

State of the World's Plants 2017

Plant Health – state of research

Identification of top 20 researched pests, and top 10 pests for research intensification

Arthropod pests – totalling 1187 – were identified as those with full datasheets in the CABI compendia on crop protection, forestry and/or invasive species. We searched for publications mentioning each of these pests in the CAB Direct database (<http://www.cabdirect.org>), using their scientific name as a search term, and specifying publication year as being between 2012 and 2016. Pests were ordered by the number of search results (publication number), and genus-level pests (e.g. “Callosobruchus”) were removed from the list.

For the top 10 pests for research intensification, we additionally performed the same searches, but specifying the years 2007 to 2011. For each time period (2007-2011 and 2012-2016), pests were ordered by publication number and assigned a numbered rank. Pest species were subsequently ordered by their increase in rank over time. Genus-level pests (e.g. “Callosobruchus”) were removed from the list, as well as pests that appeared to have undergone a recent name change (explaining the apparent difference in research efforts over time).

Geographical distribution of pests

Geographical distribution information was obtained from a pest's CABI datasheet. We considered a pest to be “present” within a country if its distribution within that country (or at least one of its regions) was described as “present”, “widespread”, or “restricted”, but not if “absent”, “formerly present”, “eradicated”, or “transient”. A pest was considered “present” in a continent if at least one country in that continent met these requirements.

Host genera and top hosts

Host lists were obtained from CABI datasheets, with no discrimination of context (e.g. “wild host”, “main”, “other”).

For host genera counts in Table 1, host species were summarised at the unique genus level, and host descriptions which matched higher taxonomic groups (e.g. family) were eliminated.

For each pest, to find the most co-researched hosts (Table 1) we performed a search on the CAB Direct database (<http://www.cabdirect.org>) as for identification of the top pests. In addition to using the scientific name of the pest as a search term, and specifying publication year as being between 2012 and 2016, each host was searched within the “Organism” field. For each pest species, hosts were ordered by the number of search results (publication number). No such analysis was performed for Table 2, where instead example host plants were selected.

Research by country

To assess research on top pests by country (as visualised on the SOTWP website), we searched for 2012-2016 publications on the top 20 pests on CAB Direct as described above, and downloaded a full record of publications in .csv format. Publication records on all 20 pests were combined into a single spreadsheet, and the “author affiliation” column (a record of the first author of each publication) was cross-referenced against a list of countries in an automated manner. Unassigned publications were manually checked and assigned countries. Duplicate publications were removed from the list, and for each country publication number was counted and mapped.

For pest-specific publication counts the above was performed, using publications for only a specific pest.

For supplementary information for this chapter please contact sotwp@kew.org