

varietyTrial_plantCounts.R

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```
# Variety trial plant count data

library(tidyverse)

## -- Attaching packages ----- tidyverse 1.3.2 --
## v ggplot2 3.4.0      v purrr  0.3.5
## v tibble  3.1.8      v dplyr  1.0.10
## v tidyr   1.2.1      v stringr 1.4.1
## v readr   2.1.3      v forcats 0.5.2
## -- Conflicts ----- tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()

# Becker collection on 20Sep2023
read.csv("VarietyTrial_2023_PlotPlan - plant_counts.csv") -> dat

dat %>%
  pivot_longer(
    cols = c(count_0.5m_1, count_0.5m_2)
  ) %>%
  mutate(sample = recode(name,
    "count_0.5m_1" = "a",
    "count_0.5m_2" = "b")) %>%
  mutate(vis = ifelse(sample=="b", NA, vis_rating)) %>%
  mutate(plants_meter = value*2) %>%
  dplyr::select(-c(name, value)) -> dat2

dat2 %>%
  filter(site=="Becker") %>%
  summarise(
    mean = mean(plants_meter),
    sd = sd(plants_meter),
    max=max(plants_meter),
    min = min(plants_meter),
    n=n()
  ) %>%
  mutate(across(
    .fns = ~round(.,0))) %>%
  knitr::kable(
    caption = "Plant counts in variety trial at Becker MN on 20Sep2023"
  )
```

Table 1: Plant counts in variety trial at Becker MN on 20Sep2023

mean	sd	max	min	n
25	16	80	2	160

```

dat2 %>%
  filter(site=="Becker") %>%
  group_by(program) %>%
  summarise(
    mean = mean(plants_meter),
    sd = sd(plants_meter),
    max=max(plants_meter),
    min = min(plants_meter),
    n=n()
  ) %>%
  mutate(across(
    .cols = 2:6,
    .fns = ~round(.,0))) %>%
  knitr::kable(
    caption = "Plant counts in variety trial by program at Becker MN on 20Sep2023"
  )

```

Table 2: Plant counts in variety trial by program at Becker MN on 20Sep2023

program	mean	sd	max	min	n
MN	25	16	80	2	128
TLI	26	14	56	2	32

```

dat2 %>%
  filter(site=="Becker") %>%
  group_by(line) %>%
  summarise(
    mean = mean(plants_meter),
    sd = sd(plants_meter),
    max=max(plants_meter),
    min = min(plants_meter),
    n=n()
  ) %>%
  arrange(desc(mean)) %>%
  mutate(across(
    .fns = ~round(.,0))) %>%
  knitr::kable(
    caption = "Plant counts in variety trial by line at Becker MN on 20Sep2023"
  )

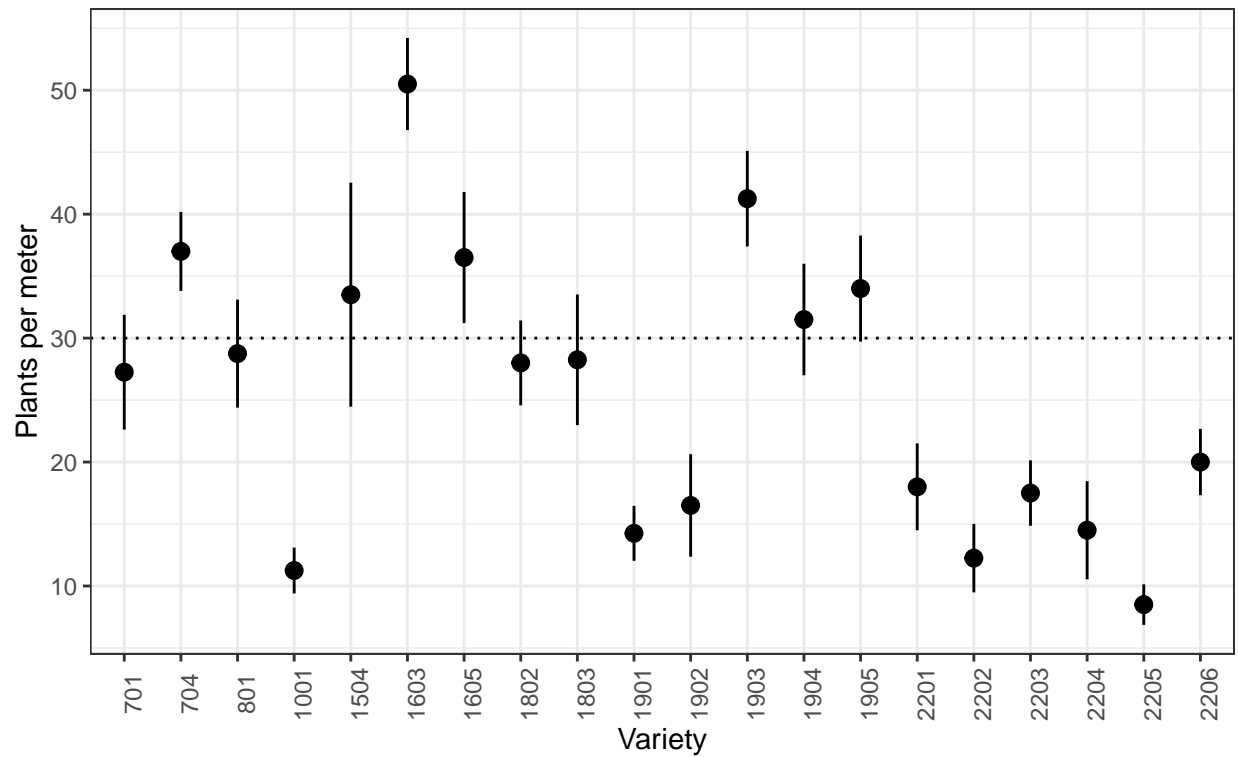
```

Table 3: Plant counts in variety trial by line at Becker MN on 20Sep2023

line	mean	sd	max	min	n
1603	50	11	70	38	8
1903	41	11	58	24	8
704	37	9	56	28	8
1605	36	15	58	8	8
1905	34	12	52	16	8
1504	34	26	80	8	8
1904	32	13	48	8	8
801	29	12	50	12	8
1803	28	15	52	10	8
1802	28	10	44	16	8
701	27	13	46	12	8
2206	20	8	32	12	8
2201	18	10	34	4	8
2203	18	7	24	6	8
1902	16	12	36	4	8
2204	14	11	36	2	8
1901	14	6	22	6	8
2202	12	8	24	2	8
1001	11	5	18	2	8
2205	8	5	14	4	8

```
dat2 %>%
  filter(site=="Becker") %>%
  ggplot(
    aes(factor(line),plants_meter)
  ) +
  geom_hline(yintercept = 30,
             linetype=3) +
  stat_summary() +
  theme_bw() +
  theme(axis.text.x = element_text(angle = 90)) +
  labs(x="Variety",
       y="Plants per meter",
       caption = "Becker MN 20Sep2023\nPlanted 1Sep2023\nTarget population is 30 plants per meter")
```

```
## No summary function supplied, defaulting to 'mean_se()'
```

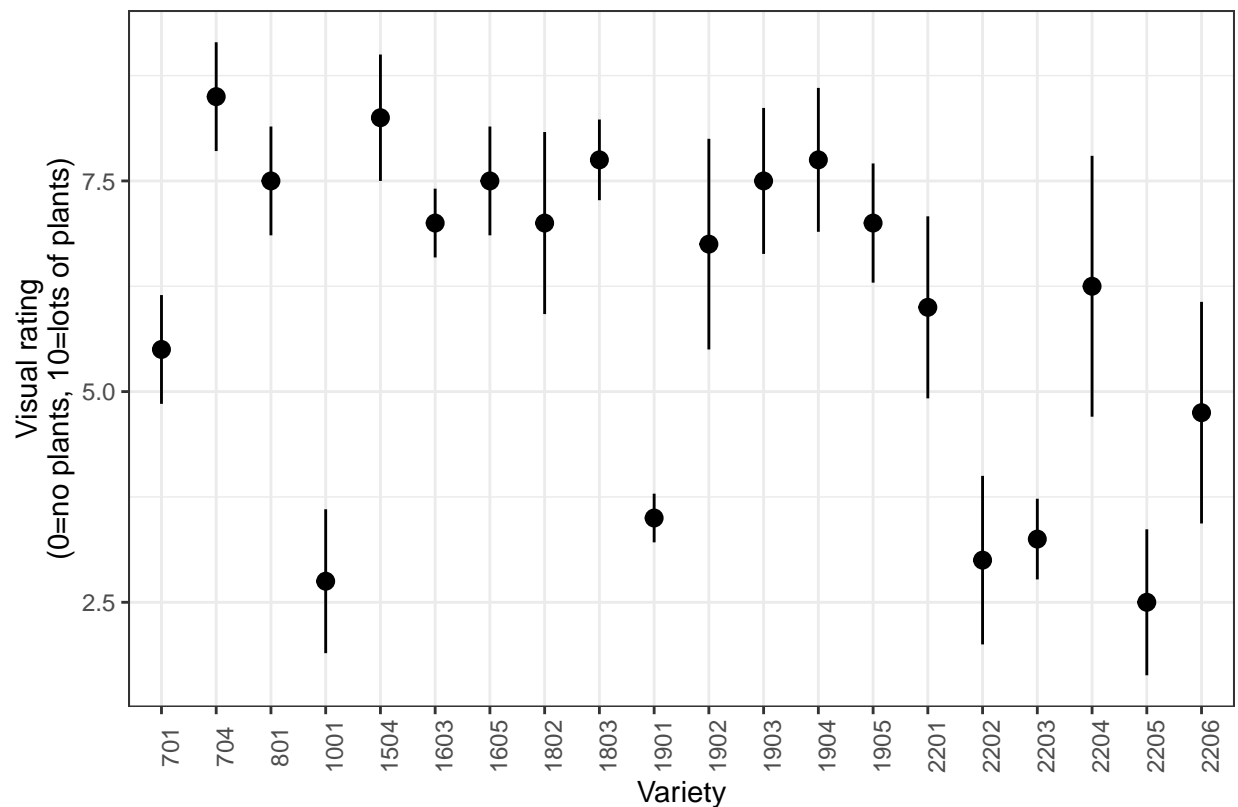


Becker MN 20Sep2023
 Planted 1Sep2023
 Target population is 30 plants per meter

```
dat2 %>%
  filter(site=="Becker") %>%
  ggplot(
    aes(factor(line),vis)
  ) +
  stat_summary() +
  theme_bw() +
  theme(axis.text.x = element_text(angle = 90)) +
  labs(x="Variety",
       y="Visual rating\n(0=no plants, 10=lots of plants)",
       caption = "Becker MN 20Sep2023")
```

```
## Warning: Removed 80 rows containing non-finite values ('stat_summary()').
```

```
## No summary function supplied, defaulting to 'mean_se()'
```



Becker MN 20Sep2023

```
dat2 %>%
  filter(site=="Becker") %>%
  group_by(line) %>%
  summarise(
    plants_meter = mean(plants_meter),
    vis_rating = mean(vis,na.rm = T)
  ) %>%
  arrange(vis_rating) %>%
  mutate(across(
    .fns = ~round(.x,1)
  )) %>%
  knitr::kable(caption = "Relationship between plant counts and visual rating")
```

Table 4: Relationship between plant counts and visual rating

line	plants_meter	vis_rating
2205	8.5	2.5
1001	11.2	2.8
2202	12.2	3.0
2203	17.5	3.2
1901	14.2	3.5
2206	20.0	4.8
701	27.2	5.5
2201	18.0	6.0

line	plants_meter	vis_rating
2204	14.5	6.2
1902	16.5	6.8
1603	50.5	7.0
1802	28.0	7.0
1905	34.0	7.0
801	28.8	7.5
1605	36.5	7.5
1903	41.2	7.5
1803	28.2	7.8
1904	31.5	7.8
1504	33.5	8.2
704	37.0	8.5

```
library(corrplot)
```

```
## corrplot 0.92 loaded
```

```
dat2 %>%
  filter(site=="Becker") %>%
  group_by(line) %>%
  summarise(
    plants_meter = mean(plants_meter),
    vis_rating = mean(vis,na.rm = T)
  ) %>%
  mutate(across(
    .fns = ~round(.x,1)
  )) -> c1

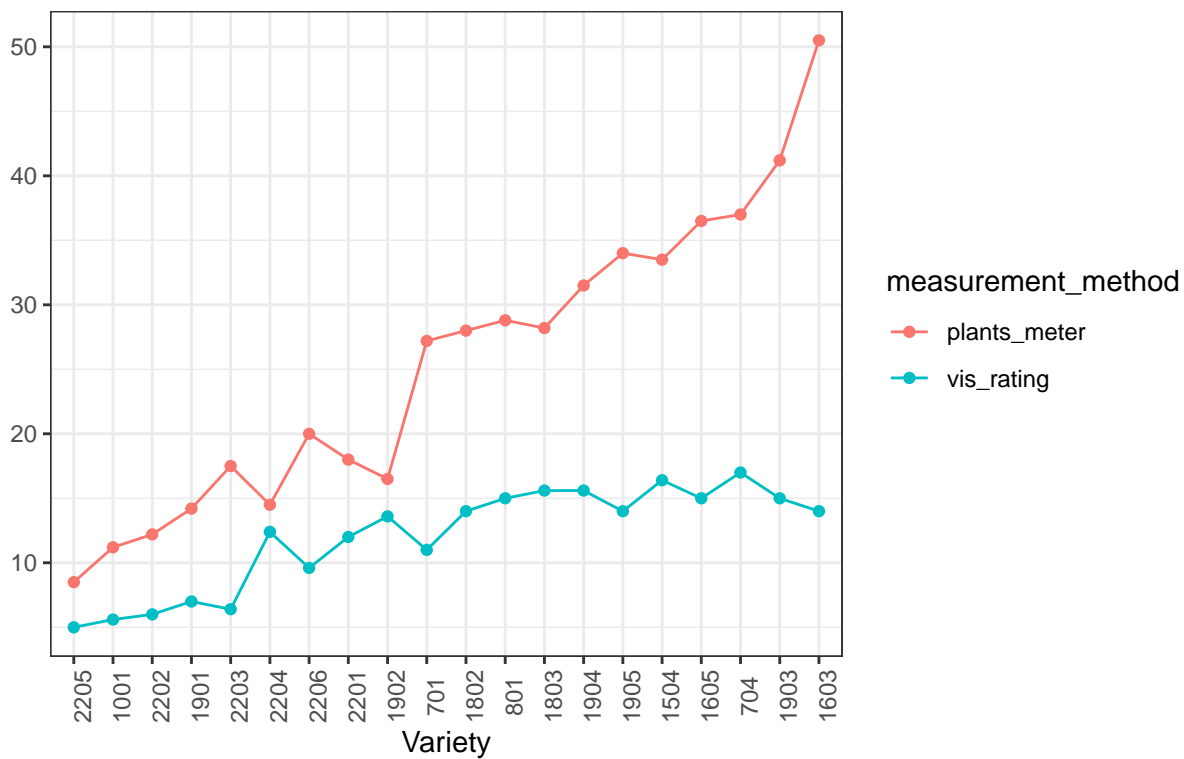
cor(c1$plants_meter,
    c1$vis_rating,
    method = "pearson")
```

```
## [1] 0.7765857
```

```
# 77% of increase in visual rating is explained by increase in plant counts
```

```
c1 %>%
  mutate(vis_rating = vis_rating*2) %>%
  pivot_longer(
    cols = c(plants_meter,vis_rating),
    names_to = "measurement_method"
  ) %>%
  mutate(line = fct_reorder(factor(line),value)) %>%
  ggplot(aes(factor(line),
              value,
              col=measurement_method,
              group=measurement_method)) +
  geom_point() +
  geom_line() +
  theme_bw() +
```

```
theme(axis.text.x = element_text(angle = 90)) +
labs(x="Variety",
     y="",
     caption = "Comparison of visual rating vs. plant counts\nVisual ratings are doubled from original")
```



Comparison of visual rating vs. plant counts
Visual ratings are doubled from original 0–10 scale
 $r=0.77$