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Definition of color groups from RHS Colour Charts

Document prepared by an expert from Germany

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## TWO 49: Definitions of Color Groups from RHS Colour Charts

 In 2015 the TWO considered document TWO/48/19 and received some presentations on the use of the RHS Colour Chart.

 The TWO agreed to request an expert from Germany to prepare a study on the possibility to use the Sixth Edition of the RHS Colour Chart for defining color groups for the purpose of grouping of varieties and organization of the growing trial and answer the question whether the allocation of UPOV Color Groups for each RHS color, as set out in document TGP/14, should be revised (see document TWO/48/26, page 6).

## Introduction

 The following table gives an overview of the existing groups for the RHS Colour Chart:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Number of entries or groups | Example | Use |
| level of precisionlow high | RHS Colour Chart Number | 920 | 49A | Used for precise description of colors of plant parts. |
| RHS Colour Name (sixth edition only) | 190 | Strong Pink |  |
| UPOV Color Group(up to the fifth edition) | 50 | group 17,Red Pink | Used in the variety description to translate the RHS Colour Chart number into a color name. |
| RHS Color Group(heading on each sheet, 29 in the sixth edition) | 29 | Red Group | Used by the CPVO for checking colors in proposals for variety denominations. |

## Changes in the Sixth Edition of the RHS Colour Chart compared to previous versions

 The Sixth Edition of the RHS Colour Chart (subsequent: Sixth Edition)includes 24 new color patches on six sheets (N45, NN74, N75, N78, N95, N148), and a revision of N137 (now NN137).

 For the first time each patch has a color name. Some background information about the naming can be found in the General Information of the RHS Colour Chart Guide:

***“Colour names***

*Although colour names may mean different colours to different people, in this sixth edition colour names have been provided for each patch. Feedback from users of the Chart strongly supported the addition of colour names to help with preparing descriptions and to avoid the confusion that arises from using colour-group names. The colour names have been taken from A Contribution Toward the Standardization of Color Names in Horticulture by R. D. Huse & K. L. Kelley (American Rhododendron Society, 1984) by kind permission of Donald Voss and the American Rhododendron Society. These colour names have been determined objectively using CIE co-ordinates and the Munsell Colour Chart.”*

 The 190 different color names were formed by using attributes like “very light, very pale, light, pale, moderate, medium, vivid, brilliant, deep, and strong”. A list of all names used can be found in the annex.

*Additional information:*

The naming of the colors in the Sixth Edition seems in several cases not appropriate. The new patch NN74C for example is named “Light Reddish Purple” although its color is darker than NN74D which is named “Strong Reddish Purple”. Mr. John David from the RHS is aware of this and plans to check the color names for the next edition.

## Color Names in the Sixth Edition compared to UPOV Color Names

 In document TGP/14/3 “Glossary of Terms used in UPOV Documents, Section 2: Botanical Terms: Subsection 3: Color: Annex” the following explanation is given for the UPOV Color Names:

*“For the purpose of naming the RHS Colour Chart in a variety description UPOV has defined 50 Color Groups consisting of either the [pure color] / [colour hue] (e.g. yellow, orange, red), a combination of two [pure colors] / [color hues] (e.g. yellow orange, orange pink, purple red) or a combination of the [pure color(s)] / [ color hue)s)] with ‘light’, or ‘dark’ (e.g. light yellow, dark pink red).”*

 An example in which differences in the color names in the two systems could occur can be found in the following table. The color of the patches is very similar:

|  |  |  |
| --- | --- | --- |
| **RHS Colour Chart No** | **Color Name Sixth Edition** | **UPOV Color Name** |
| 158C | Yellowish white | Light yellow brown |
| 158D | Yellowish white | Light yellow brown |
| 159C | Pale orange yellow | Light yellow brown |
| 159D | Pale yellowish pink | Light yellow brown |

 In the Sixth Edition color names are used which do not always reflect the color similarity of the patches. The UPOV system consists of fewer color groups and therefore similar colors have the same name.

 Because of what is mentioned above and because it is not useful for UPOV purposes to distinguish between the terms “light” and “pale”, “moderate” and “medium”, “vivid” and “brilliant”, “deep” and “strong”, it seems to be not appropriate to use the RHS Colour Names of the Sixth Edition for UPOV purposes.

 *The TWO is invited to discuss this conclusion.*

## Is it necessary to revise the allocation of UPOV Color Groups for each RHS color?

 In document TGP/14/3 “Glossary of Terms used in UPOV Documents, Section 2: Botanical Terms: Subsection 3: Color: Annex”, it is stated that:

*“1.4 The color names in this document can be used with different editions of the RHS Colour Chart. The 1986 version of the RHS Colour Chart was used for the initial grouping and naming. In the 1995 edition no new charts were added. The additional charts in the 2001 edition (marked with ‘N’) and in the 2007 edition (marked with ‘NN’) have been integrated into the existing groups.”*

As the 1986 version has been used for the initial grouping, experts from the Netherlands and Germany checked the allocation of the patches of the Sixth Edition to the initial grouping.

 Some charts of the 1986 edition and the later versions have a different color than the same chart in the 2015 edition. Therefore the Sixth Edition seems to be a good starting point for the discussion on a new list of UPOV Color Groups. The other option would be to add the new patches to the existing list.

 *The TWO is invited to consider creating a new list of UPOV Color Groups for naming of colors rather than adding the new color charts to the existing groups.*

 If the TWO comes to the conclusion to continue with the 50 UPOV Color Groups used so far, the 24 new color patches need to be added to these groups. A proposal for this can be found in the following table.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **New** | **RHS No** | **Proposal for UPOV color name** | **Group** |  | **New** | **RHS No** | **Proposal for UPOV color name** | **Group** |
|  |  |  |  |  |  |  |  |  |
| 2015 | N45A | red | 21 |  | 2015 | N95A | blue | 35 |
| 2015 | N45B | red | 21 |  | 2015 | N95B | blue | 35 |
| 2015 | N45C | red | 21 |  | 2015 | N95C | violet blue | 33 |
| 2015 | N45D | red | 21 |  | 2015 | N95D | violet blue | 33 |
|  |  |  |  |  |  |  |  |  |
| 2015 | NN74A | purple | 27 |  | 2015 | NN137A | dark green | 4 |
| 2015 | NN74B | purple | 27 |  | 2015 | NN137B | dark green | 4 |
| 2015 | NN74C | purple | 27 |  | 2015 | NN137C | dark green | 4 |
| 2015 | NN74D | blue pink | 19 |  | 2015 | NN137D | brown green | 9 |
|  |  |  |  |  |  |  |  |  |
| 2015 | N75A | violet | 28 |  | 2015 | N148A | brown green | 9 |
| 2015 | N75B | violet | 28 |  | 2015 | N148B | brown green | 9 |
| 2015 | N75C | violet | 28 |  | 2015 | N148C | brown green | 9 |
| 2015 | N75D | violet | 28 |  | 2015 | N148D | brown green | 9 |
|  |  |  |  |  |  |  |  |  |
| 2015 | NN78A | purple | 27 |  |  |  |  |  |
| 2015 | NN78B | purple | 27 |  |  |  |  |  |
| 2015 | NN78C | purple | 27 |  |  |  |  |  |
| 2015 | NN78D | purple | 27 |  |  |  |  |  |

## Can the Sixth Edition be used for defining color groups for the purpose of grouping of varieties and organizing the growing trial?

 So far the purpose of the UPOV Color Groups was to harmonize color names in variety descriptions (see document TGP/14/3 “Glossary of Terms used in UPOV Documents, Section 2: Botanical Terms: Subsection 3: Color: Annex”, paragraph 1.1).

 The TC requested the TWO to check whether the Sixth Edition could be used for defining color groups for grouping of varieties and organizing the growing trial.

 Color can be defined in terms of three elements hue (distinguishes the different colors), saturation (the element of color that indicates the purity or grayness of the color) and intensity (distinguishes the total amount of light that is reflected by the color, how the color is perceived by the eye on a light to dark scale –see document TGP/14/3 “Glossary of Terms used in UPOV Documents, Section 2: Botanical Terms: Subsection 3”). Since there are three dimensions for every color it is not possible to arrange them on a single linear scale. This is also reflected by the pseudo-qualitative type of expression of color characteristics.

 A list of color groups which is created for harmonizing color names is focused on grouping varieties which have the same color (hue) combined with the intensity. The difference between the groups can be smaller compared to a list that is created for grouping of varieties. When grouping varieties a very clear and large difference between the colors is required.

*Example:*

For harmonization of color names it seems appropriate to have groups like violet blue and blue violet. The different name provides the information that one group is bluer and less violet than the other. However, with respect to grouping of varieties for the growing trial both groups would be considered as violet.

 If a list for grouping of varieties were to be created, the question would be whether this list could be created in a way that it could be used for all genera and species.

 Examples for the differences between the color groups in grouping characteristics of different Test Guidelines are listed in the following table:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test Guidelines | **Osteospermum**(TG/175/5) | **Pelargonium** (TG/28/9 corr.) | **Plectranthus**(TG/315/1) | **Hosta**(TG/299/1) |
|  |  |  |  |  |
| Characteristic | Ray floret: main color of middle part | Lower petal: color of middle of upper side | Flower: main color  | Leaf blade: color covering the largest surface area |
|  |  |  |  |  |
| Color groupsfor grouping | white | white | white | white |
| yellow | orange red | pink | light yellow |
|  | orange | orange | reddish purple | medium yellow |
|  | pink | red | purple | dark yellow |
|  | red | purple | violet | light green |
|  | purple | blue pink | violet blue | medium green |
|  | violet |  |  | dark green |
|  |  |  |  | blue green |

 *The TWO is invited to discuss whether a new list of UPOV Color Groups should be created for:*

1. *grouping of varieties only;*
2. *harmonizing color names and grouping of varieties.*

[Annex follows]

List of Color Names used in the Sixth Edition of the RHS Colour Chart

| **No** | **Color Name** |
| --- | --- |
| 1 | Black |
| 2 | Bluish Black |
| 3 | Bluish White |
| 4 | Brilliant Yellow |
| 5 | Brilliant Blue |
| 6 | Brilliant Bluish Green |
| 7 | Brilliant Green |
| 8 | Brilliant Greenish Blue |
| 9 | Brilliant Greenish Yellow |
| 10 | Brilliant Orange |
| 11 | Brilliant Orange Yellow |
| 12 | Brilliant Purple |
| 13 | Brilliant Purplish Blue |
| 14 | Brilliant Violet |
| 15 | Brilliant Yellow |
| 16 | Brilliant Yellow Green |
| 17 | Brilliant Yellowish Green |
| 18 | Brownish Grey |
| 19 | Brownish Orange |
| 20 | Brownish Orange |
| 21 | Dark Blue |
| 22 | Dark Bluish Green |
| 23 | Dark Green |
| 24 | Dark Greenish Blue |
| 25 | Dark Greenish Yellow |
| 26 | Dark Greyish Green |
| 27 | Dark Greyish Green/Greyish Green |
| 28 | Dark Greyish Purple |
| 29 | Dark Greyish Red |
| 30 | Dark Greyish Reddish Brown |
| 31 | Dark Greyish Yellow |
| 32 | Dark Greyish Yellowish Brown |
| 33 | Dark Orange |
| 34 | Dark Pink |
| 35 | Dark Purple |
| 36 | Dark Purplish Grey |
| 37 | Dark Purplish Pink |
| 38 | Dark Purplish Red |
| 39 | Dark Red |
| 40 | Dark Reddish Orange |
| 41 | Dark Violet |
| 42 | Dark Yellowish Green |
| 43 | Dark Yellowish Pink |
| 44 | Deep Blue |
| 45 | Deep Greenish Yellow |
| 46 | Deep Orange Yellow |
| 47 | Deep Pink |
| 48 | Deep Purple |
| 49 | Deep Purplish Blue |
| 50 | Deep Purplish Pink |
| 51 | Deep Purplish Red |
| 52 | Deep Red |
| 53 | Deep Reddish Purple |
| 54 | Deep Violet |
| 55 | Deep Yellowish Green |
| 56 | Deep Yellowish Pink |
| 57 | Greenish Grey |
| 58 | Greenish White |
| 59 | Greyish Brown |
| 60 | Greyish Olive Green |
| 61 | Greyish Purple |
| 62 | Greyish Purplish Blue |
| 63 | Greyish Purplish Red |
| 64 | Greyish Red |
| 65 | Greyish Reddish Brown |
| 66 | Greyish Reddish Orange |
| 67 | Greyish Reddish Purple |
| 68 | Greyish Violet/Dark Purple |
| 69 | Greyish Yellow Green |
| 70 | Light Blue |
| 71 | Light Bluish Green |
| 72 | Light Brownish Grey |
| 73 | Light Green |
| 74 | Light Greenish Blue |
| 75 | Light Greenish Grey |
| 76 | Light Greenish Yellow |
| 77 | Light Grey |
| 78 | Light Greyish Olive |
| 79 | Light Olive |
| 80 | Light Olive Brown |
| 81 | Light Olive Grey |
| 82 | Light Orange |
| 83 | Light Orange Yellow |
| 84 | Light Pink |
| 85 | Light Purple |
| 86 | Light Purple/Light Reddish Purple |
| 87 | Light Purplish Blue |
| 88 | Light Purplish Grey |
| 89 | Light Purplish Pink |
| 90 | Light Reddish Brown |
| 91 | Light Reddish Purple |
| 92 | Light Violet |
| 93 | Light Yellow |
| 94 | Light Yellow Green |
| 95 | Light Yellowish Brown |
| 96 | Light Yellowish Green |
| 97 | Light Yellowish Pink |
| 98 | Medium Grey |
| 99 | Moderate Blue |
| 100 | Moderate Bluish Green |
| 101 | Moderate Brown |
| 102 | Moderate Green |
| 103 | Moderate Greenish Blue |
| 104 | Moderate Olive Brown |
| 105 | Moderate Olive Green |
| 106 | Moderate Orange |
| 107 | Moderate Orange Yellow |
| 108 | Moderate Pink |
| 109 | Moderate Purple |
| 110 | Moderate Purplish Pink |
| 111 | Moderate Purplish Red |
| 112 | Moderate Red |
| 113 | Moderate Reddish Brown |
| 114 | Moderate Reddish Orange |
| 115 | Moderate Reddish Purple |
| 116 | Moderate Violet |
| 117 | Moderate Violet/Dark Violet |
| 118 | Moderate Yellow |
| 119 | Moderate Yellow Green |
| 120 | Moderate Yellowish Brown |
| 121 | Moderate Yellowish Green |
| 122 | Moderate Yellowish Green/Pale Green |
| 123 | Moderate Yellowish Pink |
| 124 | Pale Blue |
| 125 | Pale Green |
| 126 | Pale Greenish Yellow |
| 127 | Pale Greenish Yellow |
| 128 | Pale Orange Yellow |
| 129 | Pale Pink |
| 130 | Pale Purple |
| 131 | Pale Purplish Pink |
| 132 | Pale Yellow |
| 133 | Pale Yellow Green |
| 134 | Pale Yellowish Pink |
| 135 | Pinkish Grey |
| 136 | Pinkish White |
| 137 | Pinkish White |
| 138 | Purplish Grey |
| 139 | Reddish Grey |
| 140 | Strong Blue |
| 141 | Strong Bluish Green |
| 142 | Strong Brown |
| 143 | Strong Green |
| 144 | Strong Greenish Blue |
| 145 | Strong Greenish Yellow |
| 146 | Strong Orange |
| 147 | Strong Orange Yellow |
| 148 | Strong Pink |
| 149 | Strong Purple |
| 150 | Strong Purplish Blue |
| 151 | Strong Purplish Pink |
| 152 | Strong Purplish Red |
| 153 | Strong Red |
| 154 | Strong Reddish Orange |
| 155 | Strong Reddish Purple |
| 156 | Strong Violet |
| 157 | Strong Yellow |
| 158 | Strong Yellow Green |
| 159 | Strong Yellowish Brown |
| 160 | Strong Yellowish Green |
| 161 | Strong Yellowish Pink |
| 162 | Very Light Blue |
| 163 | Very Light Bluish Green |
| 164 | Very Light Green |
| 165 | Very Light Greenish Blue |
| 166 | Very Light Purple |
| 167 | Very Light Purplish Blue |
| 168 | Very Pale Blue |
| 169 | Very Pale Green |
| 170 | Very Pale Purple |
| 171 | Very Pale Purplish Blue |
| 172 | Very Pale Violet |
| 173 | Vivid Blue |
| 174 | Vivid Greenish Yellow |
| 175 | Vivid Orange |
| 176 | Vivid Orange Yellow |
| 177 | Vivid Purplish Blue |
| 178 | Vivid Purplish Pink |
| 179 | Vivid Purplish Red |
| 180 | Vivid Red |
| 181 | Vivid Reddish Orange |
| 182 | Vivid Reddish Purple |
| 183 | Vivid Violet |
| 184 | Vivid Yellow |
| 185 | Vivid Yellow Green |
| 186 | Vivid Yellowish Green |
| 187 | Vivid Yellowish Pink |
| 188 | White |
| 189 | Yellowish Grey |
| 190 | Yellowish White |

[End of Annex and of document]