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## 1. The survey of maize factors.

The world literature dealing with the genetics and with the breeding of maize is very extensive (our private card-register alone contains more than 11,300 citations). Of this large quantity approximately 2/5 (according to our experience) deal directly with the problem of the genes. In spite of the great extent of the world literature on the factors and genes of maize, we can point out only a few works dealing with the working out of catalogues of factors and genes and with their description for their accurate determination. One of the first attempts at a systematic survey of genes was that carried out by R. A. Emerson et al (1935) and M. M. Chadžinov (1935). Of the later works we should like to point out the work published by L. M. Jones (1958, 1959). To the most detailed attempts belong the studies performed by J. Weijer (1952) and L. Říman (1961). This short survey of the pertaining literature, however, only emphasizes the lack of snythetic works on the factors and genes of maize, which works, at the present situation of research work, we consider a very important component part of the total investigation of the problem of the genes of maize.

We have attempted to compile a comprehensive collection of the factors of maize, which we submit to our colleagues for their kind consideration:

| Numerical order | Mark | Denomination | Number of genes | Number of non-included symbols |
|---|---|---|---|---|
| 1 | a, A | anthocyanin | 5 | 65 |
| 2 | ac, Ac | activator | 1 | |
| 3 | ad | adherent | 7 | 2 |
| 4 | ae | amylose extender | 1 | |
| 5 | ag, Ag | susceptible (resistant) to grasshoppers and locusts | 1 | |
| 6 | al | albescent | 3 | |
| 7 | am, Am | ameiotic | 1 | |
| 8 | an | anther ear | 3 | 6 |
| 9 | ar | argentia | 1 | 1 |
| 10 | | argostripe | 1 | |
| 11 | as | asynaptic | 1 | |
| 12 | at | antherless | 1 | |
| 13 | au | aurea | 2 | |
| 14 | b, B | plant colour booster | 1 | 4 |
| 15 | ba | barren stalk | 2 | 1 |
| 16 | bd | branched silkless | 7 | |

| Numerical order | Mark | Denomination | Number of genes | Number of non-included symbols |
|---|---|---|---|---|
| 17 | be | blanched ear | 1 | |
| 18 | bf, Bf | blue fluorescent | 2 | |
| 19 | bh, Bh | blotched aleurone | 1 | |
| 20 | bk | brittle stalk | 2 | 1 |
| 21 | bl | blotched leaf | 7 | |
| 22 | bm | brown midrib | 6 | 1 |
| 23 | bn, Bn | brown aleurone | 2 | |
| 24 | bp | brown pericarp | 1 | |
| 25 | br | brachytic | 3 | |
| 26 | bs | barren sterile | 1 | |
| 27 | bt, Bt | brittle endosperm | 4 | 3 |
| 28 | bu | | 1 | |
| 29 | bv | brevis | 2 | |
| 30 | bz, Bz | bronze | 2 | 2 |
| 31 | c, C | aleurone colour | 2 | 2 |
| 32 | cb | chloroblotch | 1 | |
| 33 | Ce | | 2 | |
| 34 | Cg | corn grass | 1 | |
| 35 | cl, Cl | modifier of chlorophyll | 3 | |
| 36 | club | club | 1 | |
| 37 | co | coherent tassel | 1 | 1 |
| 38 | | corn borer susceptible(resistant) | 1 | |
| 39 | cr | crinkly leaf | 4 | |
| 40 | ct | compact | 1 | |
| 41 | cz | cuzcoid | 1 | |
| 42 | d, D | dwarf plant | 10 | 19 |
| 43 | da, Da | dilute aleurone | 2 | 1 |
| 44 | de | defective endosperm | 19 | 1 |
| 45 | Df | diffuse | 1 | |
| 46 | di | disintegrated endosperm | 1 | |
| 47 | dl | dull brown endosperm blotch | 1 | |
| 48 | dm | dead leaf margins | 2 | |
| 49 | Ds | | 1 | |
| 50 | dt, Dt | dotted aleurone | 3 | 2 |
| 51 | du | dull endosperm | 2 | |
| 52 | dv | divergent | 1 | |
| 53 | dy | desynaptic | 1 | |
| 54 | E | euchlaena | 1 | 5 |
| 55 | el | | 1 | |
| 56 | En | enhancer | 1 | |
| 57 | et | etched endosperm | 1 | |
| 58 | f | fine stripe | 3 | 2 |
| 59 | fi | fine streaked | 1 | 1 |
| 60 | fl | floury endosperm | 2 | |

| Numerical order | Mark | Denomination | Number of genes | Number of non-included symbols |
|---|---|---|---|---|
| 61 | fn | | 1 | |
| 62 | fr | frayed | 2 | |
| 63 | fs | fasciated | 1 | |
| 64 | fu | fused tassel branched | 1 | |
| 65 | fz | | 1 | |
| 66 | g | golden | 4 | 1 |
| 67 | ga, Ga | gametophyte | 8 | 1 |
| 68 | gc | | 1 | |
| 69 | ge | germinating seeds | 15 | |
| 70 | gi | | 1 | |
| 71 | gl | glossy seedling | 17 | 10 |
| 72 | gm | germless | 4 | 3 |
| 73 | gs | green striped | 3 | 1 |
| 74 | h | soft starch | 2 | |
| 75 | ha | | 2 | 1 |
| 76 | hc, Hc | hornlike coleoptile | 1 | |
| 77 | hf | hermaphrcditic flowers | 1 | |
| 78 | hm, Hm | susceptible (resistant) to Helminthosporium carbonum leaf blight | 2 | |
| 79 | | susceptible (resistant) to Helminthosporium turcicum leaf blight | 1 | |
| 80 | Hs | hairy sheath | 2 | |
| 81 | ch, Ch | chocolate pericarp | 1 | |
| 82 | I | inhibitor of aleurone colour | 1 | |
| 83 | id | indeterminate flowering | 1 | |
| 84 | ij | iojap striping | 1 | |
| 85 | in, In | intensifier of aleurone colour | 3 | 2 |
| 86 | it | intensifier of yellow endosperm | 1 | |
| 87 | j | japonica | 4 | 1 |
| 88 | Kn | knotted leaf | 1 | |
| 89 | l, L | luteus | 11 | 8 |
| 90 | la | lazy plant | 2 | 1 |
| 91 | le | lemon endosperm | 1 | |
| 92 | lg, Lg | liguleless leaf | 3 | |
| 93 | li | lineate | 2 | |
| 94 | lo | lethal ovule | 2 | |
| 95 | lp | pollen lethal | 1 | |
| 96 | lw | lemon white | 4 | |
| 97 | m, M | yellow white seedling | 2 | 1 |
| 98 | ma | maculate leaf | 1 | |
| 99 | mc | micropyle colour | 1 | |
| 100 | Md | midccb colour | 1 | |

| Numerical order | Mark | Denomination | Number of genes | Number of non-included symbols |
|---|---|---|---|---|
| 101 | me | mealy endosperm | 1 | |
| 102 | mg | miniature germ | 1 | |
| 103 | mi | midget | 1 | 2 |
| 104 | mn | miniature seed | 1 | |
| 105 | Mp | | 2 | 2 |
| 106 | mr | midrib | 1 | |
| 107 | ms, Ms | male sterile | 22 | 5 |
| 108 | Mt | mottled aleurone | 1 | |
| 109 | na | nana | 2 | |
| 110 | nc | | 1 | |
| 111 | nl | narrow leaf | 2 | 1 |
| 112 | | necrotic | 2 | |
| 113 | | new starchy | 1 | |
| 114 | o, O | opaque endosperm | 3 | 1 |
| 115 | og, Og | old gold stripe | 1 | 1 |
| 116 | or, Or | | 2 | |
| 117 | | orobanche seedling | 1 | |
| 118 | oy | oil yellow | 2 | |
| 119 | P | pericarp and cob colour | 32 | 1 |
| 120 | pa | pollen abortion | 1 | |
| 121 | pb, Pb | piebald | 5 | 1 |
| 122 | Pc | purple coleorhiza | 4 | |
| 123 | pd | | 1 | |
| 124 | pe | pubescens hairy sheath | 1 | |
| 125 | pg, Pg | pale green seedling | 12 | 5 |
| 126 | Ph | | 1 | |
| 127 | pi | development of secondary pistillate florets | 2 | |
| 128 | pk | polkadot leaves | 1 | |
| 129 | pl, Pl | purple plant colour | 1 | |
| 130 | pm | pale midrib | 1 | |
| 131 | pn, Pn | papyrescent glume | 1 | |
| 132 | po, Po | polymitotic | 1 | |
| 133 | Pp | | 1 | |
| 134 | pr, Pr | red aleurone | 2 | |
| 135 | ps | panicula specialis | 1 | |
| 136 | | pink scutellum | 1 | |
| 137 | pt, Pt | polytypic | 1 | |
| 138 | Pu | purple plumule | 2 | |
| 139 | py, Py | pigmy | 2 | |
| 140 | r, R | aleurone and plant colour | 18 | 6 |
| 141 | | ragged seedling | 1 | |
| 142 | ra, Ra | ramosa ear | 3 | |

| Numerical order | Mark | Denomination | Number of genes | Number of non-included symbols |
|---|---|---|---|---|
| 143 | rd | reduced plant | 1 | 1 |
| 144 | re | reduced endosperm | 4 | |
| 145 | rf, Rf | fertility restoration | 2 | |
| 146 | rg, Rg | ragged leaf | 2 | 1 |
| 147 | rl | red leaf tip | 1 | |
| 148 | ro | rolled leaves | 1 | |
| 149 | rp, Rp | rust susceptible (resistant) | 3 | 2 |
| 150 | rpp,Rpp | susceptible (resistant) to Puccinia polysora Underw | 2 | |
| 151 | rs, Rs | rough sheath | 2 | |
| 152 | rt | rootless | 1 | |
| 153 | S | coloured scutellum | 5 | |
| 154 | sa | striped auricle | 2 | |
| 155 | sb | slit blade | 1 | |
| 156 | sc | scarred endosperm | 2 | 3 |
| 157 | | semisterility | 7 | |
| 158 | sd, Sd | | 1 | |
| 159 | sf | stiff leaves | 1 | |
| 160 | sh | shrunken endosperm | 5 | 1 |
| 161 | | sienna | 2 | |
| 162 | sk | silkless | 1 | |
| 163 | si, Si | silky ear | 3 | |
| 164 | sl | slashed leaves | 1 | |
| 165 | sm, Sm | salmon silk | 1 | |
| 166 | sn | siamensis | 1 | |
| 167 | so | orange scutellum | 2 | |
| 168 | sp, Sp | small pollen | 2 | 1 |
| 169 | sr | striate | 2 | |
| 170 | st | sticky chromosome | 1 | 1 |
| 171 | su, Su | sugary endosperm | 4 | 2 |
| 172 | sy | yellow scutellum | 1 | |
| 173 | ta | tan cob | 1 | |
| 174 | tb | teosinte branched | 1 | |
| 175 | th | threaded | 1 | |
| 176 | tn | tinged plant | 1 | |
| 177 | Tp | teopod | 2 | |
| 178 | tr | two ranked ear | 1 | 1 |
| 179 | ts, Ts | tassel seed | 8 | |
| 180 | tu, Tu | tunicate ear | 1 | 6 |
| 181 | tw | twisted seedling | 3 | 4 |
| 182 | v, V | virescent seedling | 22 | 11 |
| 183 | va | variable sterile | 2 | |
| 184 | Vg | vestigial glume | 1 | |

| Numerical order | Mark | Denomination | Number of genes | Number of non-included symbols |
|---|---|---|---|---|
| 185 | vp | vivipary | 9 | |
| 186 | w, W | white seedling | 12 | 22 |
| 187 | | white | 2 | |
| 188 | wa | warty anthers | 1 | |
| 189 | | waseca stripe | 1 | |
| 190 | Wc | white capped endosperm | 1 | |
| 191 | wd, Wd | | 1 | |
| 192 | Wh | white endosperm | 1 | |
| 193 | wi | wilted | 1 | |
| 194 | wl | white leaf base | 4 | |
| 195 | ws | white sheath | 3 | |
| 196 | wt | wheat tassel | 1 | |
| 197 | wx, Wx | waxy endosperm | 1 | 8 |
| 198 | xn | xantha seedling | 2 | |
| 199 | y, Y | yellow endosperm | 8 | 7 |
| 200 | yd | yellow dwarf | 1 | |
| 201 | yf | yellow flecked seedling | 1 | |
| 202 | yg | yellow green | 13 | 2 |
| 203 | Yp | pale yellow endosperm | 1 | |
| 204 | ys | yellow stripe | 3 | 1 |
| 205 | yt | yellow top | 1 | |
| 206 | z | | 1 | |
| 207 | zb | zebra striped | 6 | 5 |
| 208 | zg | zigzag culm | 3 | |
| 209 | zl | zygotic lethal | 2 | |
| 210 | zn | zebra necrosis | 1 | |
| 210 | Summary | | 591 | 254 |

We are of the opinion that it is essential that by far more careful attention should be paid to these studies than has been the case hitherto, as the number of papers and studies on the genes of maize increases rapidly every year, and a number of symbols are falling into oblivion or changing their original meaning, etc., all of which tends to cause a certain obscurity.

We have attempted to compile a comprehensive collection of the factors of maize, which we submit to our colleagues for their kind consideration.

Supplements and amendments will be published.

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