Creating_the_table

```
library(rgdal)
```

```
## Loading required package: sp
```

```
## rgdal: version: 1.4-4, (SVN revision 833)
##  Geospatial Data Abstraction Library extensions to R successfully loaded
##  Loaded GDAL runtime: GDAL 2.4.2, released 2019/06/28
##  Path to GDAL shared files: /Library/Frameworks/R.framework/Versions/3.6/Resources/library/rgdal/gdal
##  GDAL binary built with GEOS: FALSE
##  Loaded PROJ.4 runtime: Rel. 5.2.0, September 15th, 2018, [PJ_VERSION: 520]
##  Path to PROJ.4 shared files: /Library/Frameworks/R.framework/Versions/3.6/Resources/library/rgdal/pr
##  Linking to sp version: 1.3-1
```

```
library(sf)
```

```
## Linking to GEOS 3.7.2, GDAL 2.4.2, PROJ 5.2.0
```

```
library(tidyverse)
```

```
## -- Attaching packages ---------------------------------------------------------------------------
```

```
## v ggplot2 3.2.1     v purrr   0.3.2
## v tibble  2.1.3     v dplyr   0.8.3
## v tidyr   1.0.0     v stringr 1.4.0
## v readr   1.3.1     v forcats 0.4.0
```

```
## -- Conflicts ------------------------------------------------------------------------------------
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

```
raw_df = readOGR("../R_output/spatial/KernAg_CDFA_pest/2017/B50/KernAg_CDFA_Pest2017_B50.shp") %>%
  st_as_sf() %>%
  as.data.frame() %>%
  dplyr::select(-geometry)
```

```
## OGR data source with driver: ESRI Shapefile
## Source: "/Users/clairepowers/Desktop/Organics_Final/Working/R_files/R_output/spatial/KernAg_CDFA_pest
## with 8531 features
## It has 33 fields
```

```
df = raw_df %>%
      separate(col = "COMM",
           into = c("COMM_x","COMM_y"),
           sep = "-",
           remove = FALSE)
```

```
## Warning: Expected 2 pieces. Missing pieces filled with `NA` in 8330
## rows [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19,
## 20, ...].
```

```
# Make all COMM columns characters for if() statement matching
df$COMM=as.character(df$COMM)
df$COMM_x=as.character(df$COMM_x)
df$COMM_y=as.character(df$COMM_y)
```

```r
# This if() statement eliminates the word "ORGANIC" from commodity names, but keeps the full original n
df$COMM_new <- ifelse(df$COMM_y == "ORGANIC"|is.na(df$COMM_y),
                          df$COMM_x,
                          df$COMM)

# Remove intermediate COMM columns
df = df %>%
  dplyr::select(-COMM_x,-COMM_y)

df_2 = df %>%
  dplyr::select(COMM, COMM_new, CDFA, STORIE_, AREA_HE, KgPstPr, KgABrds, KgAiBes, KgAMmml, KgAAqSp, Kg

df_2$CDFA = ifelse(is.na(df_2$CDFA),0,1)

summary(df_2)
```

```
##      COMM             COMM_new             CDFA            STORIE_
##  Length:8531        Length:8531        Min.   :0.00000   Min.   :1.000
##  Class :character   Class :character   1st Qu.:0.00000   1st Qu.:1.780
##  Mode  :character   Mode  :character   Median :0.00000   Median :2.000
##                                        Mean   :0.03903   Mean   :2.209
##                                        3rd Qu.:0.00000   3rd Qu.:2.562
##                                        Max.   :1.00000   Max.   :5.000
##                                                          NA's   :2095
##     AREA_HE             KgPstPr            KgABrds
##  Min.   :  0.07806   Min.   :    0.01   Min.   :    0.00
##  1st Qu.: 14.62391   1st Qu.:  181.78   1st Qu.:    0.00
##  Median : 26.79183   Median :  715.78   Median :    0.00
##  Mean   : 32.99647   Mean   : 2048.62   Mean   :  106.50
##  3rd Qu.: 33.72211   3rd Qu.: 2179.80   3rd Qu.:   11.23
##  Max.   :265.11312   Max.   :80654.26   Max.   :37436.85
##
##     KgAiBes            KgAMmml            KgAAqSp
##  Min.   :   0.000   Min.   :    0.00   Min.   :    0.00
##  1st Qu.:   0.192   1st Qu.:    0.00   1st Qu.:   10.01
##  Median :   7.296   Median :    0.00   Median :   59.56
##  Mean   :  50.984   Mean   :  184.69   Mean   :  423.45
##  3rd Qu.:  29.605   3rd Qu.:    6.21   3rd Qu.:  314.84
##  Max.   :5424.954   Max.   :37436.85   Max.   :32213.07
##
##     KgARptA
##  Min.   :  0.00000
##  1st Qu.:  0.00000
##  Median :  0.00000
##  Mean   :  0.07278
##  3rd Qu.:  0.00000
##  Max.   :145.49380
##
```

```r
crop_fltr_df = df_2 %>%
     group_by(COMM_new) %>%
     summarise(total_fields = n(),
               cdfa_fields = sum(CDFA)) %>%
  filter(cdfa_fields > 4) %>%
```

```
  arrange(-cdfa_fields)

top19_crops = crop_fltr_df$COMM_new

top5 = head(crop_fltr_df,5)
top5_crops = top5$COMM_new
top5_crops
```

```
## [1] "GRAPE"        "CARROT"       "LETTUCE LEAF" "ORANGE"
## [5] "SWISS CHARD"
```

```
C_matrix = matrix(ncol = 8, nrow = 7)
colnames(C_matrix) = c("Ann_KgH","birds","bees", "mmls","aqsp","reps","soil","fldsz")
rownames(C_matrix) = c("overall","sharedcrops","grape","carrot","lettuce","orange","swisschard")

O_matrix = matrix(ncol = 8, nrow = 7)
colnames(O_matrix) = c("Ann_KgH","birds","bees", "mmls","aqsp","reps","soil","fldsz")
rownames(O_matrix) = c("overall","sharedcrops","grape","carrot","lettuce","orange","swisschard")
```

```
org_df = df_2 %>%
  filter(CDFA == 1)


O_matrix[1,1] = sum(org_df$KgPstPr)/sum(org_df$AREA_HE)
O_matrix[1,2] = sum(org_df$KgABrds)/sum(org_df$AREA_HE)
O_matrix[1,3] = sum(org_df$KgAiBes)/sum(org_df$AREA_HE)
O_matrix[1,4] = sum(org_df$KgABrds)/sum(org_df$AREA_HE)
O_matrix[1,5] = sum(org_df$KgAMmml)/sum(org_df$AREA_HE)
O_matrix[1,6] = sum(org_df$KgAAqSp)/sum(org_df$AREA_HE)
O_matrix[1,7] = mean(org_df$STORIE_, na.rm = TRUE)
O_matrix[1,8] = mean(org_df$AREA_HE)



org_df_19 = org_df %>%
  filter(COMM_new %in% top19_crops)

O_matrix[2,1] = sum(org_df_19$KgPstPr)/sum(org_df_19$AREA_HE)
O_matrix[2,2] = sum(org_df_19$KgABrds)/sum(org_df_19$AREA_HE)
O_matrix[2,3] = sum(org_df_19$KgAiBes)/sum(org_df_19$AREA_HE)
O_matrix[2,4] = sum(org_df_19$KgABrds)/sum(org_df_19$AREA_HE)
O_matrix[2,5] = sum(org_df_19$KgAMmml)/sum(org_df_19$AREA_HE)
O_matrix[2,6] = sum(org_df_19$KgAAqSp)/sum(org_df_19$AREA_HE)
O_matrix[2,7] = mean(org_df_19$STORIE_, na.rm = TRUE)
O_matrix[2,8] = mean(org_df_19$AREA_HE)


org_df_grape = org_df %>%
  filter(COMM_new == top5_crops[1])

O_matrix[3,1] = sum(org_df_grape$KgPstPr)/sum(org_df_grape$AREA_HE)
O_matrix[3,2] = sum(org_df_grape$KgABrds)/sum(org_df_grape$AREA_HE)
O_matrix[3,3] = sum(org_df_grape$KgAiBes)/sum(org_df_grape$AREA_HE)
O_matrix[3,4] = sum(org_df_grape$KgABrds)/sum(org_df_grape$AREA_HE)
```

```
O_matrix[3,5] = sum(org_df_grape$KgAMmml)/sum(org_df_grape$AREA_HE)
O_matrix[3,6] = sum(org_df_grape$KgAAqSp)/sum(org_df_grape$AREA_HE)
O_matrix[3,7] = mean(org_df_grape$STORIE_, na.rm = TRUE)
O_matrix[3,8] = mean(org_df_grape$AREA_HE)



org_df_carrot = org_df %>%
  filter(COMM_new == top5_crops[2])

O_matrix[4,1] = sum(org_df_carrot$KgPstPr)/sum(org_df_carrot$AREA_HE)
O_matrix[4,2] = sum(org_df_carrot$KgABrds)/sum(org_df_carrot$AREA_HE)
O_matrix[4,3] = sum(org_df_carrot$KgAiBes)/sum(org_df_carrot$AREA_HE)
O_matrix[4,4] = sum(org_df_carrot$KgABrds)/sum(org_df_carrot$AREA_HE)
O_matrix[4,5] = sum(org_df_carrot$KgAMmml)/sum(org_df_carrot$AREA_HE)
O_matrix[4,6] = sum(org_df_carrot$KgAAqSp)/sum(org_df_carrot$AREA_HE)
O_matrix[4,7] = mean(org_df_carrot$STORIE_, na.rm = TRUE)
O_matrix[4,8] = mean(org_df_carrot$AREA_HE)


org_df_lettuce = org_df %>%
  filter(COMM_new == top5_crops[3])

O_matrix[5,1] = sum(org_df_lettuce$KgPstPr)/sum(org_df_lettuce$AREA_HE)
O_matrix[5,2] = sum(org_df_lettuce$KgABrds)/sum(org_df_lettuce$AREA_HE)
O_matrix[5,3] = sum(org_df_lettuce$KgAiBes)/sum(org_df_lettuce$AREA_HE)
O_matrix[5,4] = sum(org_df_lettuce$KgABrds)/sum(org_df_lettuce$AREA_HE)
O_matrix[5,5] = sum(org_df_lettuce$KgAMmml)/sum(org_df_lettuce$AREA_HE)
O_matrix[5,6] = sum(org_df_lettuce$KgAAqSp)/sum(org_df_lettuce$AREA_HE)
O_matrix[5,7] = mean(org_df_lettuce$STORIE_, na.rm = TRUE)
O_matrix[5,8] = mean(org_df_lettuce$AREA_HE)


org_df_orange = org_df %>%
  filter(COMM_new == top5_crops[4])

O_matrix[6,1] = sum(org_df_orange$KgPstPr)/sum(org_df_orange$AREA_HE)
O_matrix[6,2] = sum(org_df_orange$KgABrds)/sum(org_df_orange$AREA_HE)
O_matrix[6,3] = sum(org_df_orange$KgAiBes)/sum(org_df_orange$AREA_HE)
O_matrix[6,4] = sum(org_df_orange$KgABrds)/sum(org_df_orange$AREA_HE)
O_matrix[6,5] = sum(org_df_orange$KgAMmml)/sum(org_df_orange$AREA_HE)
O_matrix[6,6] = sum(org_df_orange$KgAAqSp)/sum(org_df_orange$AREA_HE)
O_matrix[6,7] = mean(org_df_orange$STORIE_, na.rm = TRUE)
O_matrix[6,8] = mean(org_df_orange$AREA_HE)



org_df_chard = org_df %>%
  filter(COMM_new == top5_crops[5])

O_matrix[7,1] = sum(org_df_chard$KgPstPr)/sum(org_df_chard$AREA_HE)
O_matrix[7,2] = sum(org_df_chard$KgABrds)/sum(org_df_chard$AREA_HE)
O_matrix[7,3] = sum(org_df_chard$KgAiBes)/sum(org_df_chard$AREA_HE)
```

```
O_matrix[7,4] = sum(org_df_chard$KgABrds)/sum(org_df_chard$AREA_HE)
O_matrix[7,5] = sum(org_df_chard$KgAMmml)/sum(org_df_chard$AREA_HE)
O_matrix[7,6] = sum(org_df_chard$KgAAqSp)/sum(org_df_chard$AREA_HE)
O_matrix[7,7] = mean(org_df_chard$STORIE_, na.rm = TRUE)
O_matrix[7,8] = mean(org_df_chard$AREA_HE)


O_df = as.data.frame(O_matrix)
write_csv(O_df,"../R_output/CSV/organic_summary.csv")
```

```
conv_df = df_2 %>%
  filter(CDFA == 0)


C_matrix[1,1] = sum(conv_df$KgPstPr)/sum(conv_df$AREA_HE)
C_matrix[1,2] = sum(conv_df$KgABrds)/sum(conv_df$AREA_HE)
C_matrix[1,3] = sum(conv_df$KgAiBes)/sum(conv_df$AREA_HE)
C_matrix[1,4] = sum(conv_df$KgABrds)/sum(conv_df$AREA_HE)
C_matrix[1,5] = sum(conv_df$KgAMmml)/sum(conv_df$AREA_HE)
C_matrix[1,6] = sum(conv_df$KgAAqSp)/sum(conv_df$AREA_HE)
C_matrix[1,7] = mean(conv_df$STORIE_, na.rm = TRUE)
C_matrix[1,8] = mean(conv_df$AREA_HE)



conv_df_19 = conv_df %>%
  filter(COMM_new %in% top19_crops)

C_matrix[2,1] = sum(conv_df_19$KgPstPr)/sum(conv_df_19$AREA_HE)
C_matrix[2,2] = sum(conv_df_19$KgABrds)/sum(conv_df_19$AREA_HE)
C_matrix[2,3] = sum(conv_df_19$KgAiBes)/sum(conv_df_19$AREA_HE)
C_matrix[2,4] = sum(conv_df_19$KgABrds)/sum(conv_df_19$AREA_HE)
C_matrix[2,5] = sum(conv_df_19$KgAMmml)/sum(conv_df_19$AREA_HE)
C_matrix[2,6] = sum(conv_df_19$KgAAqSp)/sum(conv_df_19$AREA_HE)
C_matrix[2,7] = mean(conv_df_19$STORIE_, na.rm = TRUE)
C_matrix[2,8] = mean(conv_df_19$AREA_HE)


conv_df_grape = conv_df %>%
  filter(COMM_new == top5_crops[1])

C_matrix[3,1] = sum(conv_df_grape$KgPstPr)/sum(conv_df_grape$AREA_HE)
C_matrix[3,2] = sum(conv_df_grape$KgABrds)/sum(conv_df_grape$AREA_HE)
C_matrix[3,3] = sum(conv_df_grape$KgAiBes)/sum(conv_df_grape$AREA_HE)
C_matrix[3,4] = sum(conv_df_grape$KgABrds)/sum(conv_df_grape$AREA_HE)
C_matrix[3,5] = sum(conv_df_grape$KgAMmml)/sum(conv_df_grape$AREA_HE)
C_matrix[3,6] = sum(conv_df_grape$KgAAqSp)/sum(conv_df_grape$AREA_HE)
C_matrix[3,7] = mean(conv_df_grape$STORIE_, na.rm = TRUE)
C_matrix[3,8] = mean(conv_df_grape$AREA_HE)



conv_df_carrot = conv_df %>%
  filter(COMM_new == top5_crops[2])
```

```
C_matrix[4,1] = sum(conv_df_carrot$KgPstPr)/sum(conv_df_carrot$AREA_HE)
C_matrix[4,2] = sum(conv_df_carrot$KgABrds)/sum(conv_df_carrot$AREA_HE)
C_matrix[4,3] = sum(conv_df_carrot$KgAiBes)/sum(conv_df_carrot$AREA_HE)
C_matrix[4,4] = sum(conv_df_carrot$KgABrds)/sum(conv_df_carrot$AREA_HE)
C_matrix[4,5] = sum(conv_df_carrot$KgAMmml)/sum(conv_df_carrot$AREA_HE)
C_matrix[4,6] = sum(conv_df_carrot$KgAAqSp)/sum(conv_df_carrot$AREA_HE)
C_matrix[4,7] = mean(conv_df_carrot$STORIE_, na.rm = TRUE)
C_matrix[4,8] = mean(conv_df_carrot$AREA_HE)


conv_df_lettuce = conv_df %>%
  filter(COMM_new == top5_crops[3])

C_matrix[5,1] = sum(conv_df_lettuce$KgPstPr)/sum(conv_df_lettuce$AREA_HE)
C_matrix[5,2] = sum(conv_df_lettuce$KgABrds)/sum(conv_df_lettuce$AREA_HE)
C_matrix[5,3] = sum(conv_df_lettuce$KgAiBes)/sum(conv_df_lettuce$AREA_HE)
C_matrix[5,4] = sum(conv_df_lettuce$KgABrds)/sum(conv_df_lettuce$AREA_HE)
C_matrix[5,5] = sum(conv_df_lettuce$KgAMmml)/sum(conv_df_lettuce$AREA_HE)
C_matrix[5,6] = sum(conv_df_lettuce$KgAAqSp)/sum(conv_df_lettuce$AREA_HE)
C_matrix[5,7] = mean(conv_df_lettuce$STORIE_, na.rm = TRUE)
C_matrix[5,8] = mean(conv_df_lettuce$AREA_HE)


conv_df_orange = conv_df %>%
  filter(COMM_new == top5_crops[4])

C_matrix[6,1] = sum(conv_df_orange$KgPstPr)/sum(conv_df_orange$AREA_HE)
C_matrix[6,2] = sum(conv_df_orange$KgABrds)/sum(conv_df_orange$AREA_HE)
C_matrix[6,3] = sum(conv_df_orange$KgAiBes)/sum(conv_df_orange$AREA_HE)
C_matrix[6,4] = sum(conv_df_orange$KgABrds)/sum(conv_df_orange$AREA_HE)
C_matrix[6,5] = sum(conv_df_orange$KgAMmml)/sum(conv_df_orange$AREA_HE)
C_matrix[6,6] = sum(conv_df_orange$KgAAqSp)/sum(conv_df_orange$AREA_HE)
C_matrix[6,7] = mean(conv_df_orange$STORIE_, na.rm = TRUE)
C_matrix[6,8] = mean(conv_df_orange$AREA_HE)



conv_df_chard = conv_df %>%
  filter(COMM_new == top5_crops[5])

C_matrix[7,1] = sum(conv_df_chard$KgPstPr)/sum(conv_df_chard$AREA_HE)
C_matrix[7,2] = sum(conv_df_chard$KgABrds)/sum(conv_df_chard$AREA_HE)
C_matrix[7,3] = sum(conv_df_chard$KgAiBes)/sum(conv_df_chard$AREA_HE)
C_matrix[7,4] = sum(conv_df_chard$KgABrds)/sum(conv_df_chard$AREA_HE)
C_matrix[7,5] = sum(conv_df_chard$KgAMmml)/sum(conv_df_chard$AREA_HE)
C_matrix[7,6] = sum(conv_df_chard$KgAAqSp)/sum(conv_df_chard$AREA_HE)
C_matrix[7,7] = mean(conv_df_chard$STORIE_, na.rm = TRUE)
C_matrix[7,8] = mean(conv_df_chard$AREA_HE)

C_df = as.data.frame(C_matrix)

write_csv(C_df,"../R_output/CSV/conventional_summary.csv")
```