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The Role of Agricultural Science Knowledge Transfer to Promote Food and Nutrition Security

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Agricultural science strives to improve people's basic livelihoods. In this respect, it has achieved great success to improve food security in developing countries in the last decades. However, the agricultural sector has become negatively to the spotlight in the public road. Since large parts of society no longer have direct contact with agriculture, they often draw their knowledge from media coverage. In addition to the media, citizens' initiatives, interest groups and non-governmental organizations (NGOs) have an ever-increasing influence on public discussions and policy-making of agricultural issues. For that reason, recent findings and outputs have to be transferred more effectively in a direct way to their target groups. This study aims at investigating whether and to what extent universities, as the promoter of state agricultural research, could at least partially adopt this type of knowledge transfer for a partly non-academic clientele, or perhaps already do so in order to present a more balanced picture of agricultural realities. The methods used here are based on a comprehensive literature research. On the other hand, guide-based telephone interviews were conducted with agricultural scientist of the University of Hohenheim (UHOH) and others in order to discuss and analyze the topic from the point of view of practicing science based on his case study. Science communication must be geared to the target group, occasion, medium and format. This requires considerable effort and communication experience and competence. The results obtained paint a clear picture of agricultural science perceptions of this topic. They highlight the challenges, but also the opportunities that scientists encounter and see in public relations and the media presentation of agricultural science topics. From this, relevant measures and implications for the transfer of knowledge between actors in agriculture, society and agricultural sciences can be identified, which on the one hand can result in more objective reporting. On the other hand, university science communication helps to raise public awareness that public funds are used efficiently and sensibly in the scientific system.

Keywords: agricultural sciences, knowledge transfer, mass media, media coverage, NGOs, perception of agriculture, public relations, public opinion, science communication

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Introduction

The agricultural sciences deal with all questions concerning the primary production of human and animal food as well as renewable raw materials, landscape conservation and environmental protection (see DFG 2005; DAFA 2013). Although agricultural science, together with its manufacturing branch, i.e. agriculture, has achieved great success in many respects in the past, the sector is increasingly in the public interest. Critical consumers question the health and ethical and moral aspects of modern agricultural production. In science, too, the discrepancy between social

perception and the self-image of the agricultural industry has been studied many times in recent years. The results show that agriculture and consumers have become alienated from each other. A major reason for this development is that large sections of the population no longer have direct contact with agricultural production. In an increasingly urban society, knowledge of modern production techniques is dwindling. This creates an idealized image of agriculture that can hardly withstand reality. The result is often conflicts between farmers, the population and other interest groups that the agricultural sector has to deal with actively. However, the intensity of these conflicts over agriculture and food issues is not a coincidence. They show sharp problems in our culture as a whole, because agriculture and food production are particularly sensitive fields of expression that literally go to the human being on »body and stomach«. In particular, the question of whether agricultural science research in the form of external science communication and knowledge transfer services should and can be integrated into the social discourses of agricultural topics has been investigated (cf. HELMLE 2011; BIRNER 2012; MATTHES 2014).

Material and Methods

Data collection consisted of secondary data analysis and six expert interviews conducted with scientists and social media experts from the University of Hohenheim (4) as well as from the Julius Kühn-Institut in Germany (1) and from the World Vegetable Center in Taiwan (1), one of the 15 CGIAR (Consultative Group on International Agricultural Research) Research Centers. The interviews were conducted using standardized methods for expert interviews and consisted of open questions aiming at retrieving qualitative data. The results were examined on the basis of a Qualitative Content Analysis following MAYRING (2015).

Results and Discussion

Many people no longer draw their knowledge from their own point of view, but mainly from media coverage. Lack of direct reference by many consumers to agriculture is therefore of paramount importance to such media when it comes to forming opinions. In view of the confusing structures of society in general and the agricultural economy in particular, they are the ones who act as »mediators« and are supposed to provide their users with an overview and understanding of larger connections. However, media coverage is largely negatively connoted and contributes significantly to the sceptical perception of the agricultural economy from a consumer perspective (see FEINDT and LANGE 2007; KAYSER 2012).

In recent decades, the journalistic media has come under increasing economic pressure, which has led in part to a loss of journalistic quality and independence. The media landscape is undergoing a profound upheaval, among other things, through digitization and fragmentation, commercialization and orientation towards the mass audience, but also through a trend towards increased scandalization, moralization and personalization. At the same time, journalism on the Internet has lost its exclusive role as a channel for the dissemination of current news (»gatekeeper«). It is replaced by a significant proportion of news aggregators, such as search engines and social network sites (see ALBERSMEIER et al. 2009; SCHWEIGER 2017).

In addition to the media, citizens' initiatives, interest groups and non-governmental organisations (NGOs) have an increasing influence on public discussions and policy-making of agricultural issues as civil society becomes increasingly professionalised. Often greatly simplified patterns of interpretation or interpretation, so-called *frames*, dominate the public discourse, which break down cause-and-effect relationships to central core questions. *Fake news* has also become a problem with enormous impact and reach in an information-driven society, as its content is continuously and intensively disseminated, especially through social media. They act as an instrument of political influence, mood-making and commercial profit. Through social networks, anyone can become the author and spreader of *fake news* (see GRAVANIS et al. 2019; MÜLLER and DENNER 2019).

NGOs and other interest groups are now an integral part of public debates. They are above all political actors who try to influence politics with their work, as well as the work of companies or

the behaviour of consumers. Through public attention, NGOs are able to build pressure and influence public debate in order to achieve their stated goals. In particular, the large, well-funded NGOs have largely expanded and professionalised their public relations work. This is a possible way to encourage companies, policymakers and consumers to change their actions. Prejudices shape the public image of agricultural production, but an objective representation of the situation and circumstances is rare (see ENGEL 2009; VOSS 2009).

Agricultural research is carried out in Germany by a large number of different institutions. Universities are still the first to be named as the promoter of state agricultural research. Through teaching and research, they represent the human and financial foundation of the multi-layered German research system. The University of Hohenheim in Stuttgart not only carries out basic research within the agricultural sciences, but also strives to develop innovative solutions for the important social issues in this environment.

The agricultural scientists are subject to conflicting objectives. In order to be able to work on your own research topics, a very good reputation within science is required. This is obtained almost exclusively by the publication of scientifically relevant essays in journals with peer-reviewed publications. At present, the scientific system as a whole is based on indicator-based performance incentives and resulting competition for attention. What is needed is the establishment of a new evaluation system that not only measures the content of scientific publications in value for knowledge and which also recognises and appreciates knowledge transfer services as a service to society. Above all, the universities themselves, but also the donors, who have an enormous influence on the scientific scene through their third-party funding, are called upon: Discussion and guidelines for action are needed, on the one hand, which strategic objectives are to be pursued and, on the other hand, under what conditions or evaluation indicators they want to award research funds. All experts interviewed agree that it cannot be expedient to leave the transfer of practice-oriented or relevant research results to scientists alone.

Confidence in science has fallen significantly in recent years, at least for a part of society. Here, the scientists surveyed largely agree that university science communication, in addition to the transfer of knowledge, can help to create an awareness among the population that public funds are used efficiently and sensibly in the scientific system. It can also reclaim lost trust in science. However, regardless of the desired goal and format of communication, this transfer service cannot be taken over exclusively by the scientists themselves. This requires cooperation and a clear division of tasks, for example with experts from the communication sciences and/or with science journalists. Through good, regular and trusting cooperation, scientific external representation could take place at the highest level across institutes. This serves both the institutes in detail and the university as a whole and guarantees a professional external presentation as a whole that goes far beyond the field of pure public relations.

Conclusions and Outlook

Looking to the future, the WISSENSCHAFTSRAT (2016) recommends that universities and research institutions understand the promotion of transfer activities (in particular science communication) as a strategic task and take responsibility for them at management level. In exchange with partners from politics, civil society, business or culture, a sound understanding of natural and social changes can be developed. In addition, opportunities for action can be identified and innovations can be initiated. The increasing willingness of universities and research institutions to take up questions and problems from society and to cooperate with a large number of social actors should therefore be seen as a positive signal. However, such exchange processes are complex and require time, personnel and money. It is now up to the decision-makers from politics, universities and also external donors to translate them into clear instructions and strategies and to have them put into effect in order to provide the necessary financial resources and structural infrastructure for future knowledge transfer services.

In January 2020, the DEUTSCHE FORSCHUNGSGEMEINSCHAFT (DFG) launched its nationwide campaign »DFG 2020 – Für das Wissen entscheiden«. The aim of this campaign is to make the principles of a free and independent science and its value for an open and informed society prominently visible to the public throughout 2020 (see DFG 2020). A campaign so broad and elaborate by the DFG impressively illustrates how important and up-to-date the topic of external science communication is. It is clear that the issue will become even more important in the future. Science, but also society, can adapt and prepare for this.

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