



## Dem Wasser kluge Wege ebnen!

### Acceptance analysis for groundwater-protective agricultural-environmental measures in the communities Suderburg and Suhlendorf in Northeastern Niedersachsen

By the Water Framework Directive (WFD) Germany is obliged until 2015 to achieve "good quantitative and chemical status" of groundwater. In 2009, the state of Lower Saxony reported the actual condition of groundwater bodies to Brussels. The community Suderburg belongs to the groundwater water bodies "Ilmenau loose rock on the left side". The inventories there resulted in the assumption that the legislation, referring to groundwater contamination by nitrate will probably not be enough to fulfill the guideline of the WFD. Only with additional groundwater-protective measures, the environmental objectives of WFD are to be reached. Groundwater-protective measures are part of the Lower Saxony Agricultural Environment Programme (NAU), whose participation is voluntary.

In winter 2009/2010, the office in Uelzen of the Chamber of Agriculture in Lower Saxony, accomplished within the framework of the EU - AQUARIUS project a survey of farmers in the communities Suderburg and Suhlendorf. The aim of this survey was to find out the acceptance of the NAU-measures within (community Suderburg) and outside (community Suhlendorf) a special region where the so called measure A7 of NAU – e.g. financial support for seeding of nitrogen catchcrops - is offered to farmers. In both communities the agrarian structure like soil and cultivation conditions are nearly the same. Also the number of farms is approximately similar. In both communities no special water protection consultancy is offered.

In December 2009, farms on mainline and sideline in the communities Suderburg and Suhlendorf received a questionnaire. It was divided into three categories. In addition to general operating data and willingness to participate in NAU, also questions were asked about the importance of groundwater protection for farms. In Suderburg additional questions were asked how to form the consultant for WFD and their protections measures.

According to the agricultural statistics Suhlendorf has 81% (2 593 ha) agricultural area and in Suhlendorf are 94% (4 106 ha) used as arable land. The level of grassland is low. In Suderburg are operating 25 farms on mainline and 23 on sideline. In Suhlendorf are 26 farms on mainline and 15 on sideline. The average farm size in Suhlendorf is 95 ha and in Suderburg it is 65 ha per farm.

Basis for the present analysis are 43 questionnaires, 23 came from Suderburg and 20 questionnaires were from Suhlendorf. In Suderburg 62% (1 606 ha) and in Suhlendorf 89% (3 644 hectares) of arable land was reported and almost half of the grassland area as well.

In Suderburg 8 farms with a farm size of 60 - 100 ha, 5 farms with 100 – 200 ha and two farms over 200 ha participated in this survey. The farms in Suhlendorf are characterized by a high rate of agricultural land use. Two thirds of the farms are larger than 100 ha, of which 8 farms manage more than 200 ha.

### General operating data

In both communities cereals and root crops predominate. Nearly on half of the cultivated area (48%) in Suhlendorf are cereals and 40% are root crops. In Suderburg are 43% cereals and 36% root crops. The cultivation of renewable raw materials and fodder crops only play a minor role in both communities. By 50 - 80% of the replies the extent of cereal irrigation is less than 60 mm / ha. On average root crops are irrigated more intensive with 70-90 mm/ha.

According to the survey on 25% of the arable land will be grown catch crops in the communities Suderburg and Suhlendorf. Primarily used as crop type is "Ölrettich". In relation to the potential area for catch cropping (area for cultivation summercrops) there are only small differences with 45% in Suderburg and 53% in Suhlendorf. One third of the farms in Suderburg with a size between 50 and 100ha had additionally added companion crops on 10% of their cultivated land in

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2008. But also 4 farms in Suhlendorf expanded in the last few years their catch cropping on about 10 - 15% of the arable land, although they are outside the classification of areas with measures for "Water Framework Directive".

### Acceptance of the lower saxony agricultural –environmental measures

	Suderburg		Suhlendorf	
	2009		2009	
	amount of farms	ha	amount of farms	ha
<b>A2</b> - mulch-direct drilling	1	7	2	86
<b>A3</b> – environmentally friendly output of Farm manure	1	3.000 m3	1	10
<b>A4</b> – flowerarea on set-aside	1	4	1	31,5
<b>A5</b> - asset of annual flower-strips outside Set-aside	1	1	5	28
<b>A7</b> – culture of catch cropping	<b>9</b>	<b>243</b>	-	-
<b>B1</b> – reduction application inputs by grassland	2	21	1	6

Tabel 1: participation to NAU – measures in the communities Suderburg (23 questionnaire) und Suhlendorf (20 questionnaire)

Referring to the survey in 2009 Suhlendorf has 8 farmers with ~ 5% of arable land, who attended the NAU programme. 2 Farms of 86 ha decided to implement A2 - the mulch direct drilling. Still in 2008 there were 4 farms with 169 ha using that measure. Background is the ending of the period of support for the classification areas "water erosion" in 2008. A quarter of the operating farms appreciated the NAU - measure A5 with only a small area of 28 ha. They lie outside the classification of areas "Water Framework Directive".

Because the community Suhlendorf is situated outside the classification of areas "Water Framework Directive", farmers couldn't take part to the NAU measure A7.

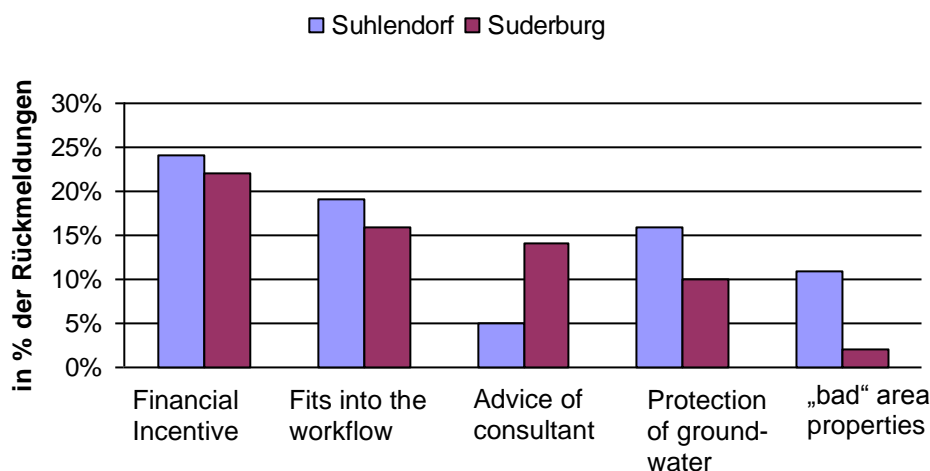


Chart 1: Reasons for participating on NAU-measures in Suderburg and Suhlendorf in % of responses, multiple answers possible

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Prior the main reasons for participating in NAU are the financial incentive and the good integration into the course of operation. References from the consulting office are more important for farmers in the community Suderburg than in Suhlendorf. About one fifth of the farmers in the community of Suhlendorf the precaution for the protection of groundwater are an activator to participate.

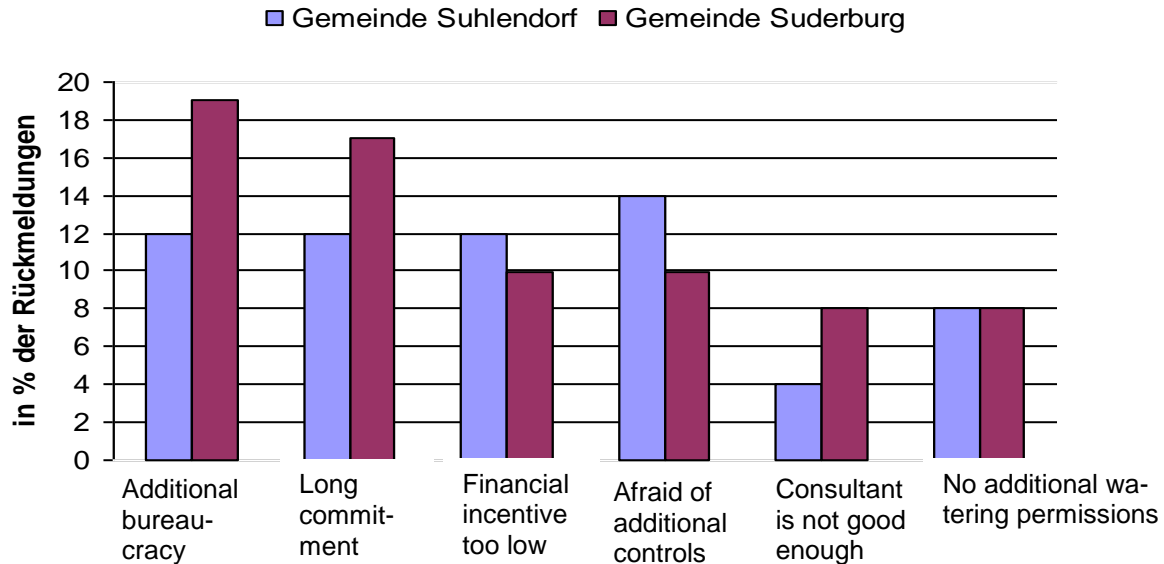


Chart 2: Constraints of participants for using NAU-measures in Suderburg and Suhlendorf (in %) of responses; multiple answers possible.

Information of prevailing NAU - measures receives the farmers primarily by the local consulting officer. Also specialist magazines and the internet are important sources of information. To find a decision the consulting is measured out as very important. In both communities almost 50% of the farmers document an information deficit about NAU - measures. The other 50% have the impression to be good advised about NAU.

The most important aspect to increase the willingness to participate to the NAU- measures is to reduce the overhead for administration (p.e. annual obligation to report). From the perspective of farmers a greater consideration of regional incidents and a greater freedom of action within the implementation of measures would increase the willingness to participate.

### Importance of groundwater protection

Ca. 60% of participating farmers in both communities already take measures to reduce their N – balance of area. Measures have the advantage to prevent nitrate deposition into groundwater. Some measures are: The reduction of mineral N fertilization, changing the manure or optimization of fertilizing planning. Concrete proposals to nutrient balance were declared like more efficient forms of fertilizer or the division of fertilizer application. Investments in computer-controlled irrigation, mulch seeding of sugar beets and extensification of grassland were also specified as practicable measures. In the view of almost all farmers in Suderburg these measures will countervail the need for reduction the N – balance of area. In addition ca. 30% of farmers in Suhlendorf would take further measures to reduce the N – balance of area.



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Gemeinde Suderburg	Gemeinde Suhlendorf
Intensify and enhance investing irrigation	N-Stabilisatores for manure (2)
Reducing manuring, augment efficiency N, accurate organic manure (3)	Improving irrigation systems (3) Augment the quantity of water (1)
Extend mulch seeding (1)	Minimalize tillage (1) Increase soil filtration (1)
Improve technics(1)	Catch crop for green manure (2)
Increase „green manuring“ (1)	Accurate liquid manure (2)
Stripes along the cultivated field (1)	Reduction of maize cultivation (1)
	Forest conversion (1)

Table 2: Named measures (number of responses)

### Consultancy in future for WDF

The majority of farmers wish to have more speech events for more information. Letters or emails are welcome as long as it is about current N-wash out or topical questions. Workshops or seminars are not requested. The future consultant should be focused on improvement of the nutrient management (planning of fertilizer input and current to growth consultations). Some other priorities of advice are seen in informing about NAU-measures. Farmers would like to have a consultant as an agent between practise working and administration. Minimum 5 farms would participate on a monitoring programme.

In general all questioned farmers agreed to participate in future on measures for groundwater protection. Especially the measures A3-2 and A7-2 are interesting for farmers in Suhlendorf und Suderburg.