Nomenclature system for edible bananas

The informal nomenclature system used to classify banana cultivars was developed by Norman Simmonds and Kenneth Shepherd in 1955[1]. It forgoes two-part Latinized names (the first part indicating the genus, and the second one the species) and instead classifies edible bananas into genome groups, according to the relative contribution of their ancestral wild species, and into subgroups, sets of closely related cultivars. This system eliminates almost all the difficulties and inconsistencies of a taxonomy based on Musa paradisiaca and Musa sapientum[2].

However, due to difficulties in assigning certain cultivars to a genome group and subgroup, there are inconsistencies in the way the system has been applied. Contributing to the confusion is the continued use of Latin binomials to refer to edible bananas.

Contents

- Simmonds and Shepherd's genome-based system
  - Scoring system
- Formalizing Simmonds and Shepherd's system
- References
- See also on this website
- Further reading

Simmonds and Shepherd's genome-based system

In this system, bananas, at least the ones that are related to Musa acuminata and Musa balbisiana, are classified according to the relative contribution of these species designated by the letter A, for acuminata, and B, for balbisiana. A cultivar is assigned to a genome group according to the number of chromosome sets in its genome (its ploidy) and the species that donated them (see Domestication of the banana). Diploid cultivars can belong to the AA or AB genome group, while triploid cultivars fall into three genome groups: AAA, AAB and ABB (see the cultivar diversity portal).

Some taxonomists recognize a BBB genome group, but its existence has not been conclusively demonstrated. Tetraploid cultivars are mostly hybrids produced by breeders.

Genome groups are further divided into subgroups usually defined as a set of cultivars derived from each other through somatic mutations. On the basis of this system, cultivar names are put between inverted commas and preceded by the name of the genus and when known, the name of the group and subgroup. For example: Musa (AAA group Cavendish subgroup) 'Robusta'[3].

Scoring system

The system is based on 15 characters that were chosen because they are different in Musa
acuminata and Musa balbisiana. Each character is scored on a scale from one (typical Musa acuminata) to five (typical Musa balbisiana). The possible total scores range from a minimum of 15 to a maximum of 75. The expected scores are 15 for AA and AAA, 35 for AAB, 45 for AB, 55 for ABB and 75 for BB.

<table>
<thead>
<tr>
<th>Character</th>
<th>Musa acuminata</th>
<th>Musa balbisiana</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pseudostem colour</td>
<td>More or less heavily marked with brown or black blotches</td>
<td>Blotches very slight or absent</td>
</tr>
<tr>
<td>Petiole canal</td>
<td>Margin erect or spreading, with scarious wings below, not clasping pseudostem</td>
<td>Margin inclosed, not winged but clasping pseudostem</td>
</tr>
<tr>
<td>Peduncle</td>
<td>Usually downy or hairy</td>
<td>Glabrous</td>
</tr>
<tr>
<td>Pedicels</td>
<td>Short</td>
<td>Long</td>
</tr>
<tr>
<td>Ovules</td>
<td>Two regular rows in each loculus</td>
<td>Four irregular rows in each loculus</td>
</tr>
<tr>
<td>Bract shoulder *</td>
<td>Usually high (ratio&lt;0.28)</td>
<td>Usually low (ratio&gt;0.30)</td>
</tr>
<tr>
<td>Bract curling</td>
<td>Bracts reflex and roll back after opening</td>
<td>Bracts do not reflex</td>
</tr>
<tr>
<td>Bract shape</td>
<td>Lanceolate or narrowly ovate, tapering sharply from the shoulder</td>
<td>Broadly ovate, not tapering sharply</td>
</tr>
<tr>
<td>Bract apex</td>
<td>Acute</td>
<td>Obtuse</td>
</tr>
<tr>
<td>Bract colour</td>
<td>Red, dull purple or yellow outside; pink, dull purple or yellow inside</td>
<td>Distinctive brownish-purple outside; bright crimson inside</td>
</tr>
<tr>
<td>Colour fading</td>
<td>Inside bract colour usually fades to yellow towards the base</td>
<td>Inside bract colour usually continuous to base</td>
</tr>
<tr>
<td>Bract scars</td>
<td>Prominent</td>
<td>Scarcely prominent</td>
</tr>
</tbody>
</table>
Formalizing Simmonds and Shepherd's system

Efforts to classify cultivars into genome groups and subgroups have not progressed much since Simmonds's extensive treatment of cultivars in Bananas. Recognizing the limitations of the current system, some ProMusa and MusaNet members are discussing aligning Simmonds and Shepherd's genome-based nomenclature system with the International Code of Nomenclature for Cultivated Plants as part of an effort to have it formally recognized[4].

References

2. Linnaeus's banana legacy: How Linnaeus inadvertently muddled the taxonomy of bananas when he gave Latin binomials to two edible bananas, published 22 May 2019 in InfoMus@’s News and analysis section.
4. Modernizing Simmonds and Shepherd's legacy: The nomenclature system specific to edible bananas is the only alternative to Latin binomials, but it needs tweaking and advocates to promote it, published 22 May 2019 in InfoMus@’s news and analysis section.

See also on this website

Linnaeus’s banana legacy
Modernizing Simmonds and Shepherd’s legacy
Musapedia pages on the domestication of the banana and the scientific name of bananas
Navigate the taxonomy of edible bananas on the cultivar diversity portal
Banana cultivar checklist of local names and synonyms
Where bananas come from in Under the peel, the blog of the ProMusa community, published on 7 October 2015
Portal on wild species of bananas

Further reading

David Constantine’s annotated list of Musa species