

Tools to identify heterogeneous cereals 3: description

Problems

Identification and traceability of genetically diverse populations is required for variety registration and seed certification. Whilst in (genetically homogeneous) varieties one individual plant can represent the whole plant grouping, making univocal identification possible, in (genetically heterogeneous) populations an individual plant cannot represent the population, and therefore a range of description and identification metrics is needed.

Solutions

A temporary experiment on the marketing of genetically diverse populations of wheat, barley, oats and maize was granted under the EU implementing decision 2014/150/EU. It assessed different tools' effectiveness at guaranteeing population identification and the identity of the seeds of a population. It was possible to conduct a SWOT analysis of the different tools used in different contexts. The third set of tools that were critiqued related to the degree of heterogeneity, performance characteristics and experimental data – or the description of registered populations (Table 1).

Table 1: Summary of the SWOT analysis conducted on tools relating to the description of populations

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> Recognises variable nature of populations Can provide farmers and end-users with information on performance and align with national list protocols Provides a reliable reference 	<ul style="list-style-type: none"> Remains difficult to distinguish populations from one another - risk of parallel market What traits and indicators to measure? Knowledge gaps and research needs Performance is season, location and management dependent and may change over time due to evolutionary processes
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> Can outline the agro-climatic context of a populations' breeding and multiplication Potential to link to on-farm trials and end-use Provision of advice on environmental coverage for optimal performance (e.g. soil, climate, management) 	<ul style="list-style-type: none"> Limited testing capacity especially in and for organic farming conditions Can become overly prescriptive and limit the potential application of the population Challenging from an administrative point of view if number of populations, actors and/or users increases significantly

Practical recommendations

- Description of the degree of heterogeneity and population performance can be useful in advising on the management and use of the population.
- Detailed description is likely to be difficult to implement, so it is not recommended as a legal requirement in the next stage of regulation for heterogeneous material.
- However, to enable good advice, good practice would be, that developers maintain and share clear records on the parameters relating to the description and use of their population.

Further information

- [Text of the Commission Implementing Decision 2014/150/EU](#)
- [Main outcomes and SWOT of experiences from marketing populations under the Temporary Experiment into the commercialisation of heterogeneous populations in the European Union](#)

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