The Universal List of Species: role and impact

Training of seed analysts in seed identification

ISTA Purity Seminar, Monday 15 June 2009

Jane Taylor- OSTS for England & Wales, June 2009
Seed identification

• How do seed analysts learn the practical skills for seed analysis & identification?

• How is training passed on from those without in depth botanical knowledge but describe things visually?

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Learning and Development

• Learning
  – By demonstration & then frequent practice samples over period of time (months?)

• Confirmation of skills and knowledge
  – By checking of practical samples
  – Exams

• Maintenance of skill
  – By continual practice & re-assessment
  – Comparison of results by participation in proficiency tests / ring tests

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Training requirements

- List of species
- Reference specimens
- Descriptions
- Illustrations and/or photos
- Experienced staff
- Equipment needs – magnification
  - x8, x10, x20 hand lens, binocular microscope
- Good light & working environment

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Training process

• One to one
• Description / explanation
• Demonstration
• Comparison of individual features
• Comparison to reference specimens, Illustrations and photos
• Practical application
• Checking

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Details used in identification

• Shape
• Colour
• Size
• Surface markings
• Texture
• Shape and position of attachment scar
• Other features:
  wings, scales, spines, awns, hairs, teeth

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Reference specimens / descriptions

**Poa trivialis L.**  Poaceae

Rough-stalked meadowgrass
A perennial of pastures, wasteland, also included in some seed mixtures, lemma very sharply keeled, narrow oblong and pointed in side view, keel strongly arched, 2.5-3.2mm long, distinctly 5 nerved, rachilla smooth, usually without hair or hairs on keel only. Image NIAB copyright.

**Poa pratensis L.**  Poaceae

Smooth-stalked meadowgrass
A perennial of pastures, meadows and roadsides, incorporated in some seeds mixtures. Lemma sharply keeled, oblong or oblong oval, 3-4mm long, keel and marginal nerves hairy, inner lateral nerves fine but usually distinct, rachilla cylindrical and smooth. Image NIAB copyright.

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**Poa trivialis**

- More pointed at tip
- Thin infolded upright margins
- Very distinct nerve line between margin and keel along entire length of lemma
- Curved boat shaped keel
- Smooth cylindrical rachilla, typically long
- Narrow callus compared to *Poa pratensis*
- Basal web of hairs typical of *Poa trivialis* but not unique to *P. trivialis*, often removed during processing

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Poa pratensis

- Teeth on keel visible at x10, but not on every seed, varies with variety.
- Teeth on palea visible at x10 depending on how infolded the margin is.
- Margin shape in outline is upright, oblong ovate, often wide and papery, not markedly infolded.
- Keel straight in mid-section, slightly curved towards tip.
- Distinct nerve line, does not usually extend to tip of lemma.
- Rachilla cylindrical and smooth.
- Callus wider and straighter compared to *P. trivialis*.

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General details

Poa trivialis
In general the caryopsis fills the whole space within the glumes, glumes thinner and fit tightly around the caryopsis, in bulk colour of seed darker than P. pratensis.

Poa pratensis
In general the glumes slightly thicker and fit more loosely around the caryopsis, caryopsis does not fill whole space, in bulk colour of seed lighter than P. trivialis. More variation between varieties.

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Training outcomes

- Recognition of seed identification features for selected species held as a mental or visual image
- Confidence and competence
- Accuracy & speed of analysis improves with practice
- Reliability and repeatability
- Trained staff who have the ability to transfer their knowledge

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Benefits of the Universal List

Universal List can help focus training on:

• species & contaminants relevant in commercial trade
• species that are required to be known by individual countries Seed Regulations
• provide the basis of species to include in proficiency tests
• development of training documents to included additional species of the same genus

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Acknowledgements

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- I would like to acknowledge two retired OSTS analysts who taught me such a lot
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  Eileen Falkner, Head of Vegetables

- Original reference “Seed” of the Genus *Poa* commonly found on the Market – W H Wright, 1942

Thank you for your interest

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