

## Public sector research in agricultural biotechnology – Crop plants and trees

This matrix aims to assist in collecting the following information about key agricultural crops and production trees:

1. Main constraints, such as:
  - a. Biotic stress, e.g. diseases, pests, weeds;
  - b. Abiotic stress, e.g. drought, flooding, temperature, soil conditions such as high salinity;
  - c. Compositional constraints, e.g. starch composition currently resulting in substantive use of chemicals and energy to extract starch;
  - d. Nutritional value constraints, e.g. low or no presence of important components, such as iron or zinc, (pro)vitamins, important oils;
  - e. Plant architecture constraints, e.g. height of crops or trees;
  - f. Bioremediation, e.g. using plants or trees to remove pollutants.
  
2. For each of these constraints:
  - a. The current situation 1) Consequences, e.g. yield penalties, and 2) current approaches to address the constraints, e.g. - pesticide use, IPM.
  - b. Biotechnologies that could address these constraints and that are available or under development:
    - i. In vitro techniques for disease free multiplication, e.g. micro-propagation
    - ii. New breeding techniques e.g: Marker Assisted Selection
    - iii. Molecular techniques for the introduction of novel traits, recombinant DNA

Developing these matrices per country aims to serve a variety of purposes, because they offer a tool for policymakers and the research community to prioritise R&D investments on the basis of - for example - current yield losses or pesticide use. This approach further involves the farming community in shaping the agricultural research agenda, and it helps researchers to contact other researchers working in similar areas

When you have received this matrix from the contact person identified in the footer of this matrix, please:

1. Complete the matrix per crop for the topics for which you know that public sector research is planned, ongoing, completed or ended.
2. Identify per topic whether public research is
  - Planned, ongoing, completed or ended R&D
  - Applied R&D or basic research, Lab stage, green house stage, field trial stage, commercialisation stage,
  - Name of the institute plus a name and email for further contacts.

A completed cell would for example give the following information: “ Ongoing applied research, field trial stage, Institute ABC, [contactperson@email.org](mailto:contactperson@email.org).”, with detailed references given in end notes. (please only use end notes and not footnotes).

In case you know of more R&D activities for the same topic, please use separate blocks for the different R&D activities. You can add as many rows as you wish, but please do not add columns. In case R&D has been ended or moved abroad, please explain in a footnote why and add a contact person for further information.

Questions related to this matrix can be sent to the contact person below, or to: [pietvandermeer@gmail.com](mailto:pietvandermeer@gmail.com).

Country contact person:

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<b>COUNTRY:</b> > <b>Crop/Tree:</b> >	<b>Current situation</b> 1') consequences: e.g. yield penalties 2) current approaches: e.g. - pesticide use / IPM,	<b>Diagnostics and early warning strategies</b>	<b>New reproduction and breeding techniques e.g:</b> - micro-propagation - Marker assisted selection - mutation breeding	<b>Introduction of novel traits through genetic engineering</b>
<i>Biotic stress</i>				
<i>Abiotic stress</i>				
<i>Nutritional value</i>				
<i>Composition</i>				
<i>Plant Architecture</i>				
<i>Bioremediation</i>				

Country contact person: