

**Technical Committee****TC/53/23 Add.****Fifty-Third Session  
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**ADDENDUM TO DOCUMENT TC/53/23****DEVELOPMENT OF CALCULATED THRESHOLDS FOR EXCLUDING VARIETIES OF COMMON KNOWLEDGE FROM THE SECOND GROWING CYCLE WHEN COYD IS USED***Document prepared by experts from the United Kingdom**Disclaimer: this document does not represent UPOV policies or guidance*

The Annex to this document contains a copy of a presentation on “Thresholds for excluding varieties of common knowledge from the second growing cycle when COYD is used” (in English only) to be made at the fifty-third session of the Technical Committee.

[Annex follows]

THRESHOLDS FOR EXCLUDING VARIETIES OF COMMON KNOWLEDGE FROM THE SECOND  
GROWING CYCLE WHEN COYD IS USED  
(IN ENGLISH ONLY)

Thresholds for excluding varieties of  
common knowledge from the  
second growing cycle when COYD is  
used

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## Introduction

After first growing cycle:

- Review results
- Identify reference varieties that are clearly distinct from candidate
- TGP/9; GAIA

For **quantitative characteristics** where COYD is used

- Difficult to do this effectively based on experience
- Can we use a statistical approach?

## Introduction

For **quantitative characteristics** where COYD is used

- TWC/25/14: method first proposed
- TWC/28/30: shown that method needed improvement
- TWC/33/20: improved method proposed
- TWC/34/08: further evaluation
- Paper in Journal of Agricultural Science  
*Roberts, Nevison & Christie (2016)*

## Basis

- Calculate probability that a candidate will be distinct from a reference variety on 2-cycle COYD criterion
  - Predict what will happen using first year results only
  - High probability → enough evidence that reference variety is distinct from candidate
  - Set the probability required → threshold
  - Method requires first year results plus historical data (>10 years)

## How useful is this method in practice?

Evaluated on an example data set:

- Field pea data set from the United Kingdom  
*19 years, 222 varieties, 13 characteristics*
- Compare decisions between first-year decisions using thresholds and final two-year decision
- Results for individual characteristics promising

Next step: decisions combined across all characteristics

- Do we get first year decisions correct?
- What cost reductions are achieved?

## United Kingdom Field Pea Thresholds

Characteristic (UPOV number)	Typical 2-year COYD criterion	Calculated 1-year threshold
(5) Stem: number of nodes up to and including first fertile node	0.9	4.1
(15) Stipule: length (mm)	10.8	23.4
(16) Stipule: width (mm)	7.0	14.2
(22) Petiole: length from axil to first leaflet or tendril (mm)	12.6	28.4
(28) Flower: width of standard (mm)	2.4	6.0
(34) Peduncle: length from stem to first pod (mm)	19.6	45.6
(37) Pod: length (mm)	5.8	12.6
(38) Pod: width (mm)	1.0	2.0
(46) Pod: number of ovules	0.5	1.0
(57) Seed: weight	4.0	9.7

## How useful is this method in practice?

Useful to evaluate on other crops

2016 UPOV invitation for further example data sets

- Slovakia: red fescue
- Finland: timothy, meadow fescue and red clover
- Denmark: oilseed rape

Subsequent offers included from United Kingdom (oilseed rape)

## Work planned for 2017

Development of software (in R)

Look at over-characteristic decisions in United Kingdom field pea example

Apply to further example data sets supplied

Report at 2017 TWC