

A critical assessment of the HGCA grain sampling guide

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HGCA's grain sampling guide is assessed with respect to the principles for representative sampling as set forward in the Theory of Sampling (TOS). Sampling correctness, which requires the elimination of all Incorrect Sampling Errors (ISE), constitutes the only guarantee for valid, representative grain quality control; presence of ISEs causes a varying, uncontrollable sampling bias that cannot be corrected for. Contrary to a first superficial observation ("grain is grain"), many different species and varieties, as well as differences caused by soil types, availability of local nutrients, make "grain" a significantly heterogeneous commodity, which requires special attention when sampled at various process locations (from harvesting, storage until commercial intake). The present appraisal shows that most of the respected HGCA grain guide's recommendations do not comply with TOS principles of sampling correctness. The suggested sampling procedures constitute major error potentials, which strongly compromise sample representativity.

Introduction

The "Home Grown Cereals Authority" (HGCA) is a UK, which is mainly responsible for the oilseed sector. As a part of the AHDB and HGCA and processor representatives with an aim to "deliver the industry through independence and investment".¹ In 2011 published a guide on grain key requirements for export, sampling at various process stages, from harvest, to storage until departure of the grain.² Besides physical grain "sample", focus is also on moisture, temperature, pe especially mycotoxins. The sampling practices must therefore be procedures that reliably are able to ensure grain quality, to protect level throughout the storage as to determine quality level (before transportation to buy arrival at the buyer. For various reasons the latter two aspects (of quality level at departure vs quality level at arrival) have in the past caused cases, not seldom due to inadequate sampling procedures such discrepancies causing economic disputes, extraction of representative grain samples is also crucial with impurity detection (e.g. GMO toxins), as regulated by international standards (e.g. ISO 24276:2006).³

The following critical assessment of HGCA's grain sampling guide serves to

evaluate whether

Dear TOS Forum,
 Thank you for publishing the recent critique of the HGCA Grain Sampling Guide, which raises some interesting and thought-provoking issues for anyone involved with practical on-farm sampling.
 We thought it might be helpful for your readers to explain HGCA's approach as set out in the Guide, which is focused on providing growers with a practical and cost-effective means of sampling—particularly at very busy times such as during harvest.
 The methods outlined were developed to be suitable for growers in real, on-farm situations where time is constrained and resources are often limited.
 The Guide was drawn up in close conjunction with the UK arable industry to reduce errors as far as practically possible and to provide growers with a realistic and basic level of information about the physical properties of their grain.
 This information will help growers understand whether their grain meets contractual specifications on attributes such as moisture, protein levels, specific weight and Hagberg Falling Number.
 The Guide's working assumption is that these attributes will follow a normal distribution, so the protocol is sufficient to give a basic, but useful, level of information about the farmer's crop.
 In addition, grain coming from a single field can be regarded as reasonably homogeneous because it is a single variety that has largely received the same agronomic management and has been exposed to the same soil and weather conditions.
 This context is somewhat different to the Theory of Sampling principles to which you compare the HGCA Guide. These principles are very rigorous and are more suitable for finding contaminants present at a low inclusion rate, and is not necessarily what is required on-farm.
 All the information within the guide was written to adhere to:
 • BS EN ISO 24333:2009 Cereals and cereal products – sampling
 • BS EN ISO 542:1990 Oilseeds – sampling
 Growers and the UK grain industry will continue to work towards the common objective of providing an improved understanding of grain quality which meets both contractual and due diligence requirements.
 As the UK industry moves forward, HGCA will ensure its Grain Sampling Guide is reviewed regularly and we will continue to look at how issues such as those raised in your article can be better reflected in our on-farm advice.
 Yours sincerely
 Dr Dhan Bhandari (HGCA) and Dr Ken Wildey (Technology for Growth)

of grain lots is not always possible due

and offloading processes. The current appraisal Table 1 of the basic sampling guide opposed with understanding of these representative sample, and aggregate sampling in the grain chain". Agreements with the definitions in TOS, surprisingly narrow as basic sampling with the term used in the HGCA property of the property of the number of samples stated in the case the precision), but has accuracy. Accuracy ensured by sampling correctness-generating ("Sampling Errors") Furthermore, a process also essential Sampling errors that all in the lot probability implying must have being selected for the sample. For practical sampling the above must also hold for the operational unit, the "increment". The FSP condition is missing entirely with HGCA.