environment, plants (cultivated and non-cultivated), herbivores (invertebrates - mainly insects - and vertebrates), plant pathogens, and natural enemies of herbivores (parasites, parasitoids and predators). The health of the plant is determined by the environment (weather, soil, nutrients) and the herbivores. The populations of herbivores are balanced by their natural enemies. Weed plants in the field, with which the crop has to compete, also have an effect on crop condition and health. To be able to understand how this system is working, one should know the elements of it and the interactions among them. This aim can be reached by Agroecosystem Analyses (AESA). |
| WHY | The goal of AESA is to assess what type of action will be needed to best produce a profit for the farmer. |
| HOW | AESA should be conducted by observing biotic and abiotic elements of the field, flowering field edges and the surroundings of the field. Sampling of a few locations in the field allows us to estimate and to understand what is happening in the whole field.<br><br>Observations are made at each location of:<br>► Date, type of study field assessed, number of days/weeks after sowing (age of crop)<br>► Soil conditions<br>► Weather conditions<br>► Plant development: plant height, and the size and number of leaves, ears etc.<br>► Plant health status, based on leaf colour (nutrient deficiency symptoms), etc.<br>► Pest and disease attack symptoms, number and types of pests and natural enemies<br>► Presence of insect pests in the soil<br>► Presence of insects living on the soil (Barber pots/pitfall traps)<br>► Weed incidence<br>► Environmental conditions around the field<br>► Unknown insects, leaves with an unfamiliar appearance, with symptoms of unknown diseases, insect damage, or with other damage |

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| | AESA will be successful if it is done regularly (every two to three weeks) and throughout the season. With this intensity, farmers will have continuous information on what happens in the field and what interactions are needed. |
| SOURCES | Frederike Praasterink: A facilitator's field guide. |