Geyer, S., Jacobs, A., Hoffmann, T.

Software ELSKA for quality control of fruit and vegetables

Today trading of fresh fruit and vegetables is transacted worldwide by means of marketing standards. The electronic image catalogue of defects adds significant images to the marketing standards, facilitates the interpretation of the regulations and contributes to a harmonized interpretation of marketing standards by different users.

Keywords:
Electronic image catalogue, software, knowledge transfer, marketing standards, visual interpretation assistance

Abstract
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Marketing standards fulfil an important function for the transparency of trade and the comparability of produce on the market. The standards define quality demands of produce. The compliance with marketing standards is compulsatory at all marketing stages and marketing standards serve the interests of consumers as well.

Interpretation support

Interpretation of marketing standards is not always unique. Up to now explanatory texts, placed behind the specific text segments of marketing standard served as a guide to the interpretation of marketing standards. Partly there are also exemplifications by printed images. So the Working Committee for Quality Control of Fruit, Vegetables and Potatoes, a consortium of the German inspection services within the Association of the Chambers for Agriculture (http://ogs.atb-potsdam.de) published the reference manual for inspection authorities "Heft" No 61 "Qualitätsnormen und Handelsklassen für Gartenbauerzeugnisse und Kartoffeln" published by Appelhans, Braunschweig [1].

At international level, the Organisation for Economic Co-Operation and Development (OECD) provides the publications „International Standardisation of Fruit and Vegetables". Here the marketing standards are illustrated by complementary texts and rich imagery. They are published mainly in English and French and describe each with one produce per volume [2].

Table

Fruit and vegetables with marketing standards in ELSKA

Fruit	Apple, Apricots, Avocados, Cherries, Citrus Fruit, Kiwifruit, Melons, Peaches / Nectarines, Pears, Plums, Strawberries, Table Grapes, Watermelons
Vegetables	Artichokes, Asparagus, Aubergines, Beans, Brussels Sprouts, Carrots, Cauliflowers, Courgettes, Cucumbers, Cultivated Mushrooms, Garlic, Headed Cabbages, Leeks, Lettuces, Onions, Peas, Ribbed Celery, Spinach, Sweet Peppers, Tomatoes, Witloof Chicory
Potatoes	Table Potatoes inclusive Early Table Potatoes
Nuts	Hazelnuts, Walnuts

Visual interpretation of marketing standards

The Working Committee for Quality Control of Fruit, Vegetables and Potatoes, a consortium of the German inspection services within the Association of the Chambers for Agriculture, where the Leibniz-Institute for Agricultural Engineering Potsdam-Bornim (ATB) is cooperating, has additionally developed a uniform objective interpretation of marketing standards for fresh fruit and vegetables and the German national standard for potatoes: "ELSKA", the electronic image catalogue of defects, a user friendly software program visually interpreting marketing standards. These visual exemplifications on the one hand facilitate the interpretation and application of the regulations, but on the other hand ensure a harmonized interpretation of different users like producers, retailers and quality inspectors. Expert knowledge accumulated by inspec-

tors and information from OECD explanatory brochures and international agreements have been integrated in the development of ELSKA.

ELSKA illustrates 36 marketing standards for fresh fruit and vegetables and the German national standard for potatoes by means of evaluative image examples in one comprehensive data base with more than 2250 images and comments (Table 1). For this reason it is unique as a visual interpretation aid in Germany.

ELSKA 1.65

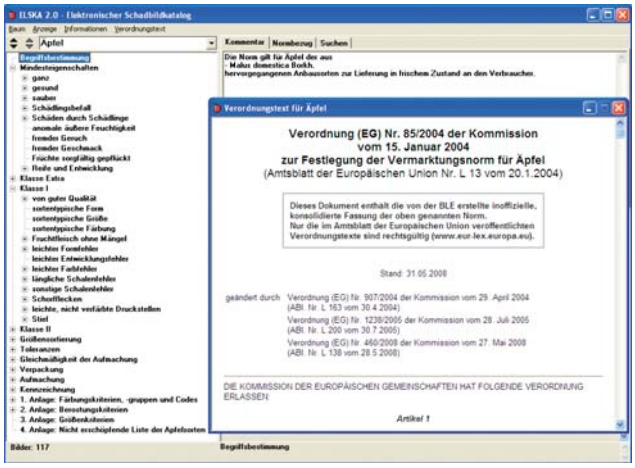
In summer 2007 ELSKA was published the first time as constituent part of the reference manual for inspection authorities "Heft" No. 61 [3].

ELSKA 1.65 was intended to be used by quality inspectors, producers and employees of retail markets. Applying the software, knowledge about the contents of marketing standards was necessary. ELSKA offered one menu tree structured according to ten groups of assessment criteria like e.g. skin defects, physiological defects or defects of ripeness and development. In this menu tree all objections were summarized that are noted in the marketing standards and are possible in principle to be declared at an official inspection [4].

ELSKA 2.0

The software version ELSKA 2.0 resulted in an advanced and even more user friendly tool for an expanded circle of clients [1]. ELSKA 2.0 includes all current EC regulations concerning marketing standards for fresh fruit and vegetables in the consolidated version drawn up by the Federal Institute for Agriculture and Food (BLE) (www.ble.de) as well as the German national marketing standard for potatoes. Complementing the catalogue of quality defects according to assessment criteria like skin defects or physiological defects, the requirements of marketing standards are comprehensively described in ELSKA 2.0. Minimum requirements such as "intact", "sound", the different quality classes "Extra", I and II up to the provisions concerning marking are listed in detail and are illustrated by images. Many terms in the wording of the regulations are linked to correlated images in ELSKA 2.0 for visual interpretation (Image 2).

Fig. 1



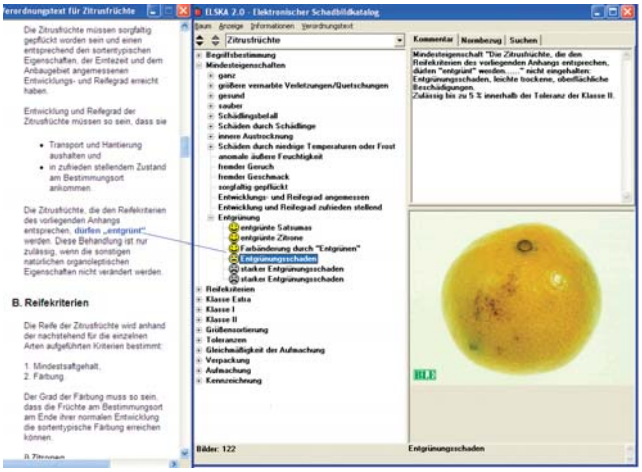
ELSKA 2.0 with the menu tree according marketing standard for apples and appendant regulation text of marketing standard for apples.

This interpretation elaborated for ELSKA demonstrates the limits of the allowable defects for grading produce in a specific quality class or classifying it as out of grade.

ELSKA is an objective, neutral benchmark for the visual interpretation of marketing standards. ELSKA takes legal amendments into account and offers prompt updates.

More information about ELSKA: http:// www.atb-potsdam.de

Fig. 2



Numerous terms of regulation text are linked with interpreting and evaluating pictures. Here citrus fruit with defect caused by degreening in form of slight dry superficial damage; allowed up to 5 % within the tolerance of class II.

Literature

[1] „Qualitätsnormen und Handelsklassen für Gartenbauerzeugnisse und Kartoffeln", Stand 79. Ergänzungslieferung, Verlag E. Appelhans, Braunschweig, 2008 (Stand 08/08)

[2] OECD Standardwerke unter http://oecd.org: Browse By Topic / Agriculture / Agricultural Trade - Standards for Seeds, Tractors, Forest, Fruit and Vegetables - Publication & Documents - Newsletters/Brochures - Fruit and Vegetables -Publications - Fruit and Vegetables - Download your free of charge electronic publications

[3] „Qualitätsnormen und Handelsklassen für Gartenbauerzeugnisse und Kartoffeln", Stand 77. Ergänzungslieferung, Verlag E. Appelhans, Braunschweig 2007 (Stand 03/07)

[4] Geyer, S.; Hoffmann, T.; Jacobs, A.: EG-Vermarktungsnorm für Kulturchampignons - ELSKA im Heft Nr. 61 hilft bei der richtigen Auslegung der Qualitätsvorschriften und -kriterien. Der Champignon (4): 14-16, 2007

Authors

Dr.-Ing. Sabine Geyer is scientist and **Dipl. Ing. Andree Jacobs** is scientific-technical employee at the department Past Harvest Technologie (director **Dr. rer. agr. Thomas Hoffmann**) at the Leibniz Institute for Agricultural Engineering Potsdam-Bornim (scientific director: **Prof. Dr. R. Brunsch**), Max-Eyth-Allee 100, 14469 Potsdam), e-mail: sgeyer@atb-potsdam.de