

Landscape Aesthetics as an indicator for social sustainability of crop rotations

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Key words: evaluation, landscape aesthetics, sustainability

Abstract

The goal of this study was to evaluate different crop rotations in terms of landscape aesthetics using Klostergut Scheyern as an example. Therefore, people living in the vicinity of Klostergut Scheyern were shown photos of each crop at different periods of the year. Additionally, a questionnaire containing quantitative as well as qualitative questions was developed. Each crop was given a grade, the best one being 1 and the worst one being 4. People were allowed to justify their ranking. The use of agricultural machines was also presented on photos. For each crop, participants could decide whether they liked or disliked the use of the machines.

In summary, all crops have been evaluated rather positively; the grades reach from 1.4 to 2.6. The use of machines has hardly ever influenced people's opinions. Taking qualitative comments into consideration, the survey revealed the difficulty to separate purely visual aspects from moral attitudes towards a certain crop.

Introduction

Within the last 20 years, many attempts have been undertaken to evaluate the sustainability of farms. In most cases, the focus has been put on ecological indicators. In this approach, we have tried to integrate landscape aesthetics as an indicator of social sustainability. As landscape aesthetics depend on many factors and are difficult to evaluate, there is a tendency to underestimate their importance and rather ignore them. At the same time, the general public seems to get more conscious about agricultural production. Complaints about the increased number of maize fields as well as resistance against plans to construct new stables come up over and over again.

The goal of this study is to develop a sustainable crop rotation for the ecologically managed fields of Klostergut Scheyern, an experimental site in southern Germany, 40 km north of Munich. Currently, the crop rotation is economically unreasonable. The new rotation shall not only bring in more money, but also consider ecological and social aspects. Most evaluation systems work on farm level; therefore, we had to develop indicators that are sensitive to changes in the crop rotation. For example, phytosanitary aspects are closely linked to crop rotations, yet they are not considered in evaluations on farm level.

Talking of landscape aesthetics temporary aspects play a predominant role at the level of crop rotations since the fields look differently in the course of the year. Furthermore, perception and evaluation of landscape can vary from place to place. Hence, the target group is limited to people living in the vicinity of the farm. In Scheyern, this is particularly interesting because in the near past a new housing estate has grown around the Klostergut.

Material and methods

The survey is based on a questionnaire containing quantitative as well as qualitative questions. Since the target group is small, statements going beyond the actual questions are gathered as well.

Participants have been visited at home and shown photos of different crops at different periods of the year (Figure 1). Additionally, photos of different stages of the machines at work have been presented (Figure 2). In a complementary questionnaire, people were asked to rate each crop with a grade. The crops in question for the new rotation are potato, winter wheat, sunflower, grass-clover-mixture, rye, field bean, soya bean and oat. The participants had to decide how much they would like to see each crop be planted in Scheyern using the grades 1 "very good", 2 "good", 3 "less good" and 4 "not at all". In the next question, the participants had to tell whether the use of machines had influenced their evaluation. The final question has been how much

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diversity of the cultivated plants, crop cover and use of machines influenced the participant's scenic experience. Again, there are the grades 1 "positive", 2 "rather positive", 3 "rather negative" and 4 "negative".

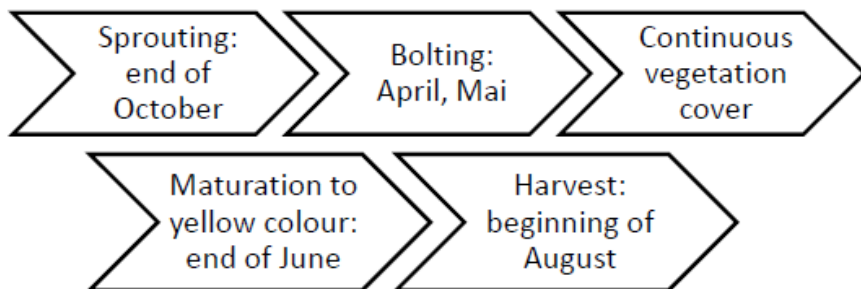


Figure 1: Different periods in the cultivation of winter wheat that have been shown on photos

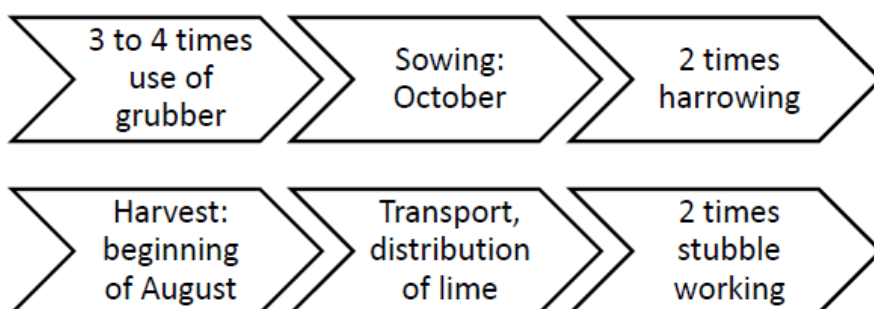


Figure 2: Different working steps in the cultivation of winter wheat that have been shown on photos

Results

The survey was carried out on the 11th of June 2013 between 3 and 8 pm in the vicinity of Klostergut Scheyern. There were 13 participants, eight female and five male. Of the participants, 11 people could see the agricultural fields of the neighbouring farm from their houses.

Overall, the evaluation is rather positive. All crops have grades between 1.4 and 2.6 with Sunflower having the best evaluation of 1.4 whereas grass-clover-mixture for later use in biogas plant achieves the worst grade of 2.6. Sunflower, potato, rye, oat, wheat and field bean are situated between 1.3, representing "very good", and 1.8, "good". Soya beans, grass-clover-mixture for mulching and biogas plants are less popular, reaching grades between 2.3 "good" and 2.6 "less good". The null hypothesis that grades and crops are independent cannot be refuted at a 5 % level ($p=0,083$).

The use of agricultural machines hardly influences the evaluation. Only in case of the grass-clover-mixture, more than three people felt this was the case. The use of machines in the cultivation of grass-clover-mixture for mulching disturbed four participants whereas one person said he appreciated the machines. However, this person did so for every crop in the survey. Coming to grass-clover-mixture for biogas plants, five people (corresponding to 38 % of the participants) gave a negative evaluation for the use of machines whereas two people liked it.

A high diversity of crops and a complete vegetation cover throughout the year are aspects people like, so the grade for each of these aspects is 1.2. The use of machines has the grade 2.5, which indicates that people are indifferent about it. This fits well to the finding that the use of agricultural machines hardly influences the evaluation of the crops.

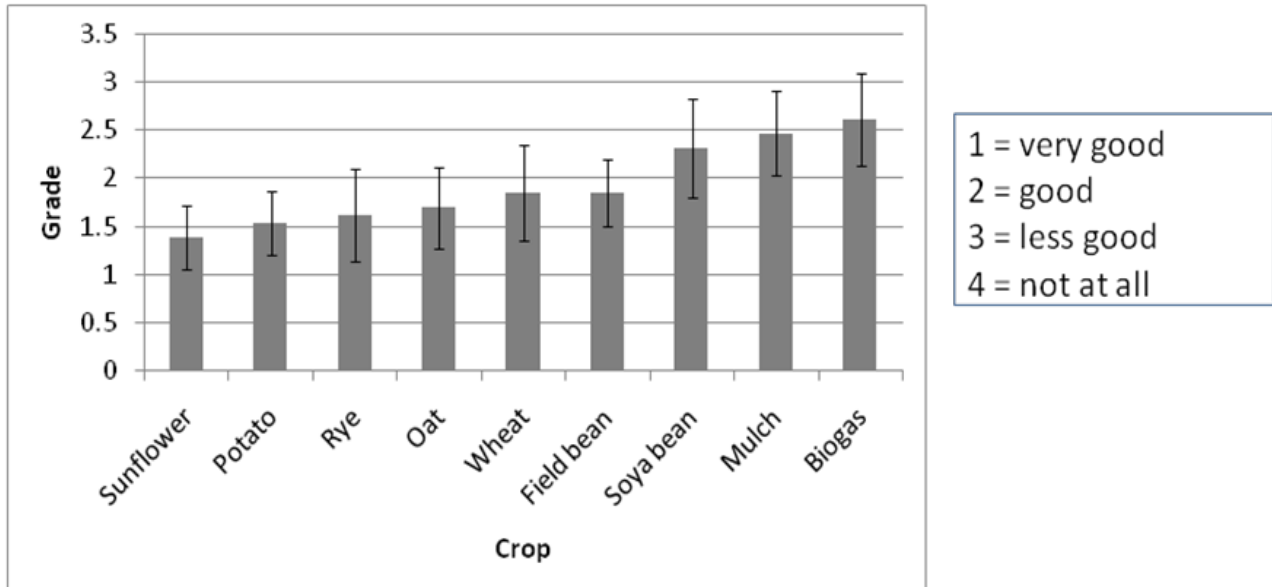


Figure 3: Chart showing the results of the survey

Some qualitative comments shall also be mentioned: Soya beans are not considered as being indigenous plants and awake some negative connotations due to the debate on genetically modified plants. Currently, there is a lot of grass-clover-mixture in the rotation that is only used for mulching. Therefore, it is sometimes less appreciated.

Sunflower is the favourite crop since its flowering is very popular. Potatoes scored second best. Many times, this has been explained by the fact that they are sold in Scheyern and people like buying local products.

Discussion

In summary, the survey revealed the difficulty to separate purely visual aspects from moral attitudes towards a certain crop. However, this might not be a real drawback since all connotations influence the perception and evaluation of agricultural fields. In fact, they are indeed included in the broader definition of aesthetics. Therefore, the overall feedback gained in our survey is probably more valuable than a simple grading of visual aspects. Moreover, people claim that environment and global food issues matter more to them than visual appearance. They might, however, misjudge the ecological relevance of different farming systems, so that a more intense exchange on agricultural issues is crucial.

The International Federation of Organic Agriculture Movements (IFOAM) defines the promotion of "a good quality of life for all involved" as a goal. Eventually, landscape aesthetics shall no longer be ignored but must be considered as an important aspect of quality of life.

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