

| Maize phenological stage dataset in Northeast China |                   |                 |     |     |     |     |     |     |     |     |
|---|-------------------|-----------------|-----|-----|-----|-----|-----|-----|-----|-----|
| Latitude<br>(°N)                                    | Longitude<br>(°E) | Day of year (d) |     |     |     |     |     |     |     |     |
|   |                   | SW              | VE  | V3  | V7  | JT  | VT  | FR  | R1  | R6  |
| 38.90   | 121.60            | 112             | 130 | 136 | 151 | 173 | 190 | 193 | 195 | 251 |
| 38.90   | 121.63            | 110             | 130 | 136 | 151 | 173 | 190 | 193 | 195 | 251 |
| 39.42   | 122.37            | 110             | 129 | 136 | 150 | 170 | 190 | 193 | 195 | 250 |
| 39.62   | 121.97            | 121             | 127 | 135 | 149 | 177 | 194 | 197 | 199 | 252 |
| 39.63   | 122.02            | 110             | 127 | 135 | 149 | 172 | 190 | 193 | 195 | 250 |
| 39.67   | 122.90            | 110             | 126 | 133 | 146 | 168 | 189 | 192 | 194 | 251 |
| 39.72   | 122.95            | 110             | 127 | 134 | 147 | 170 | 190 | 193 | 195 | 250 |
| 40.17   | 122.15            | 111             | 128 | 140 | 154 | 171 | 190 | 193 | 195 | 255 |
| 40.20   | 123.58            | 119             | 133 | 136 | 153 | 177 | 194 | 197 | 199 | 262 |
| 40.22   | 122.25            | 126             | 135 | 141 | 155 | 185 | 199 | 202 | 204 | 259 |
| 40.28   | 123.27            | 123             | 134 | 145 | 153 | 178 | 194 | 197 | 199 | 256 |
| 40.28   | 123.28            | 112             | 134 | 144 | 153 | 175 | 192 | 195 | 197 | 255 |
| 40.32   | 120.33            | 127             | 140 | 144 | 161 | 171 | 190 | 193 | 195 | 251 |
| 40.35   | 120.35            | 110             | 139 | 144 | 162 | 171 | 190 | 193 | 195 | 251 |
| 40.47   | 123.47            | 124             | 136 | 142 | 156 | 183 | 198 | 201 | 203 | 262 |
| 40.58   | 120.58            | 123             | 133 | 142 | 160 | 189 | 204 | 207 | 209 | 271 |
| 40.65   | 122.17            | 112             | 133 | 142 | 155 | 172 | 192 | 195 | 197 | 255 |
| 40.70   | 122.58            | 135             | 143 | 149 | 161 | 178 | 196 | 199 | 201 | 261 |
| 40.72   | 124.78            | 115             | 137 | 145 | 155 | 175 | 193 | 196 | 198 | 258 |
| 40.72   | 124.78            | 123             | 137 | 145 | 155 | 175 | 193 | 196 | 198 | 258 |
| 40.82   | 119.83            | 120             | 135 | 145 | 163 | 181 | 199 | 202 | 204 | 262 |
| 40.88   | 123.90            | 114             | 138 | 144 | 158 | 173 | 193 | 196 | 198 | 258 |
| 41.05   | 124.47            | 123             | 140 | 144 | 159 | 185 | 199 | 202 | 204 | 276 |
| 41.08   | 121.12            | 120             | 130 | 136 | 150 | 171 | 196 | 199 | 201 | 264 |
| 41.08   | 123.00            | 115             | 135 | 141 | 155 | 174 | 194 | 197 | 199 | 257 |
| 41.13   | 121.12            | 115             | 131 | 136 | 150 | 172 | 196 | 199 | 201 | 261 |
| 41.20   | 123.10            | 116             | 133 | 138 | 152 | 180 | 198 | 201 | 203 | 258 |
| 41.20   | 125.30            | 125             | 138 | 137 | 158 | 177 | 196 | 199 | 201 | 261 |
| 41.22   | 121.20            | 127             | 139 | 144 | 157 | 175 | 198 | 201 | 203 | 267 |
| 41.25   | 125.33            | 118             | 136 | 134 | 155 | 175 | 195 | 198 | 200 | 259 |
| 41.28   | 125.35            | 115             | 136 | 134 | 155 | 175 | 195 | 198 | 200 | 259 |
| 41.32   | 123.78            | 115             | 137 | 142 | 156 | 175 | 194 | 197 | 199 | 260 |
| 41.38   | 119.70            | 115             | 132 | 139 | 154 | 179 | 200 | 203 | 205 | 264 |
| 41.40   | 119.63            | 112             | 132 | 139 | 153 | 179 | 200 | 203 | 205 | 263 |
| 41.42   | 123.33            | 124             | 136 | 141 | 155 | 173 | 194 | 197 | 199 | 259 |
| 41.47   | 123.20            | 128             | 137 | 142 | 156 | 175 | 196 | 199 | 201 | 261 |
| 41.55   | 120.45            | 116             | 136 | 142 | 156 | 175 | 198 | 201 | 203 | 255 |
| 41.63   | 119.12            | 118             | 131 | 135 | 146 | 175 | 196 | 199 | 201 | 267 |
| 41.68   | 125.90            | 115             | 141 | 146 | 163 | 176 | 194 | 197 | 199 | 265 |
| 41.68   | 122.08            | 116             | 138 | 143 | 155 | 175 | 196 | 199 | 201 | 258 |
| 41.70   | 124.85            | 116             | 132 | 137 | 153 | 175 | 194 | 197 | 199 | 262 |
| 41.70   | 123.53            | 129             | 138 | 142 | 156 | 173 | 194 | 197 | 199 | 260 |
| 41.73   | 123.52            | 116             | 137 | 142 | 156 | 174 | 195 | 198 | 200 | 260 |
| 41.80   | 126.92            | 116             | 142 | 148 | 163 | 178 | 194 | 197 | 199 | 265 |
| 41.92   | 124.08            | 118             | 136 | 142 | 157 | 175 | 195 | 198 | 200 | 260 |
| 41.92   | 120.75            | 130             | 140 | 145 | 156 | 176 | 199 | 202 | 204 | 259 |
| 41.98   | 122.83            | 125             | 136 | 142 | 157 | 175 | 198 | 201 | 203 | 260 |

|       |        |     |     |     |     |     |     |     |     |     |
|-------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 41.98 | 122.83 | 118 | 136 | 142 | 157 | 175 | 198 | 201 | 203 | 260 |
| 42.03 | 123.52 | 125 | 137 | 143 | 161 | 177 | 197 | 200 | 202 | 262 |
| 42.05 | 122.08 | 123 | 139 | 144 | 155 | 181 | 202 | 205 | 207 | 264 |
| 42.08 | 121.72 | 118 | 140 | 147 | 159 | 175 | 200 | 203 | 205 | 260 |
| 42.10 | 127.57 | 118 | 144 | 150 | 165 | 180 | 196 | 199 | 201 | 266 |
| 42.10 | 124.92 | 116 | 136 | 141 | 157 | 176 | 195 | 198 | 200 | 264 |
| 42.10 | 126.25 | 122 | 142 | 149 | 166 | 181 | 197 | 200 | 202 | 261 |
| 42.13 | 122.02 | 132 | 143 | 153 | 164 | 181 | 203 | 206 | 208 | 266 |
| 42.27 | 118.93 | 122 | 136 | 143 | 156 | 188 | 205 | 208 | 210 | 263 |
| 42.33 | 120.70 | 120 | 140 | 146 | 158 | 180 | 205 | 208 | 210 | 260 |
| 42.35 | 126.82 | 118 | 142 | 148 | 163 | 178 | 196 | 199 | 201 | 266 |
| 42.42 | 122.53 | 115 | 138 | 145 | 158 | 175 | 200 | 203 | 205 | 260 |
| 42.45 | 119.62 | 131 | 142 | 151 | 166 | 186 | 204 | 207 | 209 | 277 |
| 42.53 | 125.63 | 115 | 138 | 144 | 160 | 176 | 196 | 199 | 201 | 263 |
| 42.53 | 128.25 | 120 | 145 | 153 | 169 | 180 | 196 | 199 | 201 | 265 |
| 42.53 | 124.05 | 118 | 136 | 144 | 157 | 176 | 198 | 201 | 203 | 263 |
| 42.63 | 122.13 | 129 | 139 | 148 | 158 | 178 | 201 | 204 | 206 | 266 |
| 42.70 | 122.88 | 127 | 140 | 146 | 163 | 184 | 204 | 207 | 209 | 271 |
| 42.73 | 123.35 | 111 | 131 | 137 | 153 | 174 | 197 | 200 | 202 | 266 |
| 42.78 | 124.10 | 129 | 135 | 145 | 157 | 178 | 199 | 202 | 204 | 265 |
| 42.87 | 129.50 | 122 | 145 | 154 | 173 | 184 | 201 | 204 | 206 | 269 |
| 42.88 | 129.50 | 125 | 145 | 154 | 173 | 184 | 201 | 204 | 206 | 269 |
| 42.88 | 126.05 | 124 | 138 | 147 | 163 | 185 | 202 | 205 | 207 | 267 |
| 42.88 | 129.00 | 128 | 149 | 160 | 179 | 197 | 208 | 211 | 213 | 269 |
| 42.93 | 119.02 | 122 | 139 | 145 | 159 | 190 | 205 | 208 | 210 | 265 |
| 42.98 | 126.73 | 120 | 141 | 146 | 159 | 172 | 196 | 199 | 201 | 270 |
| 42.98 | 126.75 | 118 | 141 | 146 | 159 | 172 | 196 | 199 | 201 | 270 |
| 43.08 | 126.08 | 124 | 139 | 143 | 156 | 178 | 197 | 200 | 202 | 263 |
| 43.10 | 121.47 | 123 | 139 | 148 | 159 | 180 | 202 | 205 | 207 | 262 |
| 43.10 | 122.45 | 124 | 140 | 144 | 160 | 187 | 207 | 210 | 212 | 262 |
| 43.12 | 126.95 | 123 | 140 | 144 | 156 | 180 | 200 | 203 | 205 | 263 |
| 43.15 | 126.78 | 130 | 141 | 145 | 158 | 177 | 198 | 201 | 203 | 266 |
| 43.17 | 124.33 | 118 | 141 | 145 | 159 | 178 | 198 | 201 | 203 | 263 |
| 43.30 | 126.02 | 118 | 139 | 143 | 157 | 178 | 197 | 200 | 202 | 265 |
| 43.30 | 129.78 | 122 | 146 | 155 | 171 | 180 | 200 | 203 | 205 | 266 |
| 43.30 | 124.20 | 129 | 143 | 145 | 160 | 179 | 199 | 202 | 204 | 271 |
| 43.37 | 128.20 | 120 | 146 | 153 | 168 | 180 | 198 | 201 | 203 | 265 |
| 43.42 | 121.08 | 121 | 138 | 145 | 164 | 181 | 203 | 206 | 208 | 273 |
| 43.50 | 123.53 | 120 | 139 | 145 | 159 | 180 | 200 | 203 | 205 | 263 |
| 43.53 | 125.13 | 127 | 139 | 147 | 163 | 189 | 205 | 208 | 210 | 260 |
| 43.58 | 124.05 | 127 | 141 | 147 | 160 | 187 | 205 | 208 | 210 | 262 |
| 43.58 | 119.05 | 121 | 138 | 144 | 157 | 179 | 198 | 201 | 203 | 270 |
| 43.60 | 118.07 | 125 | 139 | 145 | 159 | 190 | 205 | 208 | 210 | 268 |
| 43.60 | 121.28 | 125 | 139 | 146 | 162 | 185 | 205 | 208 | 210 | 265 |
| 43.60 | 122.27 | 125 | 140 | 146 | 160 | 180 | 205 | 208 | 210 | 265 |
| 43.62 | 128.03 | 135 | 148 | 155 | 170 | 191 | 205 | 208 | 210 | 261 |
| 43.63 | 127.25 | 125 | 141 | 147 | 156 | 181 | 198 | 201 | 203 | 262 |
| 43.67 | 126.48 | 117 | 135 | 141 | 154 | 182 | 200 | 203 | 205 | 246 |
| 43.70 | 127.33 | 118 | 140 | 146 | 156 | 180 | 198 | 201 | 203 | 264 |
| 43.70 | 130.25 | 122 | 148 | 155 | 171 | 180 | 200 | 203 | 205 | 266 |

|       |        |     |     |     |     |     |     |     |     |     |
|-------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 43.82 | 125.37 | 116 | 136 | 143 | 158 | 180 | 199 | 202 | 204 | 263 |
| 43.87 | 124.13 | 128 | 139 | 146 | 160 | 183 | 202 | 205 | 207 | 269 |
| 43.90 | 125.22 | 120 | 138 | 144 | 159 | 178 | 198 | 201 | 203 | 265 |
| 43.95 | 126.47 | 118 | 136 | 142 | 156 | 178 | 198 | 201 | 203 | 265 |
| 43.98 | 119.40 | 125 | 138 | 144 | 158 | 190 | 205 | 208 | 210 | 268 |
| 44.15 | 127.25 | 126 | 139 | 148 | 164 | 178 | 198 | 201 | 203 | 261 |
| 44.25 | 123.97 | 120 | 142 | 147 | 161 | 180 | 200 | 203 | 205 | 265 |
| 44.38 | 131.17 | 125 | 149 | 157 | 171 | 183 | 203 | 206 | 208 | 266 |
| 44.42 | 124.62 | 130 | 144 | 148 | 161 | 185 | 204 | 207 | 209 | 263 |
| 44.57 | 129.60 | 125 | 145 | 153 | 168 | 183 | 203 | 206 | 208 | 265 |
| 44.57 | 120.90 | 125 | 141 | 147 | 162 | 190 | 205 | 208 | 210 | 268 |
| 44.57 | 123.52 | 125 | 145 | 151 | 165 | 183 | 203 | 206 | 208 | 266 |
| 44.68 | 125.27 | 124 | 140 | 147 | 159 | 182 | 201 | 204 | 206 | 267 |
| 44.70 | 127.55 | 126 | 142 | 150 | 166 | 196 | 211 | 214 | 216 | 261 |
| 44.78 | 123.07 | 123 | 141 | 147 | 162 | 180 | 203 | 206 | 208 | 265 |
| 44.95 | 120.15 | 125 | 143 | 148 | 163 | 189 | 205 | 208 | 210 | 285 |
| 44.97 | 126.00 | 118 | 140 | 147 | 161 | 180 | 200 | 203 | 205 | 265 |
| 45.00 | 124.02 | 123 | 141 | 147 | 161 | 180 | 202 | 205 | 207 | 265 |
| 45.07 | 121.92 | 129 | 143 | 150 | 168 | 192 | 210 | 213 | 215 | 266 |
| 45.08 | 124.87 | 122 | 141 | 146 | 160 | 180 | 200 | 203 | 205 | 265 |
| 45.08 | 125.13 | 128 | 140 | 146 | 160 | 182 | 201 | 204 | 206 | 262 |
| 45.08 | 124.45 | 131 | 142 | 147 | 161 | 181 | 202 | 205 | 207 | 271 |
| 45.13 | 125.45 | 128 | 141 | 149 | 158 | 187 | 205 | 208 | 210 | 262 |
| 45.22 | 127.97 | 123 | 143 | 150 | 165 | 182 | 203 | 206 | 208 | 265 |
| 45.30 | 130.93 | 125 | 148 | 156 | 169 | 185 | 205 | 208 | 210 | 265 |
| 45.30 | 125.38 | 122 | 138 | 141 | 156 | 183 | 203 | 206 | 208 | 260 |
| 45.33 | 122.78 | 122 | 136 | 143 | 159 | 179 | 200 | 203 | 205 | 266 |
| 45.35 | 126.85 | 122 | 138 | 144 | 156 | 181 | 203 | 206 | 208 | 266 |
| 45.37 | 128.62 | 131 | 145 | 151 | 169 | 188 | 208 | 211 | 213 | 262 |
| 45.63 | 122.83 | 125 | 137 | 145 | 160 | 186 | 205 | 208 | 210 | 265 |
| 45.63 | 126.05 | 126 | 140 | 150 | 167 | 187 | 207 | 210 | 212 | 262 |
| 45.70 | 125.20 | 117 | 148 | 154 | 167 | 179 | 200 | 203 | 205 | 266 |
| 45.70 | 125.25 | 120 | 148 | 154 | 167 | 180 | 202 | 205 | 207 | 266 |
| 45.75 | 126.77 | 122 | 140 | 147 | 161 | 180 | 203 | 206 | 208 | 265 |
| 45.77 | 132.97 | 126 | 146 | 154 | 168 | 185 | 206 | 209 | 211 | 266 |
| 45.97 | 128.73 | 125 | 144 | 151 | 167 | 183 | 205 | 208 | 210 | 265 |
| 46.03 | 130.87 | 139 | 152 | 160 | 171 | 189 | 209 | 212 | 214 | 274 |
| 46.05 | 123.38 | 126 | 138 | 145 | 160 | 180 | 203 | 206 | 208 | 266 |
| 46.07 | 123.70 | 130 | 135 | 146 | 160 | 185 | 206 | 209 | 211 | 271 |
| 46.08 | 122.05 | 128 | 141 | 148 | 165 | 190 | 210 | 213 | 215 | 270 |
| 46.13 | 127.58 | 128 | 146 | 153 | 164 | 181 | 205 | 208 | 210 | 261 |
| 46.25 | 127.28 | 128 | 143 | 151 | 163 | 183 | 206 | 209 | 211 | 270 |
| 46.25 | 130.92 | 132 | 146 | 156 | 170 | 193 | 212 | 215 | 217 | 271 |
| 46.30 | 129.58 | 126 | 146 | 154 | 168 | 185 | 208 | 211 | 213 | 267 |
| 46.32 | 132.18 | 126 | 146 | 154 | 167 | 185 | 206 | 209 | 211 | 268 |
| 46.38 | 125.32 | 125 | 141 | 150 | 168 | 184 | 205 | 208 | 210 | 266 |
| 46.38 | 128.13 | 131 | 146 | 152 | 167 | 181 | 204 | 207 | 209 | 262 |
| 46.40 | 123.42 | 125 | 138 | 147 | 162 | 186 | 208 | 211 | 213 | 268 |
| 46.55 | 126.25 | 119 | 139 | 149 | 164 | 176 | 206 | 209 | 211 | 272 |
| 46.60 | 121.22 | 130 | 144 | 151 | 167 | 190 | 209 | 212 | 214 | 274 |

|       |        |     |     |     |     |     |     |     |     |     |
|-------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 46.62 | 126.97 | 122 | 143 | 151 | 164 | 185 | 208 | 211 | 213 | 266 |
| 46.63 | 125.53 | 122 | 139 | 150 | 170 | 189 | 209 | 212 | 214 | 262 |
| 46.72 | 122.88 | 133 | 145 | 152 | 169 | 178 | 202 | 205 | 207 | 266 |
| 46.82 | 130.28 | 130 | 146 | 154 | 167 | 185 | 210 | 213 | 215 | 268 |
| 46.98 | 128.02 | 130 | 145 | 154 | 167 | 185 | 208 | 211 | 213 | 268 |
| 47.13 | 124.80 | 135 | 146 | 154 | 169 | 188 | 209 | 212 | 214 | 268 |
| 47.13 | 126.02 | 128 | 141 | 154 | 169 | 191 | 212 | 215 | 217 | 269 |
| 47.17 | 125.90 | 130 | 142 | 154 | 169 | 188 | 210 | 213 | 215 | 268 |
| 47.17 | 119.93 | 130 | 146 | 153 | 169 | 190 | 210 | 213 | 215 | 273 |
| 47.18 | 131.22 | 133 | 142 | 148 | 164 | 181 | 206 | 209 | 211 | 272 |
| 47.23 | 131.98 | 130 | 146 | 153 | 167 | 185 | 210 | 213 | 215 | 268 |
| 47.33 | 123.20 | 123 | 139 | 146 | 167 | 187 | 205 | 208 | 210 | 268 |
| 47.33 | 130.27 | 130 | 147 | 156 | 168 | 186 | 210 | 213 | 215 | 267 |
| 47.35 | 130.47 | 137 | 147 | 156 | 168 | 179 | 206 | 209 | 211 | 261 |
| 47.38 | 123.92 | 128 | 142 | 150 | 167 | 190 | 210 | 213 | 215 | 270 |
| 47.38 | 132.63 | 136 | 147 | 154 | 167 | 196 | 216 | 219 | 221 | 262 |
| 47.43 | 126.97 | 131 | 145 | 155 | 167 | 188 | 210 | 213 | 215 | 268 |
| 47.55 | 123.30 | 128 | 142 | 149 | 167 | 187 | 206 | 209 | 211 | 269 |
| 47.72 | 127.62 | 130 | 150 | 162 | 171 | 189 | 210 | 213 | 215 | 277 |
| 47.73 | 128.92 | 132 | 147 | 156 | 169 | 188 | 210 | 213 | 215 | 268 |
| 47.80 | 124.48 | 130 | 143 | 152 | 168 | 190 | 210 | 213 | 215 | 270 |
| 48.00 | 122.73 | 130 | 144 | 152 | 168 | 190 | 210 | 213 | 215 | 272 |
| 48.00 | 123.22 | 138 | 148 | 158 | 171 | 187 | 207 | 210 | 212 | 262 |
| 48.05 | 125.88 | 131 | 144 | 155 | 170 | 190 | 210 | 213 | 215 | 270 |
| 48.12 | 123.38 | 132 | 138 | 148 | 162 | 187 | 207 | 210 | 212 | 275 |
| 48.22 | 118.27 | 130 | 143 | 151 | 167 | 190 | 210 | 213 | 215 | 272 |
| 48.28 | 126.52 | 132 | 146 | 156 | 170 | 190 | 210 | 213 | 215 | 270 |
| 48.67 | 116.82 | 130 | 142 | 150 | 165 | 190 | 210 | 213 | 215 | 272 |
| 48.77 | 121.92 | 130 | 145 | 154 | 170 | 190 | 210 | 213 | 215 | 272 |
| 49.17 | 125.23 | 132 | 149 | 158 | 174 | 190 | 208 | 211 | 213 | 271 |
| 49.17 | 125.28 | 140 | 149 | 159 | 174 | 190 | 210 | 213 | 215 | 272 |
| 49.20 | 119.75 | 135 | 145 | 153 | 169 | 189 | 202 | 205 | 207 | 271 |
| 49.20 | 123.72 | 130 | 144 | 153 | 169 | 190 | 210 | 213 | 215 | 272 |
| 49.22 | 119.75 | 130 | 145 | 154 | 170 | 189 | 205 | 208 | 210 | 272 |
| 49.43 | 127.35 | 132 | 152 | 163 | 175 | 190 | 210 | 213 | 215 | 272 |
| 49.57 | 117.43 | 130 | 143 | 152 | 167 | 190 | 210 | 213 | 215 | 272 |
| 50.25 | 127.47 | 149 | 158 | 168 | 181 | 190 | 210 | 213 | 215 | 272 |
| 50.25 | 127.45 | 133 | 158 | 168 | 181 | 190 | 210 | 213 | 215 | 272 |
| 50.25 | 120.18 | 130 | 145 | 154 | 170 | 190 | 210 | 213 | 215 | 272 |
| 50.40 | 124.12 | 133 | 147 | 156 | 172 | 190 | 210 | 213 | 215 | 272 |
| 50.48 | 121.68 | 130 | 147 | 156 | 172 | 190 | 210 | 213 | 215 | 273 |
| 51.70 | 124.33 | 135 | 149 | 160 | 175 | 190 | 210 | 213 | 215 | 273 |
| 51.72 | 126.65 | 135 | 152 | 162 | 176 | 190 | 210 | 213 | 215 | 273 |
| 52.35 | 124.72 | 135 | 149 | 160 | 175 | 190 | 210 | 213 | 215 | 273 |
| 52.97 | 122.52 | 135 | 147 | 158 | 174 | 183 | 210 | 213 | 215 | 273 |