The future of plant sciences

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A shortage of investment in plant science is threatening the UK’s ability to respond to global challenges such as ensuring food security, adapting to and mitigating climate change, protecting biodiversity and improving human health. This was the clear message from the 300 members of the scientific community who supplied evidence for our report, UK Plant Science: Current Status and Future Challenges.

The report is the first ever analysis of activities across the UK’s plant science sector, and was the result of a year-long study by the UK Plant Sciences Federation (UKPSF, a special interest group of the Society of Biology). Despite the diverse roles and interests of contributors, their messages were strikingly similar.

The UK has one of the world’s most efficient plant science research communities. UK plant science ranks second in the world for publication impact despite receiving less than 4% of public funding. However, there is unmet potential for plant science to deliver innovative solutions.

Past policy swings and unstable funding mechanisms have had detrimental effects on plant science skills, infrastructure and innovation. For example, cuts in applied plant science funding since the 1980s have led to skills shortages in vital areas of plant health, crop science, horticultural science and field studies.

Concerns over plant science skills shortages were highlighted by 96% of UK organizations surveyed. Many universities lack the finances and facilities to carry out crop research, and this compromises their ability to teach crop science on degree courses. The report states that in some specialist areas of plant science, a large number of experts are approaching retirement, and warns that without significant investment in research and training, some skills losses could be irreversible within 10–15 years.

Ensuring that education and training meet the needs of employers is a major priority identified in the report. The UKPSF recommends a combination of targeted teaching fellowships, industry-linked studentships, apprenticeships, continuing professional development, further education and postgraduate courses to address this requirement.

The report also raises the need to inspire a new generation of plant scientists. Poor representation of plant science in school biology curricula means that not enough teachers are accessing high-quality plant science teaching materials or opportunities to gain professional development in the subject. This has an impact on the quality of plant science teaching in schools, and consequently, few students beginning biology degrees show significant knowledge or interest in the subject. Engaging young people with plants in the laboratory or field, however, can have an enormous effect, stimulating a greater interest and showing plant science off as an exciting and modern discipline with relevance to their lives.

Plant scientists taking part in the study considered knowledge exchange to be the biggest weakness in the UK research and funding strategy. The report calls for simple, stable and readily accessible schemes to support plant scientists engaging in public–private partnerships, to allow the effective translation of research into useful applications.

The Government’s renewed interest in supporting agricultural innovation through its £160 million UK Strategy for Agricultural Technologies, launched in 2013, comes as a timely and welcome move for UK plant scientists. The UKPSF warns, however, that a long-term stable balance between basic, applied and translational research will be needed if the UK is to truly deliver on its sustainability objectives. Repairing the gaps to build a healthy vibrant plant science research community will require a doubling of funding. It is essential that Government and industry work together to achieve this.

The UKPSF plans to address the most urgent problems identified in the report through the formation of working groups to take individual priorities forward.