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The potential of methods for assessing sustainability of farms

A new regulation on electricity from biomass took place in Germany in July 2009 and a new regulation on biofuels will follow. Therefore, sustainability as a main goal of agricultural enterprises becomes more and more important. According to the agenda 21, an agricultural enterprise has not only to maximize the profit but it also has to balance ecological and social demands if it wants to be successful in the long run. The aim of this investigation was to compare and to evaluate the systems RISE, KSNL, and DLG certification system for sustainable agriculture. The systems allow determining the sustainability of agriculture at the farm level. The potential and application of the systems and the strength and weakness are shown in this contribution.

Keywords

Sustainability, methods for assessing sustainability for farms, indicators, comparative evaluation of systems, RISE, KSNL, DLG certification system for sustainable agriculture

Abstract

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■ A sound evaluation of how well his or her enterprise operates provides the farmer with the prerequisite for a targeted optimisation through customised management. This is of great importance both for strategic decisions, for example in the case of farm ownership transfer, and also for everyday operations. In addition, many effects of sustainable agriculture affect politics and society which leads to more associated demands on farmers.

In this way, the renewable energy law requires that the generation of electricity from liquid biofuels such as rapeseed oil will, from mid-2010, only be supported when a certificate of sustainability is provided. For German oilseed production the required certificate is largely based on the business being managed in accordance with good technical practice and on the continuing Cross-Compliance requirements (CC) as well as a calculation of the potential reduction of greenhouse gas which so-called “main registrant”, e.g. cooperative associations, must provide.

Aspects of ecological and social sustainability have also found their way into quality assurance programmes (QS). For the recipient the importance of a proven sustainable production method from the field to the end-user is growing.

Comprehensive system approach

Systems, with which the farmer can examine the economic, ecological and agri-social sides of his business for sustainability in order to form an overall assessment, are still relatively unknown.

Whereas QS programmes or CC support programmes such as KKL or GQS are about observance of standards – in the sense of requirements fulfilled: yes or no – sustainability assessment systems can, with the help of indicators from the sectors of ecology, economics and social applications, depict the entire situation in a differentiated way. They give the farmer a graduated strengths-weaknesses profile. Individual results, e.g. nutrient balances can also be used for the required CC documentation.

Comparative assessment

In the period 2006–2008 the KTBL e. V., together with a group of experts from science, administration and practical experience, analysed the indicator systems RISE, KSNL and the DSL system “Sustainable Agriculture” [1; 2].

RISE. The Response Inducing Sustainability Evaluation from the Swiss College of Agriculture, Zollikofen has been used since 1998 mainly in private contracts e.g. with foodstuffs manufacturer Nestlé. It should offer key players in the foodstuffs sector such as producers, processors and traders, but also farmers, a simple tool to analyse worldwide with 12 indicators the sustainability of agricultural production systems and can provide a basis for the planning of improvement measures.

KSNL. The “Kriteriensystem Nachhaltige Landwirtschaft“ (sustainable agriculture criteria system) from a development team at the Thuringia State Institute for Agriculture was further developed from the environmental indicator system “Kriterium umweltgerechter Landwirtschaft” KUL or SUL whereby an assessment of the economic and social situation is added. The central theme

Table 1

Table 1: Comparative evaluation of the systems RISE, KSNL, DLG certification system for sustainable agriculture

	RISE	KSNL	DLG certification system
Applicability	Worldwide: Requires neither the existence of a sophisticated legal framework nor high availability of written data.	Germany (and usable in neighbouring countries). Requires inter-company availability of wide-ranging data and within-company economic BMELV (German Federal Ministry of Nutrition, Agriculture and Consumer Protection) annual accounts, and business organisation with good maintenance of data.	
Practice references in Germany (farms)	None, but Switzerland (90).	Thuringia (18), Schleswig-Holstein (6).	Test phase until 2008 (90); actual certification procedures (15).
Well suited for		Well organised farms with not too large income differentiation.	Well organised cash crop farms.
Little suited for		Part-time farms (economic and social assessment not meaningful).	Livestock farms (relevant environment indicators can only be reckoned for plant production branch of farming), part-time farms (see KSNL), farms growing speciality crops.
Cost and time involved for farm (developer information; individual offer is prepared)	600-1200 € (single implementation) ½-2 work days.	800-2000 € (according to assessment for 3 consecutive years) 1-3 work days (for second survey 1-2 days).	1000-5000 € (evaluation of 3 previous years) 1-3 days.
Certification option	No certification foreseen.	TÜV certificate planned, presently "TLL certificate" attainable; relatively demanding.	DLG certificate adapted to DIN EN 45011 attainable; relatively demanding.
Specialist content	Relevant ecological, economic and social sustainability aspects mostly recorded by indicators. With RISE, a simple animal welfare classification is optional. Indicators partly inquire on aspects that are legally regulated in Germany.	Relevant ecological, economic and social sustainability aspects mostly recorded by indicators. Biggest shortcoming; so far no assessment of animal welfare.	Social indicators are mostly from contact with dependent employees, and so less meaningful in family businesses. Assessment of economic indicators based on benchmarking.
Method of data collection: quality of the necessary data	Oral interview with questionnaire. If written documents not available, solely on the basis of farmer statements (appraisals). Limited, uncontrolled database.	Ecology: Questionnaire filled out by manager. Only data based on controllable verifiable written documents (e.g. invoices, analysis results or technically controlled administrative documents such as INVEKOS applications, FNN). Economy: Submission of annual financial statement (BMELV methods). Social: Questionnaire. Data mostly on the basis of verifiable written documents.	Ecology: Entries of the location data and the exact operational management data for the previous three years based on the field database (where applicable, field book notes) in the PC programme via the worker involved together with the manager. Limited controllable data. Economy: Submission of annual financial statement (BMELV methods), alternative assessment in the fiduciary procedure via the tax advisor. Social: Questionnaire. Limited controllable data.
Technical interfaces	None. Field list (e.g. FNN) can be presented.	Partly: Export/Entry of INVEKOS application, FNN, personnel and financial book-keeping including annual financial statement, field database or livestock planning, among others, is possible.	Partly: Export of field database including GIS area data, entry of annual financial statement is desired.
Presentation of results	Comprehensive, uniformly presented tabular documents: grid diagram with overall result: no written interpretation but a closing discussion with the farmer whereby the remedial actions are worked out.	Comprehensive tabular presentation of results with detailed calculations (often exact to field level); grid diagram with overall result, each column a bar diagram overview; mostly written interpretation, for ecology with recommendations for action.	Comprehensive presentation of results, but very brief, without presentation of the basis for calculations or field lists; grid diagram with overall result, for each indicator a graph of the evaluation function; brief keyword interpretation.

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	RISE	KSNL	DLG certification system
Possible applications/uses	<p>Company internal:</p> <ul style="list-style-type: none"> - Suitable for sustainability screening with identification of strengths/weaknesses. At present poorly suited to identify differences between farms with similar location conditions and infrastructure in countries with high legal requirements. - Sensitisation for sustainability topics. <p>Cross company:</p> <ul style="list-style-type: none"> - Instrument to analyse sustainability of production systems of different countries or regions through evaluation of exemplary groups. 	<p>Company internal:</p> <ul style="list-style-type: none"> - Tool to recognise avoidable shortcomings and their causes (weak point analysis) with, for consultation purposes, sufficient selectivity for target-oriented management optimisation/fine-tuning and for strategic decisions. - Asset for decision making competence. - Costs reduction through identification of efficiency reserves. <p>Externally:</p> <ul style="list-style-type: none"> - Basis for sustainability communications with commerce, banks, landlords, authorities, strengthening of the powers of persuasion towards the general public and customers. <p>Cross company:</p> <ul style="list-style-type: none"> - Aid to decision making, among others for agricultural politics ("sustainability reporting"). - Clearly structured tool for schooling and counselling towards establishment of sustainable business management. 	<p>Company internal:</p> <ul style="list-style-type: none"> - Suitable for the compilation of the sustainability situation (strengths/weaknesses profile) with adequate selectivity. No field or crop rotation specific statement in the result documents, which limits the use as a basis for fine-tuning of management measures. - An asset to decision making. - Costs reduction by identification of efficiency reserves. <p>Externally:</p> <ul style="list-style-type: none"> - Especially for attaining certificates, a positive external representation/image improvement towards landlords, banks, customers, authorities and others. - If needed, for the opening of new markets.

is the achievement of maximum economic success without overstepping the barriers of ecological and social sustainability. The evaluation including the plausibility check was carried out by the Verband für Agrarforschung und -bildung Thüringen e.V., Jena. The 34 test criteria of the KSNL are subject to a uniform evaluation procedure. At present there is the option of attaining a "TLL sustainability certificate".

DLG certification system for sustainable agriculture. This system has recently been developed through cooperation between the DLG, the Technical University Munich, The University of Halle-Wittenberg and others. The main purpose is the optimisation of agricultural operations according to sustainability aspects and the advancement of sustainable development in the supply chain. A set of 23 indicators from the sectors of ecology, economics and social studies is used for the sustainability analysis. The certificate is awarded when the business, which should also practice quality control in the production, complies with the target values of the three sustainability pillars.

Conclusions

The KTBL working group tested the sustainability assessment systems based on a catalogue of requirements for important aspects from the areas of technical quality, practicability as well as benefits and applicability. Selected results from this comparative assessment are shown in **table 1**, and a comprehensive presentation of the methods and project results can be found in [2].

All three systems demonstrate a potential to provide, with varying accuracy, a comprehensive and mostly meaningful situation analysis of one's own farm. A wide use in practice would be desirable. The analysis is, however, time and resource consuming and whether the results can be implemented to a monetary advantage will be dependent on the individual business situation.

Literature

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