

HW3_GUO

Qing Guo

9/12/2019

Problem 3

a. Sensory data from five operators

```
#install.packages("tibble")
library(tibble)
#install.packages("dplyr")
library(dplyr)

##
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':
##
##   filter, lag

## The following objects are masked from 'package:base':
##
##   intersect, setdiff, setequal, union

url<-"https://www2.isye.gatech.edu/~jeffwu/wuhamadabook/data/Sensory.dat"
a<-read.table(url,header=T,sep=" ",skip=1,fill=T)
a1<-filter(a,!is.na(X5))
a2<-filter(a,is.na(X5))
Item<-c()
for(i in 1:10){Item<-c(Item,rep(i,2))}
a22<-a2%>%select(Item:X4)%>%colnames<-`(c("X1", "X2", "X3", 'X4', 'X5'))
a22<-cbind(Item,a22)
a<-rbind(a22,a1)
a%>%arrange(Item)
```

```
##   Item  X1  X2  X3  X4  X5
## 1     1  4.3  4.5  4.0  5.5  3.3
## 2     1  4.1  5.3  3.4  5.7  4.7
## 3     1  4.3  4.9  3.3  5.3  4.4
## 4     2  4.9  6.3  4.2  5.5  4.9
## 5     2  6.0  5.9  4.7  6.3  4.6
## 6     2  6.0  5.3  4.5  5.9  4.7
## 7     3  3.9  3.0  2.8  2.7  1.3
## 8     3  1.9  3.9  2.6  4.6  2.2
## 9     3  2.4  2.5  2.3  3.1  2.4
## 10    4  7.1  7.9  5.9  7.3  6.1
## 11    4  6.4  7.1  6.9  7.0  6.7
## 12    4  7.4  8.2  6.4  6.8  6.0
## 13    5  5.8  5.7  5.4  6.2  6.5
## 14    5  5.8  6.0  6.1  7.0  4.9
## 15    5  5.7  6.3  5.4  6.1  5.9
## 16    6  3.0  1.8  2.1  4.0  1.7
## 17    6  2.1  3.3  1.1  3.3  2.1
## 18    6  2.2  2.4  1.7  3.4  1.7
```

```
## 19    7 1.3 2.4 0.8 1.2 1.3
## 20    7 0.9 3.1 1.1 1.9 1.6
## 21    7 1.2 1.5 1.2 0.9 0.7
## 22    8 3.0 4.5 4.7 4.9 4.6
## 23    8 4.8 4.8 4.7 4.8 4.3
## 24    8 4.2 4.8 4.5 4.6 3.2
## 25    9 9.0 7.7 6.7 9.0 7.9
## 26    9 8.9 9.2 8.1 9.1 7.6
## 27    9 8.0 8.6 9.0 9.4 8.8
## 28   10 5.4 5.0 3.4 4.9 4.6
## 29   10 2.8 5.2 4.1 3.9 5.5
## 30   10 5.0 4.8 3.9 5.5 3.8
```

b. Gold Medal performance

```
url<-"https://www2.isye.gatech.edu/~jeffwu/wuhamadabook/data/LongJumpData.dat"
a<-read.table(url,sep=" ",skip=1,fill=T)
a=as.data.frame(a)
a<-rbind(as.matrix(a[,1:2]),as.matrix(a[,3:4]),as.matrix(a[,5:6]),as.matrix(a[,7:8]))
a_new<-a%>%as.data.frame()%>%filter(!is.na(V1&V2))%>%colnames<-c("year","long_jump")
summarise_at(a_new, vars(long_jump),list(~n(), ~mean(., na.rm = TRUE),~median(.,na.rm = TRUE)))
```

```
##      n      mean  median
## 1 22 310.2873 308.125
```

```
summary(lm(long_jump~year,a_new))
```

```
##
## Call:
## lm(formula = long_jump ~ year, data = a_new)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -25.4665  -4.4821  -0.8236   6.3372  24.2246
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)  278.05315     4.25339   65.372 < 2e-16 ***
## year          0.70915     0.07801    9.091 1.53e-08 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 11.02 on 20 degrees of freedom
## Multiple R-squared:  0.8052, Adjusted R-squared:  0.7954
## F-statistic: 82.64 on 1 and 20 DF,  p-value: 1.532e-08
```

c. Brain weight (g) and body weight (kg)

```
url<-"https://www2.isye.gatech.edu/~jeffwu/wuhamadabook/data/BrainandBodyWeight.dat"
a<-read.table(url,sep=" ",skip=1,fill=T)
a<-rbind(as.matrix(a[,1:2]),as.matrix(a[,3:4]),as.matrix(a[,5:6]))
a<-a[1:62,]
a<-as.data.frame(a)
colnames(a)<-c("Body WT","Brain WT")
a
```

```
##      Body WT Brain WT
```

## 1	3.385	44.50
## 2	0.480	15.50
## 3	1.350	8.10
## 4	465.000	423.00
## 5	36.330	119.50
## 6	27.660	115.00
## 7	14.830	98.20
## 8	1.040	5.50
## 9	4.190	58.00
## 10	0.425	6.40
## 11	0.101	4.00
## 12	0.920	5.70
## 13	1.000	6.60
## 14	0.005	0.10
## 15	0.060	1.00
## 16	3.500	10.80
## 17	2.000	12.30
## 18	1.700	6.30
## 19	2547.000	4603.00
## 20	0.023	0.30
## 21	187.100	419.00
## 22	521.000	655.00
## 23	0.785	3.50
## 24	10.000	115.00
## 25	3.300	25.60
## 26	0.200	5.00
## 27	1.410	17.50
## 28	529.000	680.00
## 29	207.000	406.00
## 30	85.000	325.00
## 31	0.750	12.30
## 32	62.000	1320.00
## 33	6654.000	5712.00
## 34	3.500	3.90
## 35	6.800	179.00
## 36	35.000	56.00
## 37	4.050	17.00
## 38	0.120	1.00
## 39	0.023	0.40
## 40	0.010	0.30
## 41	1.400	12.50
## 42	250.000	490.00
## 43	2.500	12.10
## 44	55.500	175.00
## 45	100.000	157.00
## 46	52.160	440.00
## 47	10.550	179.50
## 48	0.550	2.40
## 49	60.000	81.00
## 50	3.600	21.00
## 51	4.288	39.20
## 52	0.280	1.90
## 53	0.075	1.20
## 54	0.122	3.00

```
## 55    0.048    0.33
## 56  192.000   180.00
## 57    3.000   25.00
## 58  160.000  169.00
## 59    0.900    2.60
## 60    1.620   11.40
## 61    0.104    2.50
## 62    4.235   50.40
```

```
summarise_at(a, vars(c("Body WT", "Brain WT")), list(~n(), ~mean(., na.rm = TRUE), ~median(., na.rm = TRUE))
```

```
##   Body WT_n Brain WT_n Body WT_mean Brain WT_mean Body WT_median
## 1         62         62      198.79      283.1344         3.3425
##   Brain WT_median
## 1              17.25
```

d. Triplicate measurements of tomato yield

```
library(stringr)
url<-"https://www2.isye.gatech.edu/~jeffwu/wuhamadabook/data/tomato.dat"
a<-read.table(url, sep=" ", skip=1, fill=T, comment.char="")
a<-as.data.frame(a)
d<-c()
for (i in 1:2){
  for (j in 1:3){
    bi_j<-a[i,j]
    bi_j<-unlist(str_split(bi_j, " "))
    bi_j<-as.numeric(bi_j[1:3])
    d<-c(d, bi_j)
  }
}
b1<-d[1:9]
b2<-d[10:18]
b3<-c(rep(10000, 3), rep(20000, 3), rep(30000, 3))
dataframe<-tibble(b3, b1, b2)
colnames(dataframe)<-c("Number", "Ife\\#1", "PusaEarlyDwarf")
dataframe<-as.data.frame(dataframe)
summarise_at(dataframe, vars(c("Ife\\#1", "PusaEarlyDwarf")), list(~n(), ~mean(., na.rm = TRUE), ~median(
```

```
##   Ife\\#1_n PusaEarlyDwarf_n Ife\\#1_mean PusaEarlyDwarf_mean
## 1         9              9    -18.11111    -12.02222
##   Ife\\#1_median PusaEarlyDwarf_median
## 1             -18              -12.7
```

```
t = dataframe %>% group_by(Number) %>%
  summarise_at(vars("Ife\\#1": "PusaEarlyDwarf"), funs(n(), mean(., na.rm = TRUE)))
```

```
## Warning: funs() is soft deprecated as of dplyr 0.8.0
```

```
## Please use a list of either functions or lambdas:
```

```
##
```

```
##   # Simple named list:
```

```
##   list(mean = mean, median = median)
```

```
##
```

```
##   # Auto named with `tibble::lst()`:
```

```
##   tibble::lst(mean, median)
```

```
##
```

```
##   # Using lambdas
```

```
## list(~ mean(., trim = .2), ~ median(., na.rm = TRUE))
## This warning is displayed once per session.
```

```
t
```

```
## # A tibble: 3 x 5
##   Number `lfe`\\#1_n` PusaEarlyDwarf_n `lfe`\\#1_mean` PusaEarlyDwarf_mean
##   <dbl>      <int>      <int>      <dbl>      <dbl>
## 1 -30000         3         3      -19.9      -14.5
## 2 -20000         3         3      -18.1      -12.6
## 3 -10000         3         3      -16.3      -8.93
```

Praoblem 5

```
#install.packages("swirl")
library(swirl)
```

```
##
## | Hi! I see that you have some variables saved in your workspace. To keep
## | things running smoothly, I recommend you clean up before starting swirl.
##
## | Type ls() to see a list of the variables in your workspace. Then, type
## | rm(list=ls()) to clear your workspace.
##
## | Type swirl() when you are ready to begin.
```

```
install_course("R_Programming_E")
```

```
##
|
| 0%
|
|== 3%
|
|==== 5%
|
|===== 8%
|
|===== 9%
|
|===== 10%
|
|===== 11%
|
|===== 14%
|
|===== 15%
|
|===== 17%
|
|===== 20%
|
|===== 24%
|
|===== 24%
|
```

=====	26%
=====	27%
=====	31%
=====	33%
=====	36%
=====	40%
=====	41%
=====	43%
=====	47%
=====	48%
=====	52%
=====	53%
=====	53%
=====	54%
=====	55%
=====	57%
=====	58%
=====	60%
=====	62%
=====	64%
=====	65%
=====	66%
=====	70%
=====	72%
=====	76%
=====	78%
=====	78%

```

===== | 82%
===== | 85%
===== | 89%
===== | 91%
===== | 93%
===== | 97%
===== | 100%

```

```
##
## | Course installed successfully!
```

```
swirl()
bye()
```

```
##
## | Leaving swirl now. Type swirl() to resume.
```

```

# Path to data
.datapath <- file.path(path.package('swirl'), 'Courses',
                        'R_Programming_E', 'Looking_at_Data',
                        'plant-data.txt')

# Read in data
plants <- read.csv(.datapath, strip.white=TRUE, na.strings="")
.cols2rm <- c('Accepted.Symbol', 'Synonym.Symbol')
plants <- plants[, !(names(plants) %in% .cols2rm)]
# Make names pretty
names(plants) <- c('Scientific_Name', 'Duration', 'Active_Growth_Period',
                  'Foliage_Color', 'pH_Min', 'pH_Max',
                  'Precip_Min', 'Precip_Max',
                  'Shade_Tolerance', 'Temp_Min_F')
na_plants<-apply(is.na(plants),1,sum)
plants<-plants[-which((na_plants)>0),]
plants_1<-plants%>%select(c('Scientific_Name','Foliage_Color', 'pH_Min', 'pH_Max'))
plants<-plants_1
plants$PH_Mean<-(plants$pH_Min+plants$pH_Max)/2
plants$Foliage_Color<-factor(plants$Foliage_Color)
plants

```

```
##
## 4      Scientific_Name Foliage_Color pH_Min
## 9      Acacia constricta      Green    7.0
## 14     Acalypha virginica      Green    5.9
## 17     Acer negundo           Green    5.0
## 19     Acer nigrum            Green    4.5
## 20     Acer pensylvanicum     Green    4.4
## 21     Acer platanoides       Green    4.8
## 22     Acer pseudoplatanus    Yellow-Green 5.8
## 23     Acer rubrum            Green    4.7
## 26     Acer saccharinum       Green    4.0
## 27     Acer saccharum        Green    3.7
```

## 29	Acer spicatum	Green	4.8
## 31	Achillea millefolium	Green	6.0
## 32	Achillea millefolium var. occidentalis	Green	6.0
## 43	Acorus calamus	Green	5.2
## 51	Adiantum capillus-veneris	Green	6.0
## 52	Adiantum pedatum	Dark Green	4.6
## 63	Aesculus flava	Green	5.0
## 90	Agrimonia gryposepala	Green	4.5
## 92	Agrimonia parviflora	Green	6.0
## 94	Agrimonia rostellata	Green	4.5
## 95	Agrimonia striata	Green	5.5
## 99	Agrostis canina	Green	5.0
## 100	Agrostis capillaris	Green	4.9
## 102	Agrostis gigantea	Green	4.5
## 103	Agrostis hyemalis	Green	5.0
## 104	Agrostis perennans	Green	5.5
## 105	Agrostis scabra	Green	6.0
## 106	Agrostis stolonifera	Green	5.1
## 108	Ailanthus altissima	Green	4.1
## 117	Ajuga reptans	Green	5.5
## 121	Albizia julibrissin	White-Gray	4.8
## 128	Alisma subcordatum	Green	5.0
## 146	Alnus incana	Green	5.0
## 147	Alnus incana ssp. rugosa	Dark Green	4.8
## 148	Alnus maritima	Green	5.0
## 149	Alnus serrulata	Green	5.0
## 151	Alopecurus aequalis	Green	5.5
## 153	Alopecurus carolinianus	Green	4.0
## 154	Alopecurus geniculatus	Green	4.0
## 156	Alopecurus myosuroides	Green	4.0
## 157	Alopecurus pratensis	Green	5.8
## 187	Amelanchier arborea	Dark Green	4.8
## 189	Amelanchier canadensis	Green	5.5
## 192	Amelanchier laevis	Green	4.8
## 194	Amelanchier obovalis	Dark Green	5.0
## 195	Amelanchier sanguinea	Green	4.5
## 201	Ammannia coccinea	Green	4.0
## 204	Ammophila arenaria	Green	6.0
## 205	Ammophila breviligulata	Green	5.8
## 207	Amorpha fruticosa	Green	5.0
## 209	Ampelopsis arborea	Green	4.0
## 211	Ampelopsis cordata	Green	5.2
## 226	Anaphalis margaritacea	Green	6.0
## 231	Andropogon gerardii	Green	6.0
## 233	Andropogon glomeratus	Green	5.0
## 238	Andropogon ternarius	Green	4.0
## 240	Andropogon virginicus	Green	4.9
## 258	Antennaria neglecta	Dark Green	5.5
## 279	Apios americana	Green	6.0
## 286	Apocynum cannabinum	Green	4.5
## 307	Aralia nudicaulis	Dark Green	5.0
## 310	Aralia spinosa	Green	4.8
## 316	Arctostaphylos uva-ursi	Dark Green	5.5
## 326	Argentina anserina	Green	7.0

## 329	Arisaema triphyllum	Green	4.8
## 359	Arrhenatherum elatius	Green	5.0
## 368	Artemisia ludoviciana	White-Gray	6.0
## 381	Arundinaria gigantea	Dark Green	5.0
## 384	Arundo donax	Green	4.8
## 390	Asclepias incarnata	Green	5.0
## 400	Asclepias tuberosa	Green	4.8
## 406	Asimina triloba	Dark Green	4.7
## 438	Astragalus canadensis	Green	6.0
## 444	Athyrium filix-femina	Green	4.5
## 466	Avena fatua	Green	6.0
## 467	Avena sativa	Green	5.3
## 473	Baccharis halimifolia	Dark Green	5.5
## 479	Bacopa rotundifolia	Green	5.4
## 488	Baptisia tinctoria	Gray-Green	5.8
## 504	Berberis thunbergii	Dark Green	5.5
## 511	Betula alleghaniensis	Green	4.0
## 514	Betula lenta	Green	3.6
## 515	Betula nigra	Green	3.0
## 516	Betula papyrifera	Green	4.2
## 518	Betula populifolia	Green	3.5
## 522	Bidens aristosa	Green	5.0
## 526	Bidens cernua	Green	5.1
## 527	Bidens connata	Green	5.2
## 528	Bidens coronata	Green	5.2
## 529	Bidens discoidea	Green	5.1
## 530	Bidens frondosa	Green	5.2
## 531	Bidens laevis	Green	5.0
## 532	Bidens mitis	Green	5.0
## 535	Bidens tripartita	Green	5.0
## 546	Boehmeria cylindrica	Green	5.1
## 552	Boltonia asteroides	Green	5.3
## 557	Borrichia frutescens	Green	6.1
## 559	Bothriochloa pertusa	Green	5.0
## 564	Botrychium lanceolatum	Green	4.4
## 570	Botrychium virginianum	Green	5.6
## 575	Bouteloua curtipendula	Green	5.5
## 577	Bouteloua hirsuta	Green	6.0
## 586	Brassica juncea	Dark Green	6.0
## 587	Brassica napus	Dark Green	6.0
## 590	Brassica rapa	Green	5.0
## 599	Bromus arvensis	Green	5.2
## 600	Bromus briziformis	Green	5.3
## 601	Bromus catharticus	Green	5.5
## 602	Bromus ciliatus	Green	5.5
## 607	Bromus hordeaceus ssp. hordeaceus	Green	5.5
## 608	Bromus inermis	Green	5.5
## 611	Bromus kalmii	Green	5.7
## 617	Bromus rubens	Green	6.0
## 639	Cabomba caroliniana	Gray-Green	5.7
## 642	Cajanus cajan	Green	5.0
## 650	Calamagrostis canadensis	Green	4.5
## 652	Calamagrostis coarctata	Green	4.0
## 664	Callicarpa americana	Green	4.8

## 671	<i>Callitriche palustris</i>	Green	5.2
## 678	<i>Caltha palustris</i>	Green	4.9
## 694	<i>Camassia scilloides</i>	Green	4.2
## 700	<i>Campanula aparinoides</i>	Green	6.0
## 705	<i>Campanulastrum americanum</i>	Green	5.5
## 707	<i>Campsis radicans</i>	Green	4.9
## 718	<i>Caragana arborescens</i>	Green	5.0
## 721	<i>Cardamine bulbosa</i>	Green	5.0
## 724	<i>Cardamine douglassii</i>	Green	6.0
## 730	<i>Cardamine pensylvanica</i>	Green	4.8
## 741	<i>Carex abscondita</i>	Green	4.8
## 750	<i>Carex albolutescens</i>	Green	4.3
## 752	<i>Carex amphibola</i>	Green	5.9
## 755	<i>Carex aquatilis</i>	Green	4.0
## 760	<i>Carex atlantica</i>	Green	4.5
## 764	<i>Carex baileyi</i>	Green	4.8
## 766	<i>Carex blanda</i>	Green	4.4
## 773	<i>Carex bushii</i>	Green	5.8
## 775	<i>Carex canescens</i>	Gray-Green	5.1
## 782	<i>Carex cephalophora</i>	Green	4.8
## 786	<i>Carex comosa</i>	Green	4.6
## 791	<i>Carex crinita</i>	Green	4.0
## 794	<i>Carex cristatella</i>	Green	4.9
## 796	<i>Carex debilis</i>	Green	4.6
## 801	<i>Carex decomposita</i>	Green	4.5
## 802	<i>Carex diandra</i>	Green	5.0
## 812	<i>Carex echinata</i>	Green	5.6
## 820	<i>Carex flaccosperma</i>	Gray-Green	4.6
## 822	<i>Carex frankii</i>	Green	5.9
## 824	<i>Carex glaucescens</i>	Green	4.0
## 827	<i>Carex gracillima</i>	Dark Green	4.7
## 828	<i>Carex granularis</i>	Green	6.0
## 832	<i>Carex grayi</i>	Green	5.7
## 841	<i>Carex hyalinolepis</i>	Gray-Green	5.6
## 843	<i>Carex interior</i>	Green	5.4
## 844	<i>Carex intumescens</i>	Dark Green	4.8
## 846	<i>Carex joorii</i>	Green	4.7
## 849	<i>Carex lacustris</i>	Green	5.6
## 859	<i>Carex leptalea</i>	Green	4.8
## 862	<i>Carex leptonervia</i>	Green	5.0
## 869	<i>Carex lupulina</i>	Green	6.2
## 870	<i>Carex lurida</i>	Green	4.9
## 875	<i>Carex molesta</i>	Green	4.9
## 881	<i>Carex normalis</i>	Green	4.7
## 892	<i>Carex polymorpha</i>	Dark Green	4.8
## 893	<i>Carex prasina</i>	Green	4.8
## 894	<i>Carex projecta</i>	Green	4.8
## 902	<i>Carex scabrata</i>	Green	4.7
## 903	<i>Carex scoparia</i>	Green	4.6
## 906	<i>Carex shortiana</i>	Green	4.7
## 909	<i>Carex sparganioides</i>	Dark Green	5.0
## 911	<i>Carex squarrosa</i>	Green	5.6
## 912	<i>Carex stipata</i>	Green	4.9
## 915	<i>Carex straminea</i>	Green	4.7

## 920	Carex stricta	Green	3.5
## 923	Carex tenera	Green	4.9
## 929	Carex torta	Green	5.0
## 930	Carex tribuloides	Green	4.8
## 933	Carex trichocarpa	Green	5.7
## 934	Carex trisperma	Green	4.5
## 937	Carex typhina	Green	5.7
## 939	Carex utriculata	Green	5.7
## 943	Carex vesicaria	Green	4.5
## 946	Carex viridula	Green	4.5
## 947	Carex vulpinoidea	Green	6.8
## 952	Carpinus caroliniana	Green	4.0
## 958	Carya cordiformis	Green	4.8
## 959	Carya glabra	Green	4.8
## 960	Carya illinoensis	Yellow-Green	4.5
## 961	Carya laciniata	Green	5.0
## 963	Carya ovata	Green	4.0
## 967	Castanea dentata	Yellow-Green	5.5
## 972	Castilleja coccinea	Green	4.9
## 974	Catalpa bignonioides	Green	5.5
## 976	Catalpa speciosa	Dark Green	5.5
## 978	Caulophyllum thalictroides	Green	4.5
## 980	Ceanothus americanus	Green	4.3
## 982	Celastrus orbiculatus	Green	5.0
## 983	Celastrus scandens	Green	5.0
## 987	Celtis laevigata	Green	4.4
## 989	Celtis occidentalis	Green	6.0
## 1017	Cephalanthus occidentalis	Green	4.7
## 1031	Ceratophyllum demersum	Gray-Green	6.0
## 1034	Cercis canadensis	Green	5.0
## 1037	Chaenomeles japonica	Green	4.5
## 1049	Chamaecrista fasciculata	Green	5.5
## 1056	Chamaecyparis thyoides	Green	3.5
## 1058	Chamaedaphne calyculata	Yellow-Green	5.0
## 1075	Chasmanthium latifolium	Green	5.0
## 1076	Chasmanthium laxum	Green	4.5
## 1104	Chenopodium rubrum	Green	6.0
## 1112	Chimaphila umbellata	Green	5.4
## 1115	Chionanthus virginicus	Green	4.5
## 1133	Cichorium intybus	Green	6.0
## 1139	Cinna arundinacea	Green	4.0
## 1140	Cinna latifolia	Green	4.7
## 1142	Circaea alpina	Green	5.0
## 1178	Clematis virginiana	Green	5.0
## 1187	Clethra alnifolia	Green	4.5
## 1191	Clintonia borealis	Green	5.0
## 1198	Coelorachis rugosa	Green	5.0
## 1212	Commelina diffusa	Yellow-Green	5.2
## 1216	Commelina virginica	Green	4.7
## 1218	Comptonia peregrina	Green	4.0
## 1222	Conoclinium coelestinum	Green	5.5
## 1231	Convallaria majalis	Green	5.5
## 1235	Conyza canadensis	Green	4.8
## 1250	Coreopsis lanceolata	Green	6.0

## 1252	Coreopsis tinctoria	Green	5.2
## 1259	Cornus alternifolia	Dark Green	4.8
## 1260	Cornus amomum	Green	5.0
## 1261	Cornus canadensis	Dark Green	5.5
## 1262	Cornus florida	Green	4.8
## 1263	Cornus foemina	Green	5.8
## 1265	Cornus racemosa	Green	4.8
## 1266	Cornus rugosa	Green	6.4
## 1268	Cornus sericea ssp. sericea	Green	4.8
## 1275	Corydalis flavula	White-Gray	4.8
## 1278	Corylus americana	Green	5.0
## 1279	Corylus cornuta	Green	4.8
## 1292	Crataegus crus-galli	Green	4.5
## 1304	Crataegus phaenopyrum	Green	4.3
## 1309	Crataegus viridis	Yellow-Green	4.3
## 1360	Cydonia oblonga	Green	5.0
## 1371	Cynodon dactylon	Green	5.0
## 1380	Cyperus acuminatus	Green	4.9
## 1381	Cyperus bipartitus	Green	4.5
## 1382	Cyperus compressus	Green	5.0
## 1388	Cyperus erythrorhizos	Dark Green	5.0
## 1389	Cyperus esculentus	Green	5.0
## 1393	Cyperus flavescens	Green	5.0
## 1400	Cyperus lancastricensis	Green	5.0
## 1404	Cyperus odoratus	Green	5.0
## 1406	Cyperus polystachyos	Green	4.5
## 1408	Cyperus pseudovegetus	Green	4.6
## 1415	Cyperus strigosus	Green	6.4
## 1429	Cytisus scoparius	Green	5.5
## 1432	Dactylis glomerata	Green	5.0
## 1446	Danthonia compressa	Green	4.8
## 1459	Decodon verticillatus	Green	4.9
## 1469	Deschampsia flexuosa	Green	4.8
## 1476	Desmanthus illinoensis	Green	5.0
## 1495	Desmodium paniculatum	Green	6.0
## 1498	Desmodium perplexum	Green	5.6
## 1520	Dichanthelium aciculare	Gray-Green	4.0
## 1527	Dichanthelium clandestinum	Green	4.0
## 1528	Dichanthelium commutatum	Green	4.0
## 1534	Dichanthelium latifolium	Green	4.0
## 1543	Dichanthelium ovale	Green	4.0
## 1550	Dichanthelium scabriusculum	Green	4.0
## 1551	Dichanthelium scoparium	Gray-Green	4.5
## 1563	Diervilla lonicera	Dark Green	4.8
## 1567	Digitalis purpurea	Dark Green	5.5
## 1590	Diospyros virginiana	Dark Green	4.7
## 1602	Distichlis spicata	Green	6.4
## 1604	Dodecatheon meadia	Green	4.5
## 1629	Dryopteris cristata	Dark Green	3.5
## 1642	Dulichium arundinaceum	Dark Green	4.7
## 1652	Echinacea pallida	Green	6.5
## 1653	Echinacea purpurea	Green	6.5
## 1655	Echinochloa colona	Green	4.0
## 1659	Echinochloa frumentacea	Green	4.7

## 1663	Echinochloa walteri	Green	3.8
## 1674	Eclipta prostrata	Green	5.2
## 1678	Elaeagnus angustifolia	White-Gray	6.0
## 1679	Elaeagnus commutata	White-Gray	5.0
## 1681	Elaeagnus umbellata	White-Gray	5.0
## 1703	Eleocharis obtusa	Dark Green	4.1
## 1707	Eleocharis palustris	Dark Green	4.0
## 1713	Eleocharis tenuis	Dark Green	6.2
## 1721	Elephantopus carolinianus	Dark Green	5.0
## 1729	Elodea canadensis	Gray-Green	4.8
## 1732	Elymus canadensis	Green	5.0
## 1738	Elymus repens	Green	5.2
## 1739	Elymus riparius	Dark Green	4.5
## 1742	Elymus trachycaulus ssp. trachycaulus	Green	5.6
## 1744	Elymus virginicus	Green	5.0
## 1756	Epilobium coloratum	Green	4.5
## 1758	Epilobium leptophyllum	Green	4.0
## 1763	Equisetum arvense	Green	4.0
## 1765	Equisetum fluviatile	Green	4.5
## 1769	Equisetum sylvaticum	Green	4.0
## 1774	Eragrostis curvula	Green	4.5
## 1778	Eragrostis hypnoides	Green	4.5
## 1787	Eragrostis spectabilis	Green	4.0
## 1797	Erigeron philadelphicus	Green	4.8
## 1802	Erigeron strigosus	Green	4.8
## 1807	Eriocaulon decangulare	Dark Green	4.0
## 1816	Eriophorum gracile	Green	4.0
## 1818	Eriophorum virginicum	Green	3.8
## 1835	Erysimum capitatum var. capitatum	Green	6.0
## 1903	Eurybia macrophylla	Dark Green	4.9
## 1923	Fagus grandifolia	Green	4.1
## 1931	Festuca rubra	Green	5.0
## 1933	Festuca subverticillata	Green	5.5
## 1959	Forsythia suspensa	Green	5.0
## 1970	Fraxinus americana	Green	4.7
## 1971	Fraxinus nigra	Green	4.4
## 1972	Fraxinus pennsylvanica	Yellow-Green	4.7
## 1973	Fraxinus profunda	Green	4.5
## 2000	Galium aparine	Green	5.4
## 2001	Galium asprellum	Green	5.0
## 2002	Galium boreale	Green	5.0
## 2011	Galium obtusum	Green	4.6
## 2019	Galium tinctorium	Green	4.6
## 2021	Galium trifidum	Green	4.6
## 2030	Gaultheria hispidula	Dark Green	4.0
## 2031	Gaultheria procumbens	Dark Green	4.0
## 2036	Gaylussacia baccata	Green	4.5
## 2038	Gaylussacia dumosa	Green	4.3
## 2039	Gaylussacia frondosa	Green	3.8
## 2044	Gentiana andrewsii	Green	5.8
## 2048	Gentiana clausa	Green	5.8
## 2074	Geum canadense	Green	4.5
## 2076	Geum laciniatum	Green	5.0
## 2079	Geum rivale	Green	4.8

## 2080	Geum vernum	Green	4.8
## 2091	Glaux maritima	Green	6.5
## 2097	Gleditsia triacanthos	Green	4.8
## 2102	Glyceria canadensis	Green	5.0
## 2107	Glyceria melicaria	Green	4.5
## 2108	Glyceria obtusa	Green	4.0
## 2110	Glyceria striata	Green	4.0
## 2112	Glycine max	Green	5.5
## 2159	Hamamelis virginiana	Green	4.5
## 2166	Hedera helix	Green	5.2
## 2170	Helenium autumnale	Green	4.0
## 2172	Helenium flexuosum	Green	4.5
## 2178	Helianthus angustifolius	Dark Green	4.0
## 2179	Helianthus annuus	Green	5.5
## 2180	Helianthus debilis	Green	5.2
## 2185	Helianthus grosseserratus	Dark Green	5.8
## 2200	Helianthus tuberosus	Yellow-Green	4.0
## 2205	Heliotropium curassavicum	Gray-Green	6.5
## 2223	Heracleum maximum	Green	5.4
## 2232	Hesperis matronalis	Green	5.0
## 2254	Hibiscus laevis	Green	5.5
## 2255	Hibiscus moscheutos	Gray-Green	4.0
## 2275	Holcus lanatus	White-Gray	4.0
## 2282	Hordeum brachyantherum	Green	6.0
## 2289	Hordeum pusillum	Green	6.2
## 2290	Hordeum vulgare	Green	5.0
## 2305	Hudsonia tomentosa	Gray-Green	5.5
## 2333	Hydrolea quadrivalvis	Green	5.7
## 2349	Hypericum ascyron	Green	5.7
## 2351	Hypericum crux-andreae	Green	4.6
## 2352	Hypericum densiflorum	Green	4.0
## 2353	Hypericum denticulatum	Green	4.8
## 2357	Hypericum gentianoides	Green	4.6
## 2362	Hypericum mutilum	Green	4.6
## 2364	Hypericum prolificum	Green	4.6
## 2365	Hypericum punctatum	Green	4.6
## 2370	Hypoxis hirsuta	Green	5.2
## 2372	Ilex decidua	Dark Green	3.5
## 2373	Ilex glabra	Green	4.5
## 2377	Ilex opaca	Green	4.5
## 2379	Ilex verticillata	Green	4.5
## 2381	Impatiens capensis	Green	6.4
## 2382	Impatiens pallida	Green	6.8
## 2410	Iris virginica	Green	4.8
## 2426	Itea virginica	Green	4.0
## 2428	Iva frutescens	Green	5.0
## 2439	Juglans cinerea	Green	6.0
## 2440	Juglans nigra	Green	4.6
## 2442	Juncus acuminatus	Green	4.4
## 2446	Juncus articulatus	Green	4.8
## 2447	Juncus biflorus	Green	4.5
## 2448	Juncus brachycarpus	Green	4.5
## 2449	Juncus brachycephalus	Green	5.9
## 2451	Juncus bufonius	Green	4.6

## 2454	Juncus canadensis	Green	4.5
## 2458	Juncus dichotomus	Red	4.5
## 2461	Juncus effusus	Dark Green	5.5
## 2471	Juncus marginatus	Green	5.5
## 2472	Juncus megacephalus	Green	4.5
## 2476	Juncus repens	Green	5.5
## 2477	Juncus roemerianus	Dark Green	4.0
## 2478	Juncus scirpoides	Green	5.6
## 2479	Juncus secundus	Green	4.9
## 2480	Juncus subcaudatus	Green	4.5
## 2482	Juncus tenuis	Green	4.5
## 2483	Juncus torreyi	Green	4.5
## 2485	Juncus validus	Green	5.0
## 2488	Juniperus communis	Green	5.5
## 2490	Juniperus virginiana	Green	4.7
## 2493	Justicia americana	Dark Green	5.4
## 2498	Kalmia latifolia	Green	4.5
## 2506	Koeleria macrantha	Green	6.0
## 2508	Koeleria paniculata	Green	4.5
## 2517	Kummerowia stipulacea	Green	5.5
## 2518	Kummerowia striata	Green	4.9
## 2524	Lablab purpureus	Green	4.5
## 2526	Lachnanthes carolina	Gray-Green	4.0
## 2539	Lagerstroemia indica	Green	5.0
## 2554	Larix decidua	Yellow-Green	6.0
## 2555	Larix laricina	Dark Green	5.5
## 2558	Lathyrus hirsutus	Yellow-Green	5.8
## 2578	Leersia lenticularis	Green	5.0
## 2579	Leersia oryzoides	Dark Green	5.1
## 2580	Leersia virginica	Green	4.5
## 2610	Leptochloa dubia	Green	6.0
## 2612	Leptochloa fusca ssp. fascicularis	Green	4.0
## 2617	Lespedeza capitata	Green	5.7
## 2620	Lespedeza hirta	Dark Green	5.8
## 2631	Leucanthemum vulgare	Green	5.2
## 2641	Liatris spicata	Green	5.6
## 2652	Ligustrum amurense	Green	5.8
## 2653	Ligustrum japonicum	Dark Green	5.5
## 2656	Ligustrum ovalifolium	Green	5.9
## 2659	Ligustrum vulgare	Green	5.0
## 2671	Limnium spongia	Green	5.0
## 2673	Limonium carolinianum	Green	6.0
## 2681	Lindera benzoin	Green	4.5
## 2697	Linum striatum	Green	5.0
## 2708	Liquidambar styraciflua	Green	4.5
## 2710	Liriodendron tulipifera	Green	4.5
## 2712	Liriope muscari	Green	5.0
## 2726	Lobelia cardinalis	Green	5.8
## 2744	Lolium perenne	Green	5.0
## 2745	Lolium perenne ssp. multiflorum	Green	5.0
## 2754	Lonicera japonica	Green	4.9
## 2755	Lonicera maackii	Green	5.5
## 2757	Lonicera sempervirens	Green	6.0
## 2759	Lonicera tatarica	Green	5.2

## 2762	Lotus corniculatus	Green	5.0
## 2768	Ludwigia decurrens	Green	4.0
## 2774	Ludwigia palustris	Gray-Green	5.0
## 2812	Lycopodium annotinum	Green	4.0
## 2820	Lycopus americanus	Green	5.2
## 2823	Lycopus rubellus	Green	5.2
## 2827	Lycopus virginicus	Dark Green	5.0
## 2838	Lysimachia lanceolata	Green	5.0
## 2845	Lysimachia thyrsiflora	Green	4.8
## 2855	Maclura pomifera	Green	4.5
## 2859	Magnolia acuminata	Green	5.2
## 2860	Magnolia grandiflora	Green	4.5
## 2862	Magnolia tripetala	Green	5.0
## 2863	Magnolia virginiana	Dark Green	5.0
## 2906	Maurandella antirrhiniflora	Green	6.8
## 2916	Medicago lupulina	Dark Green	5.5
## 2920	Medicago sativa	Green	6.0
## 2923	Medicago scutellata	Dark Green	5.9
## 2935	Melilotus officinalis	Green	6.5
## 2949	Mentha arvensis	Green	5.0
## 2956	Menyanthes trifoliata	Green	4.8
## 2962	Mertensia virginica	Green	4.5
## 2970	Mikania scandens	Green	5.7
## 2978	Mimulus alatus	Green	6.2
## 2990	Miscanthus sinensis	Green	4.6
## 3008	Monarda fistulosa	Gray-Green	6.0
## 3024	Morella caroliniensis	Dark Green	4.5
## 3025	Morella cerifera	Green	5.4
## 3026	Morella pennsylvanica	Green	5.5
## 3028	Morus alba	Green	5.0
## 3029	Morus rubra	Green	5.0
## 3032	Muhlenbergia asperifolia	Yellow-Green	6.0
## 3034	Muhlenbergia capillaris	Yellow-Green	5.8
## 3035	Muhlenbergia frondosa	Green	5.9
## 3037	Muhlenbergia glomerata	Green	5.3
## 3038	Muhlenbergia mexicana	Green	5.5
## 3039	Muhlenbergia schreberi	Green	4.5
## 3041	Muhlenbergia sylvatica	Green	5.9
## 3044	Muhlenbergia uniflora	Green	4.8
## 3055	Myosotis scorpioides	Green	5.5
## 3119	Nyssa biflora	Green	4.5
## 3120	Nyssa sylvatica	Green	4.5
## 3130	Oenothera biennis	Green	5.0
## 3131	Oenothera fruticosa	Green	4.5
## 3147	Oligoneuron rigidum var. rigidum	Green	5.0
## 3191	Osmunda cinnamomea	Green	4.5
## 3194	Osmunda claytoniana	Dark Green	4.0
## 3195	Osmunda regalis	Dark Green	4.0
## 3196	Osmunda regalis var. spectabilis	Green	4.3
## 3198	Ostrya virginiana	Green	4.2
## 3207	Oxydendrum arboreum	Green	4.0
## 3212	Pachysandra terminalis	Dark Green	5.5
## 3216	Packera aurea	Green	4.5
## 3217	Packera glabella	Green	4.0

## 3225	Panicum amarum	Green	5.0
## 3230	Panicum dichotomiflorum	Green	4.8
## 3235	Panicum miliaceum	Green	5.8
## 3240	Panicum rigidulum	Green	5.0
## 3246	Panicum virgatum	Green	4.5
## 3278	Parthenocissus quinquefolia	Green	5.0
## 3279	Parthenocissus tricuspidata	Dark Green	5.0
## 3283	Paspalum dilatatum	Green	4.9
## 3285	Paspalum distichum	Green	4.9
## 3287	Paspalum fluitans	Gray-Green	6.0
## 3288	Paspalum laeve	Green	4.5
## 3296	Passiflora lutea	Green	4.5
## 3302	Paulownia tomentosa	Green	4.5
## 3306	Pedicularis canadensis	Gray-Green	4.0
## 3314	Peltandra virginica	Green	5.0
## 3316	Pennisetum glaucum	Green	5.5
## 3320	Penstemon digitalis	Red	5.5
## 3325	Penthorum sedoides	Green	5.0
## 3330	Persea palustris	Green	5.0
## 3344	Phalaris arundinacea	Green	5.5
## 3357	Philadelphus coronarius	Green	5.3
## 3363	Phleum pratense	Green	5.0
## 3368	Phlox divaricata	Green	5.5
## 3373	Phlox glaberrima	Green	5.8
## 3377	Phlox maculata ssp. maculata	Green	5.9
## 3383	Phlox subulata	Green	5.7
## 3393	Photinia pyrifolia	Green	5.5
## 3395	Phragmites australis	Green	4.5
## 3402	Phyla nodiflora	Green	6.0
## 3407	Phyllostachys aurea	Green	5.0
## 3423	Physocarpus opulifolius	Green	4.5
## 3430	Phytolacca americana	Green	4.7
## 3435	Picea abies	Dark Green	5.0
## 3436	Picea glauca	Green	4.0
## 3437	Picea pungens	Green	5.5
## 3438	Picea rubens	Green	4.0
## 3453	Pinus echinata	Green	4.0
## 3454	Pinus pungens	Green	4.5
## 3455	Pinus resinosa	Yellow-Green	4.5
## 3456	Pinus rigida	Yellow-Green	3.5
## 3457	Pinus serotina	Green	4.8
## 3458	Pinus strobus	Dark Green	4.0
## 3459	Pinus sylvestris	Green	5.0
## 3460	Pinus taeda	Green	4.0
## 3461	Pinus virginiana	Green	4.5
## 3471	Pityopsis graminifolia	Green	5.8
## 3478	Plantago major	Green	4.8
## 3503	Platanus occidentalis	Green	4.9
## 3513	Pluchea odorata var. odorata	Green	4.5
## 3517	Poa annua	Green	4.8
## 3518	Poa autumnalis	Green	5.8
## 3519	Poa bulbosa	Green	5.0
## 3521	Poa compressa	Green	5.0
## 3525	Poa palustris	Green	4.9

## 3526	<i>Poa pratensis</i>	Green	5.0
## 3529	<i>Poa sylvestris</i>	Green	5.9
## 3530	<i>Poa trivialis</i>	Green	4.8
## 3575	<i>Polygonum amphibium</i>	Green	4.0
## 3596	<i>Polygonum hydropiper</i>	Green	5.0
## 3597	<i>Polygonum hydropiperoides</i>	Dark Green	4.5
## 3600	<i>Polygonum pensylvanicum</i>	Green	4.0
## 3602	<i>Polygonum persicaria</i>	Green	4.0
## 3603	<i>Polygonum punctatum</i>	Green	6.0
## 3611	<i>Polygonum sagittatum</i>	Green	4.0
## 3625	<i>Polypogon monspeliensis</i>	Green	4.8
## 3634	<i>Pontederia cordata</i>	Green	4.9
## 3636	<i>Populus alba</i>	Green	4.9
## 3637	<i>Populus balsamifera</i>	Yellow-Green	4.5
## 3641	<i>Populus deltoides</i>	Green	4.6
## 3643	<i>Populus grandidentata</i>	Green	4.8
## 3644	<i>Populus heterophylla</i>	Green	4.6
## 3646	<i>Populus nigra</i>	Green	5.0
## 3647	<i>Populus tremuloides</i>	Green	4.3
## 3652	<i>Potamogeton amplifolius</i>	Green	5.5
## 3653	<i>Potamogeton crispus</i>	Red	6.4
## 3654	<i>Potamogeton diversifolius</i>	Green	5.0
## 3655	<i>Potamogeton epihydrus</i>	Green	5.4
## 3658	<i>Potamogeton gramineus</i>	Green	5.5
## 3661	<i>Potamogeton natans</i>	Green	5.8
## 3662	<i>Potamogeton nodosus</i>	Green	5.8
## 3665	<i>Potamogeton praelongus</i>	Green	5.8
## 3671	<i>Potamogeton robbinsii</i>	Green	5.8
## 3673	<i>Potamogeton zosteriformis</i>	Green	5.8
## 3677	<i>Potentilla arguta</i>	Green	6.0
## 3708	<i>Prunella vulgaris</i>	Gray-Green	5.4
## 3713	<i>Prunus americana</i>	Green	5.0
## 3714	<i>Prunus angustifolia</i>	Green	5.0
## 3723	<i>Prunus maritima</i>	Green	5.8
## 3725	<i>Prunus pensylvanica</i>	Green	4.3
## 3729	<i>Prunus serotina</i>	Green	4.0
## 3733	<i>Prunus tomentosa</i>	Green	5.7
## 3734	<i>Prunus virginiana</i>	Green	5.2
## 3748	<i>Ptelea trifoliata</i>	Green	4.8
## 3752	<i>Pteridium aquilinum</i>	Dark Green	4.5
## 3792	<i>Pyrus communis</i>	Green	5.2
## 3796	<i>Quercus alba</i>	Green	4.5
## 3797	<i>Quercus bicolor</i>	Green	4.3
## 3800	<i>Quercus coccinea</i>	Green	4.5
## 3802	<i>Quercus falcata</i>	Green	4.8
## 3806	<i>Quercus imbricaria</i>	Dark Green	4.5
## 3808	<i>Quercus laurifolia</i>	Green	4.2
## 3810	<i>Quercus lyrata</i>	Green	4.5
## 3811	<i>Quercus macrocarpa</i>	Green	4.5
## 3813	<i>Quercus marilandica</i>	Dark Green	4.6
## 3815	<i>Quercus michauxii</i>	Green	4.5
## 3817	<i>Quercus muehlenbergii</i>	Green	5.0
## 3818	<i>Quercus nigra</i>	Green	4.8
## 3819	<i>Quercus pagoda</i>	Green	4.5

## 3820	<i>Quercus palustris</i>	Green	4.5
## 3821	<i>Quercus phellos</i>	Green	4.5
## 3824	<i>Quercus rubra</i>	Green	4.3
## 3829	<i>Quercus shumardii</i>	Green	5.0
## 3832	<i>Quercus stellata</i>	Green	4.8
## 3834	<i>Quercus velutina</i>	Green	4.5
## 3836	<i>Ranunculus abortivus</i>	Green	5.0
## 3848	<i>Ranunculus hispidus</i>	Gray-Green	4.5
## 3851	<i>Ranunculus laxicaulis</i>	Green	6.0
## 3854	<i>Ranunculus pensylvanicus</i>	Green	5.0
## 3859	<i>Ranunculus repens</i>	Green	5.6
## 3861	<i>Ranunculus sceleratus</i>	Green	4.8
## 3872	<i>Rhamnus alnifolia</i>	Green	4.0
## 3887	<i>Rhododendron arborescens</i>	Dark Green	4.2
## 3888	<i>Rhododendron atlanticum</i>	Dark Green	4.2
## 3890	<i>Rhododendron canescens</i>	Green	4.3
## 3891	<i>Rhododendron maximum</i>	Dark Green	4.0
## 3892	<i>Rhododendron periclymenoides</i>	Green	4.3
## 3894	<i>Rhododendron viscosum</i>	Green	4.0
## 3898	<i>Rhus copallinum</i>	Green	5.3
## 3900	<i>Rhus glabra</i>	Green	5.3
## 3901	<i>Rhus trilobata</i>	Green	6.5
## 3912	<i>Rhynchospora corniculata</i>	Yellow-Green	5.1
## 3931	<i>Ribes aureum</i>	Green	6.0
## 3951	<i>Robinia pseudoacacia</i>	Green	4.6
## 3959	<i>Rorippa sessiliflora</i>	Green	5.5
## 3960	<i>Rorippa sinuata</i>	Green	5.0
## 3961	<i>Rorippa sylvestris</i>	Green	5.0
## 3967	<i>Rosa carolina</i>	Green	4.0
## 3971	<i>Rosa palustris</i>	Green	4.0
## 3973	<i>Rosa rugosa</i>	Green	5.5
## 3974	<i>Rosa setigera</i>	Dark Green	5.0
## 3976	<i>Rosa virginiana</i>	Green	5.0
## 3984	<i>Rubus allegheniensis</i>	Green	4.6
## 3987	<i>Rubus alumnus</i>	Green	4.8
## 3989	<i>Rubus argutus</i>	Green	4.5
## 3990	<i>Rubus baileyanus</i>	Green	5.0
## 3994	<i>Rubus cuneifolius</i>	Green	5.0
## 4002	<i>Rubus hispidus</i>	Gray-Green	4.5
## 4003	<i>Rubus idaeus</i>	Green	5.0
## 4006	<i>Rubus laciniatus</i>	Green	5.2
## 4016	<i>Rubus occidentalis</i>	Green	5.2
## 4017	<i>Rubus odoratus</i>	Green	4.5
## 4043	<i>Rudbeckia hirta</i>	Green	6.0
## 4046	<i>Rudbeckia laciniata</i>	Gray-Green	4.5
## 4056	<i>Ruellia humilis</i>	Green	4.5
## 4058	<i>Ruellia strepens</i>	Green	6.0
## 4065	<i>Rumex maritimus</i>	Green	5.0
## 4085	<i>Saccharum brevibarbe</i>	Green	4.0
## 4089	<i>Saccharum giganteum</i>	Green	3.5
## 4090	<i>Saccharum ravennae</i>	Green	4.8
## 4092	<i>Sacciolepis striata</i>	Green	5.0
## 4110	<i>Sagittaria latifolia</i>	Green	4.7
## 4118	<i>Salix alba</i>	Green	4.5

## 4123	Salix caroliniana	Green	4.5
## 4126	Salix discolor	Green	4.0
## 4128	Salix eriocephala	Green	4.0
## 4130	Salix humilis	Dark Green	5.9
## 4133	Salix interior	Green	4.0
## 4134	Salix lucida	Yellow-Green	5.8
## 4136	Salix nigra	Green	4.8
## 4138	Salix pentandra	Dark Green	6.5
## 4141	Salix xsepulcralis	Green	4.5
## 4142	Salix sericea	Green	5.2
## 4159	Sambucus nigra ssp. canadensis	Green	5.0
## 4161	Sambucus racemosa var. racemosa	Green	5.2
## 4181	Saponaria officinalis	Green	5.0
## 4186	Sassafras albidum	Green	4.5
## 4204	Schizachyrium scoparium	Gray-Green	5.0
## 4216	Schoenoplectus fluviatilis	Green	4.0
## 4219	Schoenoplectus pungens var. pungens	Dark Green	3.7
## 4220	Schoenoplectus robustus	Green	6.4
## 4222	Schoenoplectus tabernaemontani	Green	5.4
## 4228	Scirpus atrovirens	Dark Green	4.0
## 4229	Scirpus cyperinus	Green	4.8
## 4231	Scirpus georgianus	Dark Green	4.5
## 4233	Scirpus pendulus	Green	4.9
## 4274	Secale cereale	Green	4.5
## 4288	Senecio vulgaris	Green	5.0
## 4293	Senna marilandica	Green	4.0
## 4308	Setaria italica	Green	5.3
## 4311	Setaria pumila	Green	5.0
## 4331	Sideroxylon lycioides	Green	4.0
## 4355	Silphium perfoliatum	Green	4.5
## 4373	Sisyrinchium angustifolium	Green	5.0
## 4382	Smilax bona-nox	Green	4.5
## 4385	Smilax glauca	Gray-Green	4.5
## 4387	Smilax laurifolia	Green	4.0
## 4390	Smilax rotundifolia	Green	5.0
## 4392	Smilax walteri	Green	4.0
## 4401	Solanum lycopersicum var. lycopersicum	Green	5.5
## 4416	Solidago caesia	Dark Green	5.5
## 4417	Solidago canadensis	Green	4.8
## 4422	Solidago fistulosa	Dark Green	4.5
## 4423	Solidago flexicaulis	Green	5.3
## 4424	Solidago gigantea	Green	4.0
## 4429	Solidago missouriensis	Green	5.5
## 4431	Solidago nemoralis	Green	6.5
## 4435	Solidago patula	Green	4.5
## 4441	Solidago rugosa	Green	5.0
## 4447	Solidago sempervirens	Dark Green	5.5
## 4458	Solidago uliginosa var. uliginosa	Green	4.5
## 4468	Sorbus americana	Green	5.3
## 4469	Sorbus aucuparia	Green	5.5
## 4472	Sorghastrum nutans	Green	4.8
## 4474	Sorghum bicolor	Green	5.5
## 4475	Sorghum bicolor ssp. bicolor	Green	5.5
## 4476	Sorghum halepense	Green	5.0

## 4478	Sparganium americanum	Green	4.9
## 4481	Sparganium eurycarpum	Green	5.0
## 4483	Spartina alterniflora	Green	5.4
## 4485	Spartina cynosuroides	Green	5.8
## 4486	Spartina patens	Green	5.5
## 4487	Spartina pectinata	Green	6.0
## 4505	Sphenopholis obtusata	Green	5.0
## 4510	Spiraea alba	Green	4.3
## 4513	Spiraea betulifolia	Green	6.0
## 4520	Spiraea tomentosa	Green	4.5
## 4523	Spiranthes cernua	Green	4.5
## 4537	Spirodela polyrrhiza	Green	5.0
## 4541	Sporobolus compositus var. compositus	Green	5.5
## 4542	Sporobolus heterolepis	Green	6.0
## 4549	Sporobolus virginicus	Green	6.0
## 4557	Stachys palustris	Dark Green	5.7
## 4558	Stachys tenuifolia	Green	5.7
## 4566	Stellaria longifolia	Dark Green	4.0
## 4568	Stellaria longipes	Green	4.8
## 4600	Symphoricarpos albus	Green	6.0
## 4603	Symphoricarpos occidentalis	Green	6.6
## 4604	Symphoricarpos orbiculatus	Green	5.5
## 4608	Symphyotrichum cordifolium	Gray-Green	5.7
## 4620	Symphyotrichum laeve var. laeve	Green	5.8
## 4627	Symphyotrichum lateriflorum var. lateriflorum	Green	5.2
## 4632	Symphyotrichum novi-belgii var. novi-belgii	Green	5.5
## 4636	Symphyotrichum patens var. patens	Dark Green	4.9
## 4639	Symphyotrichum pilosum var. pilosum	Green	5.4
## 4643	Symphyotrichum prenanthoides	Green	5.5
## 4645	Symphyotrichum puniceum var. puniceum	Green	4.5
## 4648	Symphyotrichum subulatum	Green	5.6
## 4656	Symplocarpus foetidus	Green	4.0
## 4658	Symplocos tinctoria	Yellow-Green	4.5
## 4661	Syringa vulgaris	Green	5.8
## 4675	Taraxacum officinale	Green	4.8
## 4678	Taxodium distichum	Green	4.5
## 4680	Taxus canadensis	Green	5.3
## 4688	Teucrium canadense	White-Gray	4.5
## 4703	Thelypteris noveboracensis	Yellow-Green	4.0
## 4715	Thuja occidentalis	Green	5.2
## 4725	Tilia americana	Green	4.5
## 4727	Tilia americana var. heterophylla	Green	5.0
## 4728	Tilia cordata	Green	4.8
## 4730	Tillandsia usneoides	White-Gray	6.0
## 4756	Tradescantia virginiana	Green	4.0
## 4758	Tragopogon dubius	Green	6.5
## 4760	Tragopogon porrifolius	Green	5.2
## 4789	Tridens flavus	Green	4.5
## 4799	Trifolium hybridum	Green	5.6
## 4800	Trifolium incarnatum	Green	5.5
## 4802	Trifolium pratense	Green	5.5
## 4804	Trifolium repens	Green	5.2
## 4840	Tripsacum dactyloides	Green	5.1
## 4842	Triticum aestivum	Green	5.5

## 4844	<i>Tsuga canadensis</i>	Dark Green	4.2
## 4850	<i>Typha angustifolia</i>	Green	3.7
## 4853	<i>Typha latifolia</i>	Green	5.5
## 4855	<i>Ulmus alata</i>	Green	5.0
## 4856	<i>Ulmus americana</i>	Green	5.0
## 4857	<i>Ulmus parvifolia</i>	Green	4.8
## 4859	<i>Ulmus pumila</i>	Green	5.5
## 4860	<i>Ulmus rubra</i>	Green	5.0
## 4861	<i>Ulmus thomasii</i>	Green	4.5
## 4863	<i>Uniola paniculata</i>	Green	6.0
## 4866	<i>Urochloa mutica</i>	Green	5.3
## 4869	<i>Urochloa platyphylla</i>	Green	5.0
## 4870	<i>Urochloa ramosa</i>	Green	5.5
## 4902	<i>Vaccinium angustifolium</i>	Green	4.7
## 4904	<i>Vaccinium corymbosum</i>	Green	4.7
## 4912	<i>Vaccinium stamineum</i>	Green	4.0
## 4949	<i>Verbesina encelioides</i>	Green	6.4
## 4958	<i>Vernonia noveboracensis</i>	Dark Green	4.5
## 4961	<i>Veronica americana</i>	Green	5.7
## 4984	<i>Viburnum acerifolium</i>	Green	4.8
## 4986	<i>Viburnum dentatum</i> var. <i>dentatum</i>	Yellow-Green	4.5
## 4989	<i>Viburnum lantana</i>	Green	5.5
## 4990	<i>Viburnum lantanoides</i>	Green	4.9
## 4991	<i>Viburnum lentago</i>	Green	5.0
## 4994	<i>Viburnum nudum</i> var. <i>cassinoides</i>	Green	4.9
## 4996	<i>Viburnum opulus</i>	Green	5.2
## 4998	<i>Viburnum prunifolium</i>	Green	4.8
## 4999	<i>Viburnum rafinesqueanum</i>	Green	4.5
## 5003	<i>Vicia americana</i>	Green	5.9
## 5006	<i>Vicia cracca</i>	Green	4.9
## 5009	<i>Vicia grandiflora</i>	Dark Green	6.0
## 5016	<i>Vicia villosa</i>	Green	6.0
## 5021	<i>Vigna unguiculata</i>	Green	6.0
## 5024	<i>Vinca minor</i>	Dark Green	5.5
## 5048	<i>Viola macloskeyi</i>	Green	6.0
## 5056	<i>Viola pubescens</i>	Dark Green	6.0
## 5066	<i>Viola sororia</i>	Green	6.0
## 5079	<i>Vitis aestivalis</i>	Green	5.3
## 5082	<i>Vitis cinerea</i>	Dark Green	5.4
## 5086	<i>Vitis riparia</i>	Green	6.1
## 5087	<i>Vitis rotundifolia</i>	Green	6.0
## 5090	<i>Vitis vulpina</i>	Green	6.0
## 5104	<i>Wisteria frutescens</i>	Green	4.0
## 5145	<i>Zea mays</i>	Dark Green	5.5
## 5153	<i>Zizania aquatica</i>	Green	6.4
## 5158	<i>Zizaniopsis miliacea</i>	Green	4.3
##	pH_Max PH_Mean		
## 4	6.0	5.00	
## 9	8.5	7.75	
## 14	7.0	6.45	
## 17	7.8	6.40	
## 19	7.3	5.90	
## 20	6.5	5.45	
## 21	7.2	6.00	

## 22	7.0	6.40
## 23	7.3	6.00
## 26	7.3	5.65
## 27	7.9	5.80
## 29	7.0	5.90
## 31	8.0	7.00
## 32	8.0	7.00
## 43	7.2	6.20
## 51	8.0	7.00
## 52	6.6	5.60
## 63	7.0	6.00
## 90	7.0	5.75
## 92	8.0	7.00
## 94	7.0	5.75
## 95	7.5	6.50
## 99	7.5	6.25
## 100	7.5	6.20
## 102	8.0	6.25
## 103	7.5	6.25
## 104	7.5	6.50
## 105	8.0	7.00
## 106	7.5	6.30
## 108	7.9	6.00
## 117	7.5	6.50
## 121	7.3	6.05
## 128	7.0	6.00
## 146	7.0	6.00
## 147	7.7	6.25
## 148	7.0	6.00
## 149	7.0	6.00
## 151	8.0	6.75
## 153	7.5	5.75
## 154	7.5	5.75
## 156	7.5	5.75
## 157	8.0	6.90
## 187	7.5	6.15
## 189	7.5	6.50
## 192	7.0	5.90
## 194	7.0	6.00
## 195	7.2	5.85
## 201	5.9	4.95
## 204	8.5	7.25
## 205	7.8	6.80
## 207	8.5	6.75
## 209	8.0	6.00
## 211	7.4	6.30
## 226	7.5	6.75
## 231	7.5	6.75
## 233	6.3	5.65
## 238	7.5	5.75
## 240	7.0	5.95
## 258	7.5	6.50
## 279	7.5	6.75
## 286	7.0	5.75

## 307	7.2	6.10
## 310	6.6	5.70
## 316	8.0	6.75
## 326	8.0	7.50
## 329	7.0	5.90
## 359	7.0	6.00
## 368	9.0	7.50
## 381	6.9	5.95
## 384	7.0	5.90
## 390	8.0	6.50
## 400	6.8	5.80
## 406	7.2	5.95
## 438	8.0	7.00
## 444	7.0	5.75
## 466	7.5	6.75
## 467	8.5	6.90
## 473	7.8	6.65
## 479	7.8	6.60
## 488	7.0	6.40
## 504	7.2	6.35
## 511	8.0	6.00
## 514	6.8	5.20
## 515	6.5	4.75
## 516	7.4	5.80
## 518	6.5	5.00
## 522	7.0	6.00
## 526	7.0	6.05
## 527	7.1	6.15
## 528	7.1	6.15
## 529	7.1	6.10
## 530	7.2	6.20
## 531	7.0	6.00
## 532	8.6	6.80
## 535	7.2	6.10
## 546	7.0	6.05
## 552	7.0	6.15
## 557	7.5	6.80
## 559	7.5	6.25
## 564	6.0	5.20
## 570	6.9	6.25
## 575	8.5	7.00
## 577	7.2	6.60
## 586	7.2	6.60
## 587	7.2	6.60
## 590	8.0	6.50
## 599	7.5	6.35
## 600	7.2	6.25
## 601	8.0	6.75
## 602	7.5	6.50
## 607	8.0	6.75
## 608	8.0	6.75
## 611	7.0	6.35
## 617	8.2	7.10
## 639	9.2	7.45

## 642	8.3	6.65
## 650	8.0	6.25
## 652	7.0	5.50
## 664	7.0	5.90
## 671	6.8	6.00
## 678	6.8	5.85
## 694	6.5	5.35
## 700	7.5	6.75
## 705	7.5	6.50
## 707	6.8	5.85
## 718	8.5	6.75
## 721	6.8	5.90
## 724	7.7	6.85
## 730	6.8	5.80
## 741	6.8	5.80
## 750	7.8	6.05
## 752	7.0	6.45
## 755	7.5	5.75
## 760	6.0	5.25
## 764	7.0	5.90
## 766	7.0	5.70
## 773	7.5	6.65
## 775	7.2	6.15
## 782	7.0	5.90
## 786	7.5	6.05
## 791	7.5	5.75
## 794	6.8	5.85
## 796	6.6	5.60
## 801	6.6	5.55
## 802	7.2	6.10
## 812	7.2	6.40
## 820	7.1	5.85
## 822	7.2	6.55
## 824	8.0	6.00
## 827	6.9	5.80
## 828	7.2	6.60
## 832	7.2	6.45
## 841	7.9	6.75
## 843	7.2	6.30
## 844	6.9	5.85
## 846	7.3	6.00
## 849	6.8	6.20
## 859	6.9	5.85
## 862	6.8	5.90
## 869	7.0	6.60
## 870	6.8	5.85
## 875	7.0	5.95
## 881	6.7	5.70
## 892	6.8	5.80
## 893	6.8	5.80
## 894	7.0	5.90
## 902	6.8	5.75
## 903	6.9	5.75
## 906	6.9	5.80

## 909	6.8	5.90
## 911	7.3	6.45
## 912	7.9	6.40
## 915	6.9	5.80
## 920	7.0	5.25
## 923	7.0	5.95
## 929	7.0	6.00
## 930	7.0	5.90
## 933	7.0	6.35
## 934	6.8	5.65
## 937	7.0	6.35
## 939	7.7	6.70
## 943	7.5	6.00
## 946	7.5	6.00
## 947	8.9	7.85
## 952	7.4	5.70
## 958	7.4	6.10
## 959	7.3	6.05
## 960	7.5	6.00
## 961	6.6	5.80
## 963	7.3	5.65
## 967	6.5	6.00
## 972	6.8	5.85
## 974	7.5	6.50
## 976	7.0	6.25
## 978	7.0	5.75
## 980	6.5	5.40
## 982	7.5	6.25
## 983	7.5	6.25
## 987	7.7	6.05
## 989	7.8	6.90
## 1017	8.6	6.65
## 1031	8.6	7.30
## 1034	7.9	6.45
## 1037	8.0	6.25
## 1049	7.5	6.50
## 1056	6.3	4.90
## 1058	6.0	5.50
## 1075	7.0	6.00
## 1076	7.0	5.75
## 1104	8.5	7.25
## 1112	7.4	6.40
## 1115	6.5	5.50
## 1133	7.5	6.75
## 1139	8.5	6.25
## 1140	7.0	5.85
## 1142	6.6	5.80
## 1178	6.8	5.90
## 1187	7.0	5.75
## 1191	6.8	5.90
## 1198	7.0	6.00
## 1212	7.2	6.20
## 1216	6.7	5.70
## 1218	7.0	5.50

##	1222	7.5	6.50
##	1231	7.5	6.50
##	1235	7.2	6.00
##	1250	7.0	6.50
##	1252	7.8	6.50
##	1259	7.3	6.05
##	1260	7.0	6.00
##	1261	6.9	6.20
##	1262	7.7	6.25
##	1263	7.2	6.50
##	1265	7.4	6.10
##	1266	7.8	7.10
##	1268	7.5	6.15
##	1275	6.8	5.80
##	1278	7.0	6.00
##	1279	7.5	6.15
##	1292	7.2	5.85
##	1304	7.0	5.65
##	1309	7.3	5.80
##	1360	6.5	5.75
##	1371	8.0	6.50
##	1380	6.8	5.85
##	1381	6.5	5.50
##	1382	6.5	5.75
##	1388	6.5	5.75
##	1389	7.0	6.00
##	1393	7.0	6.00
##	1400	7.0	6.00
##	1404	8.3	6.65
##	1406	6.5	5.50
##	1408	6.8	5.70
##	1415	7.0	6.70
##	1429	7.0	6.25
##	1432	7.5	6.25
##	1446	7.0	5.90
##	1459	8.6	6.75
##	1469	6.8	5.80
##	1476	8.0	6.50
##	1495	7.0	6.50
##	1498	7.0	6.30
##	1520	6.5	5.25
##	1527	7.5	5.75
##	1528	6.5	5.25
##	1534	6.5	5.25
##	1543	6.5	5.25
##	1550	7.0	5.50
##	1551	7.5	6.00
##	1563	7.0	5.90
##	1567	7.0	6.25
##	1590	7.5	6.10
##	1602	10.0	8.20
##	1604	7.5	6.00
##	1629	6.5	5.00
##	1642	7.5	6.10

## 1652	7.2	6.85
## 1653	7.2	6.85
## 1655	8.5	6.25
## 1659	7.4	6.05
## 1663	9.4	6.60
## 1674	7.9	6.55
## 1678	9.5	7.75
## 1679	7.9	6.45
## 1681	7.5	6.25
## 1703	8.7	6.40
## 1707	8.0	6.00
## 1713	7.0	6.60
## 1721	7.2	6.10
## 1729	7.8	6.30
## 1732	7.9	6.45
## 1738	7.8	6.50
## 1739	7.2	5.85
## 1742	9.0	7.30
## 1744	7.0	6.00
## 1756	7.5	6.00
## 1758	6.5	5.25
## 1763	7.0	5.50
## 1765	6.0	5.25
## 1769	6.5	5.25
## 1774	8.5	6.50
## 1778	8.5	6.50
## 1787	7.5	5.75
## 1797	7.8	6.30
## 1802	7.2	6.00
## 1807	7.6	5.80
## 1816	6.5	5.25
## 1818	6.5	5.15
## 1835	8.5	7.25
## 1903	6.9	5.90
## 1923	7.2	5.65
## 1931	7.5	6.25
## 1933	7.2	6.35
## 1959	7.5	6.25
## 1970	7.5	6.10
## 1971	8.2	6.30
## 1972	8.1	6.40
## 1973	7.3	5.90
## 2000	7.2	6.30
## 2001	7.0	6.00
## 2002	7.2	6.10
## 2011	7.0	5.80
## 2019	7.0	5.80
## 2021	8.0	6.30
## 2030	6.5	5.25
## 2031	6.5	5.25
## 2036	6.5	5.50
## 2038	6.5	5.40
## 2039	5.5	4.65
## 2044	7.2	6.50

##	2048	7.2	6.50
##	2074	7.5	6.00
##	2076	7.0	6.00
##	2079	7.0	5.90
##	2080	7.0	5.90
##	2091	8.8	7.65
##	2097	8.0	6.40
##	2102	8.5	6.75
##	2107	8.0	6.25
##	2108	7.0	5.50
##	2110	8.0	6.00
##	2112	7.8	6.65
##	2159	6.2	5.35
##	2166	7.8	6.50
##	2170	7.5	5.75
##	2172	7.5	6.00
##	2178	7.0	5.50
##	2179	7.8	6.65
##	2180	7.2	6.20
##	2185	7.3	6.55
##	2200	7.0	5.50
##	2205	8.5	7.50
##	2223	7.3	6.35
##	2232	7.0	6.00
##	2254	7.2	6.35
##	2255	7.5	5.75
##	2275	7.0	5.50
##	2282	8.5	7.25
##	2289	8.0	7.10
##	2290	8.5	6.75
##	2305	6.9	6.20
##	2333	8.3	7.00
##	2349	7.1	6.40
##	2351	7.0	5.80
##	2352	7.5	5.75
##	2353	6.4	5.60
##	2357	7.0	5.80
##	2362	7.2	5.90
##	2364	7.2	5.90
##	2365	7.0	5.80
##	2370	7.3	6.25
##	2372	6.5	5.00
##	2373	7.0	5.75
##	2377	7.0	5.75
##	2379	7.5	6.00
##	2381	7.4	6.90
##	2382	7.4	7.10
##	2410	7.3	6.05
##	2426	7.5	5.75
##	2428	5.7	5.35
##	2439	7.0	6.50
##	2440	8.2	6.40
##	2442	7.2	5.80
##	2446	7.5	6.15

## 2447	7.0	5.75
## 2448	6.7	5.60
## 2449	7.1	6.50
## 2451	7.6	6.10
## 2454	5.9	5.20
## 2458	6.5	5.50
## 2461	8.8	7.15
## 2471	6.8	6.15
## 2472	6.8	5.65
## 2476	7.0	6.25
## 2477	7.0	5.50
## 2478	6.8	6.20
## 2479	6.8	5.85
## 2480	6.0	5.25
## 2482	7.0	5.75
## 2483	6.5	5.50
## 2485	6.8	5.90
## 2488	8.0	6.75
## 2490	8.0	6.35
## 2493	7.6	6.50
## 2498	5.5	5.00
## 2506	8.0	7.00
## 2508	8.0	6.25
## 2517	7.5	6.50
## 2518	7.3	6.10
## 2524	7.8	6.15
## 2526	7.4	5.70
## 2539	7.5	6.25
## 2554	7.0	6.50
## 2555	6.5	6.00
## 2558	6.2	6.00
## 2578	8.0	6.50
## 2579	8.8	6.95
## 2580	8.5	6.50
## 2610	8.0	7.00
## 2612	7.5	5.75
## 2617	8.2	6.95
## 2620	6.9	6.35
## 2631	7.0	6.10
## 2641	7.5	6.55
## 2652	7.5	6.65
## 2653	6.9	6.20
## 2656	7.7	6.80
## 2659	7.5	6.25
## 2671	5.9	5.45
## 2673	8.5	7.25
## 2681	6.0	5.25
## 2697	8.0	6.50
## 2708	7.0	5.75
## 2710	6.5	5.50
## 2712	8.0	6.50
## 2726	7.8	6.80
## 2744	8.0	6.50
## 2745	7.9	6.45

## 2754	7.8	6.35
## 2755	8.0	6.75
## 2757	8.5	7.25
## 2759	7.5	6.35
## 2762	8.0	6.50
## 2768	6.0	5.00
## 2774	8.5	6.75
## 2812	5.3	4.65
## 2820	7.8	6.50
## 2823	7.2	6.20
## 2827	6.3	5.65
## 2838	7.0	6.00
## 2845	7.2	6.00
## 2855	7.5	6.00
## 2859	7.0	6.10
## 2860	6.5	5.50
## 2862	7.5	6.25
## 2863	6.9	5.95
## 2906	9.0	7.90
## 2916	8.0	6.75
## 2920	8.5	7.25
## 2923	7.5	6.70
## 2935	8.2	7.35
## 2949	7.0	6.00
## 2956	6.5	5.65
## 2962	8.0	6.25
## 2970	8.7	7.20
## 2978	7.8	7.00
## 2990	7.5	6.05
## 3008	8.0	7.00
## 3024	7.0	5.75
## 3025	9.1	7.25
## 3026	7.8	6.65
## 3028	7.0	6.00
## 3029	7.0	6.00
## 3032	8.4	7.20
## 3034	6.8	6.30
## 3035	7.9	6.90
## 3037	7.5	6.40
## 3038	7.5	6.50
## 3039	7.5	6.00
## 3041	7.5	6.70
## 3044	6.8	5.80
## 3055	7.5	6.50
## 3119	5.7	5.10
## 3120	6.0	5.25
## 3130	7.0	6.00
## 3131	7.0	5.75
## 3147	7.5	6.25
## 3191	7.0	5.75
## 3194	6.0	5.00
## 3195	6.0	5.00
## 3196	5.2	4.75
## 3198	7.6	5.90

## 3207	6.5	5.25
## 3212	7.5	6.50
## 3216	8.5	6.50
## 3217	7.5	5.75
## 3225	7.5	6.25
## 3230	7.0	5.90
## 3235	6.8	6.30
## 3240	7.5	6.25
## 3246	8.0	6.25
## 3278	7.5	6.25
## 3279	6.5	5.75
## 3283	6.5	5.70
## 3285	8.9	6.90
## 3287	8.6	7.30
## 3288	7.5	6.00
## 3296	8.0	6.25
## 3302	7.5	6.00
## 3306	7.0	5.50
## 3314	8.8	6.90
## 3316	6.8	6.15
## 3320	7.0	6.25
## 3325	7.0	6.00
## 3330	7.0	6.00
## 3344	8.0	6.75
## 3357	7.5	6.40
## 3363	7.8	6.40
## 3368	7.2	6.35
## 3373	7.0	6.40
## 3377	6.8	6.35
## 3383	7.5	6.60
## 3393	7.5	6.50
## 3395	8.7	6.60
## 3402	8.5	7.25
## 3407	7.5	6.25
## 3423	6.5	5.50
## 3430	8.0	6.35
## 3435	7.0	6.00
## 3436	8.2	6.10
## 3437	7.8	6.65
## 3438	5.8	4.90
## 3453	6.0	5.00
## 3454	7.0	5.75
## 3455	6.0	5.25
## 3456	5.1	4.30
## 3457	6.8	5.80
## 3458	6.5	5.25
## 3459	7.5	6.25
## 3460	7.0	5.50
## 3461	7.5	6.00
## 3471	7.0	6.40
## 3478	7.3	6.05
## 3503	6.5	5.70
## 3513	7.0	5.75
## 3517	8.0	6.40

## 3518	6.9	6.35
## 3519	7.2	6.10
## 3521	7.0	6.00
## 3525	7.5	6.20
## 3526	8.4	6.70
## 3529	7.0	6.45
## 3530	7.5	6.15
## 3575	7.0	5.50
## 3596	7.5	6.25
## 3597	8.8	6.65
## 3600	8.5	6.25
## 3602	8.5	6.25
## 3603	8.7	7.35
## 3611	8.5	6.25
## 3625	7.8	6.30
## 3634	8.7	6.80
## 3636	7.0	5.95
## 3637	7.0	5.75
## 3641	6.5	5.55
## 3643	7.2	6.00
## 3644	5.9	5.25
## 3646	8.5	6.75
## 3647	9.0	6.65
## 3652	7.0	6.25
## 3653	8.5	7.45
## 3654	7.7	6.35
## 3655	7.0	6.20
## 3658	7.0	6.25
## 3661	7.0	6.40
## 3662	7.0	6.40
## 3665	7.0	6.40
## 3671	7.0	6.40
## 3673	7.0	6.40
## 3677	8.0	7.00
## 3708	8.0	6.70
## 3713	7.0	6.00
## 3714	7.5	6.25
## 3723	7.7	6.75
## 3725	7.3	5.80
## 3729	7.5	5.75
## 3733	7.2	6.45
## 3734	8.4	6.80
## 3748	7.0	5.90
## 3752	7.0	5.75
## 3792	6.7	5.95
## 3796	6.8	5.65
## 3797	6.5	5.40
## 3800	6.9	5.70
## 3802	7.0	5.90
## 3806	6.0	5.25
## 3808	6.5	5.35
## 3810	7.5	6.00
## 3811	7.5	6.00
## 3813	5.6	5.10

## 3815	6.5	5.50
## 3817	8.0	6.50
## 3818	7.3	6.05
## 3819	6.0	5.25
## 3820	6.5	5.50
## 3821	6.5	5.50
## 3824	7.3	5.80
## 3829	7.6	6.30
## 3832	6.5	5.65
## 3834	6.5	5.50
## 3836	7.5	6.25
## 3848	8.0	6.25
## 3851	7.5	6.75
## 3854	7.5	6.25
## 3859	7.2	6.40
## 3861	8.4	6.60
## 3872	8.0	6.00
## 3887	5.7	4.95
## 3888	5.7	4.95
## 3890	5.8	5.05
## 3891	5.5	4.75
## 3892	5.5	4.90
## 3894	7.0	5.50
## 3898	7.5	6.40
## 3900	7.5	6.40
## 3901	8.2	7.35
## 3912	7.4	6.25
## 3931	8.0	7.00
## 3951	8.2	6.40
## 3959	7.5	6.50
## 3960	8.5	6.75
## 3961	8.0	6.50
## 3967	7.0	5.50
## 3971	7.0	5.50
## 3973	7.5	6.50
## 3974	7.5	6.25
## 3976	7.0	6.00
## 3984	7.5	6.05
## 3987	7.0	5.90
## 3989	7.0	5.75
## 3990	7.0	6.00
## 3994	7.0	6.00
## 4002	7.0	5.75
## 4003	7.5	6.25
## 4006	7.7	6.45
## 4016	7.5	6.35
## 4017	6.5	5.50
## 4043	7.0	6.50
## 4046	7.0	5.75
## 4056	7.5	6.00
## 4058	8.5	7.25
## 4065	8.2	6.60
## 4085	7.5	5.75
## 4089	7.0	5.25

## 4090	7.0	5.90
## 4092	7.3	6.15
## 4110	8.9	6.80
## 4118	7.8	6.15
## 4123	8.8	6.65
## 4126	7.0	5.50
## 4128	7.0	5.50
## 4130	7.0	6.45
## 4133	7.8	5.90
## 4134	7.2	6.50
## 4136	8.0	6.40
## 4138	7.5	7.00
## 4141	7.5	6.00
## 4142	7.0	6.10
## 4159	8.9	6.95
## 4161	7.2	6.20
## 4181	7.0	6.00
## 4186	7.3	5.90
## 4204	8.4	6.70
## 4216	7.5	5.75
## 4219	7.5	5.60
## 4220	8.4	7.40
## 4222	7.5	6.45
## 4228	8.0	6.00
## 4229	7.2	6.00
## 4231	7.0	5.75
## 4233	7.0	5.95
## 4274	8.2	6.35
## 4288	8.5	6.75
## 4293	7.0	5.50
## 4308	6.9	6.10
## 4311	7.0	6.00
## 4331	7.0	5.50
## 4355	7.5	6.00
## 4373	7.0	6.00
## 4382	8.5	6.50
## 4385	7.5	6.00
## 4387	7.0	5.50
## 4390	7.5	6.25
## 4392	7.0	5.50
## 4401	7.0	6.25
## 4416	7.0	6.25
## 4417	7.5	6.15
## 4422	7.0	5.75
## 4423	7.0	6.15
## 4424	8.0	6.00
## 4429	7.5	6.50
## 4431	7.5	7.00
## 4435	7.0	5.75
## 4441	7.5	6.25
## 4447	7.5	6.50
## 4458	5.7	5.10
## 4468	6.8	6.05
## 4469	7.5	6.50

## 4472	8.0	6.40
## 4474	7.5	6.50
## 4475	7.5	6.50
## 4476	7.0	6.00
## 4478	7.3	6.10
## 4481	8.5	6.75
## 4483	7.0	6.20
## 4485	7.5	6.65
## 4486	7.5	6.50
## 4487	8.5	7.25
## 4505	7.5	6.25
## 4510	6.8	5.55
## 4513	7.5	6.75
## 4520	7.0	5.75
## 4523	6.5	5.50
## 4537	8.6	6.80
## 4541	7.0	6.25
## 4542	7.2	6.60
## 4549	8.0	7.00
## 4557	8.0	6.85
## 4558	7.4	6.55
## 4566	6.5	5.25
## 4568	8.5	6.65
## 4600	7.8	6.90
## 4603	8.0	7.30
## 4604	7.5	6.50
## 4608	7.5	6.60
## 4620	7.8	6.80
## 4627	7.2	6.20
## 4632	7.0	6.25
## 4636	6.9	5.90
## 4639	7.0	6.20
## 4643	7.2	6.35
## 4645	7.5	6.00
## 4648	7.0	6.30
## 4656	7.0	5.50
## 4658	6.5	5.50
## 4661	7.8	6.80
## 4675	7.5	6.15
## 4678	6.0	5.25
## 4680	7.5	6.40
## 4688	8.0	6.25
## 4703	7.0	5.50
## 4715	7.0	6.10
## 4725	7.5	6.00
## 4727	6.6	5.80
## 4728	7.2	6.00
## 4730	6.9	6.45
## 4756	8.0	6.00
## 4758	7.5	7.00
## 4760	7.8	6.50
## 4789	6.5	5.50
## 4799	7.5	6.55
## 4800	7.5	6.50

```

## 4802    7.6    6.55
## 4804    8.0    6.60
## 4840    7.5    6.30
## 4842    8.0    6.75
## 4844    5.7    4.95
## 4850    8.5    6.10
## 4853    8.7    7.10
## 4855    7.0    6.00
## 4856    8.0    6.50
## 4857    7.0    5.90
## 4859    8.0    6.75
## 4860    7.5    6.25
## 4861    7.2    5.85
## 4863    7.5    6.75
## 4866    8.7    7.00
## 4869    7.0    6.00
## 4870    6.9    6.20
## 4902    7.5    6.10
## 4904    7.5    6.10
## 4912    7.0    5.50
## 4949    8.5    7.45
## 4958    8.0    6.25
## 4961    7.5    6.60
## 4984    7.5    6.15
## 4986    7.3    5.90
## 4989    7.5    6.50
## 4990    7.0    5.95
## 4991    7.0    6.00
## 4994    7.0    5.95
## 4996    7.0    6.10
## 4998    7.5    6.15
## 4999    7.1    5.80
## 5003    7.2    6.55
## 5006    7.0    5.95
## 5009    6.9    6.45
## 5016    7.5    6.75
## 5021    8.0    7.00
## 5024    7.7    6.60
## 5048    7.3    6.65
## 5056    7.0    6.50
## 5066    7.8    6.90
## 5079    7.0    6.15
## 5082    7.0    6.20
## 5086    8.5    7.30
## 5087    8.0    7.00
## 5090    7.5    6.75
## 5104    7.0    5.50
## 5145    7.5    6.50
## 5153    7.4    6.90
## 5158    9.0    6.65

```

```
aggregate(plants$PH_Mean,by=list(plants$Foliage_Color),FUN=mean)
```

```

##      Group.1      x
## 1  Dark Green 5.999390

```

```
## 2    Gray-Green 6.370833
## 3      Green 6.175111
## 4      Red 6.400000
## 5    White-Gray 6.444444
## 6 Yellow-Green 5.937500
```

```
aggregate(plants$PH_Mean,by=list(plants$Foliage_Color),FUN=sd)
```

```
##      Group.1      x
## 1  Dark Green 0.5560272
## 2  Gray-Green 0.6387686
## 3    Green 0.5250715
## 4      Red 0.9836158
## 5  White-Gray 0.7380059
## 6 Yellow-Green 0.6043428
```

```
plants.anova<-aov(plants$PH_Mean~plants$Foliage_Color,data=plants)
F1<-summary(plants.anova)
F1
```

```
##              Df Sum Sq Mean Sq F value  Pr(>F)
## plants$Foliage_Color    5    5.23   1.0452    3.613 0.00308 **
## Residuals              807  233.48   0.2893
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
plants$Foliage_Color<-plants$Foliage_Color%>%as.factor()%>%as.numeric()
F2<-lm(plants$PH_Mean~plants$Foliage_Color,data=plants)
F2<-summary(F2)
F2
```

```
##
## Call:
## lm(formula = plants$PH_Mean ~ plants$Foliage_Color, data = plants)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -1.93924 -0.36441 -0.01441  0.33559  2.03559
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)      6.08959    0.06858  88.792  <2e-16 ***
## plants$Foliage_Color  0.02494    0.02297   1.086   0.278
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.5421 on 811 degrees of freedom
## Multiple R-squared:  0.001451,    Adjusted R-squared:  0.0002202
## F-statistic: 1.179 on 1 and 811 DF,  p-value: 0.2779
```