

The Quality and Extent of Existing Data Sources on Scientific Research on Agriculture

In order to evaluate accurately the impact of agricultural research on productivity, efficiency and environmental quality, it is essential to know how much has been spent. However, official statistics on aggregate expenditure volumes on scientific research on agriculture, at both European and national levels, are only intermittently available and are not fully comparable. The IMPRESA project has contributed to the assessment of the official data available and, through secondary data and key informants, to the description of recent levels and trends in agricultural research expenditures. The study covers twenty EU countries, in total accounting for just over 95% of European agricultural research.

Data availability

The standard economic indicators measuring various dimensions of research and experimental development are set out in the OECD 'Frascati Manual'¹. The basic measure of activity is intramural expenditure (Gross Expenditure on Research and Development, GERD), divided into four sectors of performance: government, higher education, business enterprises, and private non-profit actors. Research itself is classified in three ways, by field of science (FOS), socio-economic objective (NABS) and economic activity (NACE). To be consistent and comparable, data from all performers should be collected using identical classifications. However, business enterprise data are divided by economic activity, while data from other performers are disaggregated by socio-economic objectives or fields of science. Appropriation data, collected by socio-economic objectives, are available from provisions in government budgets.

Harmonised European statistics are regulated to ensure quality and consistency. In most countries the national office or institute in charge of preparing statistics collects and publishes data and

transmits relevant figures to Eurostat. In some countries, the ministry responsible for research is also involved in the production of relevant statistics.

While a common classification is used for research, data collection methodologies vary across countries. This results in differences in data coverage rates, notably when considering agricultural expenditure by fields of science, whose average coverage between 2004 and 2012 was 51.5% of the possible total for the 20 countries studied. Coverage of expenditure data by socio-economic objectives is not as rich, containing only 30.8% of possible total values. Eurostat data on business enterprises, reported by economic activity, covers 46.1% of possible values, and there are some concerns regarding their accuracy and breadth. There is a virtually complete series of budget appropriations data, though this represents intended rather than actual public sector expenditures.

Implementation of the Commission Regulation of 2012 obliges Member States to deposit data on higher education and government research expenditures by major field of science at least biennially. This may improve the situation, although so far it has had little beneficial effect.

¹<http://www.oecd.org/innovation/inno/frascaticmanual/proposedstandardpracticeforsurveysonresearchandexperimentaldevelopment6thedition.htm>



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Current and expected trends in European agricultural research expenditures

Budgetary appropriations data indicates that the five main public spenders on agricultural research appear to be Germany, Spain, the United Kingdom, Italy and France. Together they accounted for more than 70% of total average agricultural science appropriations between 2008 and 2013. For each of these apart from France, consistent intramural expenditure data are available from 2008 to 2012. These show that over the period, agricultural research spending fell in cash terms by €34 million (down 1%); although due to inflation the real reduction is likely to be greater. Government spending rose by 4%, higher education spending fell by 12% and business enterprise expenditure rose by 6%.

Secondary data and expert opinion from the 20 countries selected show three different trends in spending:

- Belgium, the Czech Republic, Finland, Germany, Latvia, Poland, Sweden and Switzerland increased agricultural research expenditure between 2008 and 2013, with significant public sector increases.

- Bulgaria, Hungary, Ireland, Portugal, Spain, the Netherlands and the United Kingdom experienced falling expenditures since 2008. This trend parallels substantial reductions in overall public expenditure in these countries.
- Denmark, France, Italy, Slovenia and Romania maintained approximate overall stability of expenditure.

Employment of agricultural science R&D personnel has been affected by the financial crisis in most of these countries, even where agricultural science expenditure has increased. A rise in short-term contracts for scientists raises concerns for the stability and critical mass of research expertise in Europe.

Public funding schemes for research institutes increasingly adopt competitive tendering and rely less on recurrent funding. The private sector is now more likely to be engaged in collaborative research projects with public organisations, with progressively greater influence over decision making. This may augment a perceived trend towards more focus on innovation and less on basic science.

Conclusions

Coverage data on scientific research on agriculture are generally poor, which constrains the development of effective evidence-based policies by European governments. Despite these gaps, it is clear that an overall decline in agricultural research expenditure has occurred in Europe since 2008. The government sector appears to be diminishing in relative importance for research funding and the changing levels and funding mix of agricultural research affects its structure and orientation. Public institutes tend to diversify into commercially funded work, with consequent shifts from basic to applied and developmental work.

Recommendations

In parallel to the provision of accurate and consistent information from each European country, it is important that the research community gives serious and urgent consideration to the monitoring of more detailed dimensions of research activity. This should include i) consideration of grassroots needs at the farm level to shape research topics and ii) assessment of the implementation of research innovations at the farm level.

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