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Title:	Prof. Dr. Hubert Wiggering: Transfer as salt in the soup of the agricultural scientist
Episode:	04

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Speaker Announcement (under Music): Listen.UP. The Podcast of the University of Potsdam.

Wiggering: For me, it really is the salt in the soup. It's just a great feeling to develop solutions together with the actors somewhere. On the other hand, it's also important to bring credibility into the process and to really want to do it. And then it works properly. Otherwise, in my opinion, transfer would be doomed to failure if it were only taken along somewhere as a token gesture.

Speaker 1: Today: Transfer as salt in the soup of the agricultural scientist. With Hubert Wiggering.

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Wiggering: In the agricultural sector we talk about joint experimentation. I have had very good experiences with sitting down directly with the farmers at the moment when I had the idea of submitting a project application and developing this idea together with them, taking them with me straight away and basically not having any transfer path at all, but it was merged together.

Speaker 1: Separating research from application is something that would not even occur to Hubert Wiggering because knowledge transfer is ideally bilateral. The feedback mechanisms that arise when you involve users on the ground in the scientific knowledge process increase efficiency on both sides - and allow you to think outside the box in a productive way.

Wiggering: There are male and female farmers. They are so innovative that they may already be running ahead of the development, and we should do our best to bring them in. Not in order to catch them and slow them down, but quite the opposite. This is where a new approach starts, where we enter into joint experimentation, so to speak. That really builds up.

Speaker 2: Hubert Wiggering has had an academic career as a geologist and environmental scientist. At the University of Potsdam, he is Professor of Geo-ecology and heads the "Land Sciences" working group. However, he was also Secretary General of the SRU, the German government's expert council on environmental issues, and spokesperson for the German Agricultural Research Alliance.

Speaker 1: Through this broad field of activity, he says, the idea of knowledge transfer inscribed itself almost automatically into his career.

Wiggering: It has crept in through the back door, as it were, nolens volens, by entering into these more complex questions. It is one thing to deal with these questions in "pure teaching", in inverted commas, with individual questions and then to conduct the scientific discussion. But if you link this back to the real world in an environmental context, you very quickly realise how essential it is to deal with the actors on the ground in a completely different way and to include them in your thinking.

Speaker 1: However, driving knowledge transfer has not always been easy in the academic world.

Wiggering: We are socialised very differently. We are oriented towards gaining knowledge. We move in our scientific environment, are rewarded for delivering great results and then publish them in the best possible way.

Speaker 1: The fact that transfer became an "honourable fact" at all is a recent development, says Wiggering - although for him, the networker, the approach was too linear for a long time.

Wiggering: That means that we first started out as scientists, had a scientific finding, then a huge dent came. We published it. And then the result was there and slowly the addressees realised: Aha, there's something else that we could actually use relatively well. And that is to say, transfer, was always docked at the back and to be seen as a very small light somewhere at the end of the tunnel in this linearity. Now the pressure from society has become greater to use the research funds that are made available to us to also provide answers to questions that society has, so that we also have solutions to problems ready, so that this transfer idea has moved further and further to the front.

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Speaker 2: The "Working Group on Agricultural Sciences" headed by Hubert Wiggering at the University of Potsdam is a good example of how interdisciplinary and transfer-oriented research has a particularly high problem-solving potential.

Speaker 1: In addition to Wiggering, an agricultural scientist, an astrophysicist and a geographer are part of the team that deals with "innovation and the future of agricultural systems" and the "sustainable development of landscapes". The focus is on scientifically measurable resource protection and biodiversity - as well as the cultural appreciation of landscapes. One example is the KlimAgrar project, which aims to effectively implement the Paris climate protection agreement in agriculture...

Speaker 2: ... And to build up a whole network of farmers and agro-researchers for this purpose. Wiggering himself cooperates, for example, with the young farmer Benedikt Bösel, who has dedicated himself to regenerative agriculture in Alt Madlitz in Brandenburg.

Wiggering: We have a situation here that the weather is changing. We often have a lot of precipitation in winter. Then comes a dry phase and then we have a lot of extreme rainfall events on summer days. And the farmer has to deal with that. And there are very often innovative farmers, often young people, who want to try something new, who try to deal with this situation in a different way. And such a person is Benedikt Bösel, who, as a lateral entrant, is not a trained farmer at all, but somehow comes from the financial sector, who thinks very economically, but who suddenly has a completely different firm in the area of environmental issues. That he then starts to think about how I can solve this problem?

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Speaker 2: In his organic farm with the tongue-in-cheek name "Gut&Bösel", Benedikt Bösel succeeds in reversing the soil degradation that has taken place in Brandenburg. Sandy, dry soils regain a higher humus content through proper management. This not only increases the nutrient content of the food

grown, but also stores the greenhouse gas CO₂ in the soil. For this, Bösel relies on a multifunctional land use concept - among others with the concept of "agroforestry", which is scientifically accompanied by Hubert Wiggering.

Speaker 1: The agroforestry is a field intersected at regular intervals by rows of trees 2 to 3 metres wide, also known as kniggs in technical jargon. These reduce the area under cultivation, but protect the soil and grain from wind and erosion, and also form root barriers that prevent water from running off the surface.

Wiggering: The fact that when there are periods of drought, when the sunlight is particularly strong, there is shading and the microclimate builds up in a completely different way means that we can work with the fields in a completely different way. On the one hand, as farmers often argue, we lose land and of course we can't grow crops on these rows of trees that are two or three metres wide. But on the other hand, we see that the rest of the land can suddenly be farmed much better. And Benedikt Bösel has made this his own by going there and trying to optimise this system on his land. He now knows: aha, there is also this groundwater system in the subsoil, the moisture in this hilly landscape that we have here in this environment, the contour lines. And he then designs his rows of trees on the fields so that he builds up precisely these barriers, so that the water then remains there in the system. And suddenly he realises: Oops, I don't have any loss of income, but I can not only compensate for it, but overcompensate for it, because the rest of the system simply works better.

Speaker 2: Agroforestry not only enables more productive farming, it also provides a habitat for wildlife and functions as a carbon sink.

Wiggering: That is this win-win situation. That not only the yields become more stable or better, but we bind organic carbon in the system. Other root systems are built up, other biomass is built up by the trees that are there. And these don't just have to be trees that are then used for energy production, for pellet production or otherwise, but can also be fruit trees or nut trees, so that an additional harvest factor comes into play. So that we can also settle these trees there in the long term and thus bind carbon there with the organic material and this carbon does not leave the system as greenhouse gas.

Speaker 1: In order to be able to precisely quantify such a climate protection measure and also claim it as a benefit to society in the future, natural science is again needed. Hubert Wiggering has adapted a carbon calculator for the agroforestry project that is normally used in relation to forest and forestry systems.

Wiggering: We are trying to calculate the extent to which this can be used as a really calculable factor in the political arena and say that if we think in terms of agroforestry, this will have this effect and also with the ulterior motive that the farmer is then not only available for food security in inverted commas, but also provides environmental services and, if necessary, is worth a climate and can contribute significantly to achieving our climate goals at the end of the day.

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Speaker 1: Projects like KlimAgrar also contribute to improving the sometimes thorny communication between science and agricultural associations. If the proposals come from a team that also includes successful, innovative farmers, they are more likely to be listened to.

Wiggering: In any case. And in the meantime it has even changed that the agricultural and environmental associations are deliberately provoking this kind of research. Of course, we have to see that this also helps to show that farmers are not only the bad guys and somehow create environmental problems, but that they also contribute to solving environmental problems.

Speaker 1: The position in which it has found itself as a result of society's high demands for greening has noticeably shaken the agricultural sector, says Hubert Wiggering.

Wiggering: On the other hand, I have never seen a farmer who gets up in the morning, stands in front of the mirror and says: So, today I'm going to mess up 10 hectares again and do some kind of environmental mess, but farmers, it can be assumed, have always been very careful with their resources. However, something has taken on a life of its own in the system, the framework conditions have changed so massively that producing as cheaply as possible and being able to offer products as cheaply as possible has led to the pressure to produce in such a way that this can be taken into account. This has become so great that in many cases the resource soil is no longer treated with sufficient care. That we simply pollute our waters too much due to fertilisation. That we have run into this animal welfare discussion with our eyes wide open. And against this background, something has built up as an imbalance.

Speaker 1: However, the way out of this imbalance cannot be - as projected by many consumers - a return to the farm model à la Bullerbü.

Wiggering: Certainly not. I believe that everyone who wishes for this does not realise that when we talk about food security and even if we then say okay, we are moving away from this meat-based diet, more in the direction of plants, emphasised nutrition and then have the possibilities to use land differently, we still need a lot of land and must use it as efficiently as possible. And what is there to say against that if we have the technical possibilities to make full use of them?

Speaker 2: Hubert Wiggering also lets his vision of the farm of the future take shape in the book "Cows in the Wash". The "Wimmelbuch für Kinder und Erwachsene" was published by Auflandverlag and is an attempt to leave black and white thinking behind:

Wiggering: And no longer to say conventional is evil and organic cultivation is good per se, but where we try to take the best experiences from each approach and the best possibilities to meet the environmental issues, the climate issues.

We try to take along the best experiences from each approach and the best possibilities to meet the environmental issues, the climate issues, so that for me a system is built up where we look at exactly what is possible there based on the local conditions, what production possibilities there are in terms of arable farming, but also with a land commitment. As far as livestock farming is concerned, we only have so many animals on site that can be fed out of the system from this arable farming system, on the one hand. On the other hand, if we then move in the direction of farm manure, i.e. manure, slurry, and so on. This means that they can be spread on this land again. That material cycles can be closed more than has been the case so far.

Speaker 2: Operations can be optimised on the basis of a precise analysis of the site conditions. With the help of digitalisation, completely new control options are also available.

Speaker 1: For example, fertilisers can be applied in a targeted manner.

Wiggering: That we know exactly when the plant needs which nutrients and then apply them in a targeted manner and not in stock and then run the risk of substances being washed out of the system and polluting the water, but that we do this, as I said, with pinpoint accuracy. And this is how modern farms and modern agricultural production are gradually built up with all the technical possibilities we have, but always - and this is the rule of the game par excellence - in accordance with the conditions at the location.

Speaker 2: And how large is the proportion of German farmers who have already been won over to this idea, or are at least open to it?

Wiggering: It is difficult for me to express this in percentages, but in our communication with the farmers outside, we learn that there is a great willingness across the board, but that one has to differentiate. Large farms can invest in a completely different way than small family farms and that there are also limiting factors.

Speaker 1: Like any mechanisation, that of the farm of the future, as Hubert Wiggering sees it, is also associated with high investments. According to the geo-ecologist and agricultural scientist, there may well be new models in which not every farm thinks and invests for itself.

Wiggering: If you ask about an ideal farm, I would like to answer: I would like to have an ideal region where farmers come together and work with the local conditions, as a region. That these so-called mixed farms, where arable farming and livestock husbandry are combined, do not have to take place on individual farms, but that these things can complement each other in a region. And larger, smaller farms can then also build up a completely different structure. And whether you cultivate cooperative approaches or whatever models they are, you can develop completely different possibilities in this concerted interaction.

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Speaker Ending: Listen-UP: The Podcast of the University of Potsdam.

Speaker 1: Produced by speak low on behalf of the Innovative University Potsdam.