

# Expenses

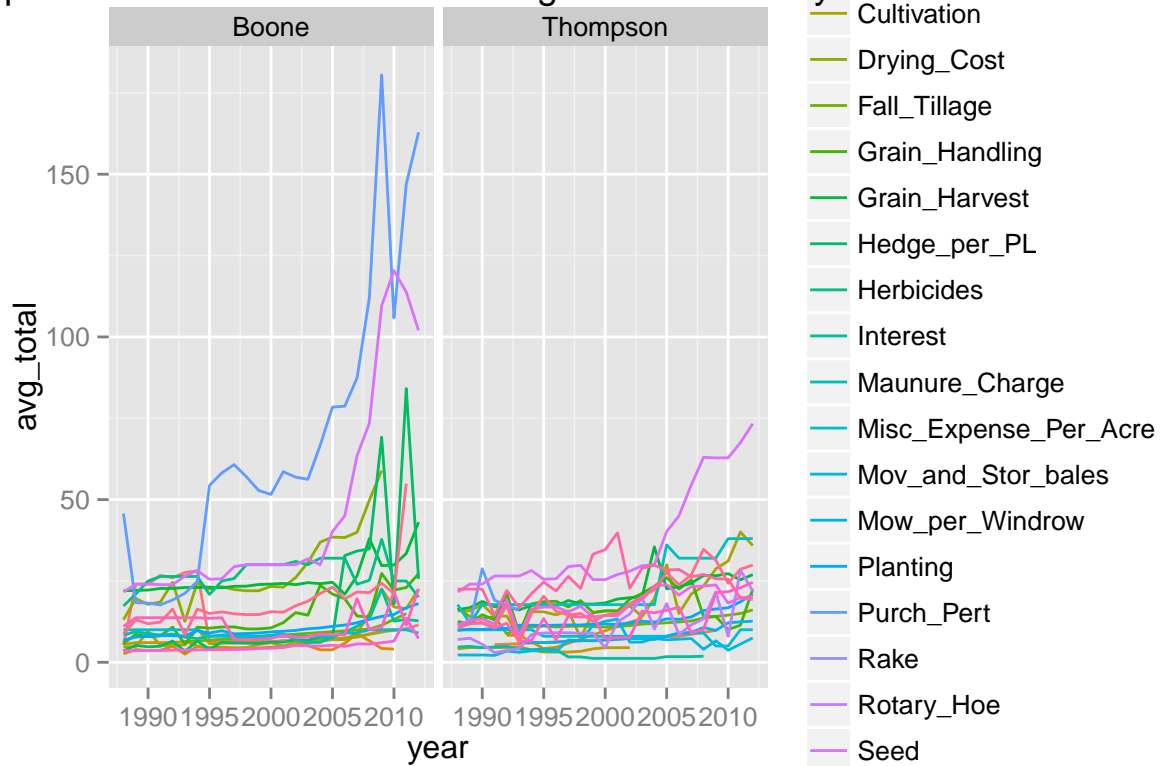
*Colin*

*Saturday, October 25, 2014*

```
library(ggplot2)
library(dplyr)
library(tidyr)

##### Read in Data #####
#pfi <- read.csv("C:/Users/Colin LB/Documents/GitHub/PFI/data/PFI_clean.csv")
#let's try to work with relative paths so that code works for everyone.
pfi <- read.csv("../data/PFI_clean.csv")
#Let's remove Land_Change since that's assumed the same for both farms.
##### Exploring #####
pfi[complete.cases(pfi),] %>%
  filter(item_type == "Expense") %>%
  filter(crop %in% c("Corn")) %>%
  filter(item != "Land_Change") %>%
  filter(value > .01) %>%
  group_by(farmer, year, crop, field_id, item) %>%
  summarise(total = sum(value)) %>%
  group_by(farmer, year, item) %>%
  summarise(avg_total = mean(total)) %>%
  ggplot() +
  geom_line(aes(x=year, y=avg_total, colour=item)) +
  facet_wrap(~farmer) +
  ggtitle('Expenses over time for Corn Averaged Over Plots by Item')
```

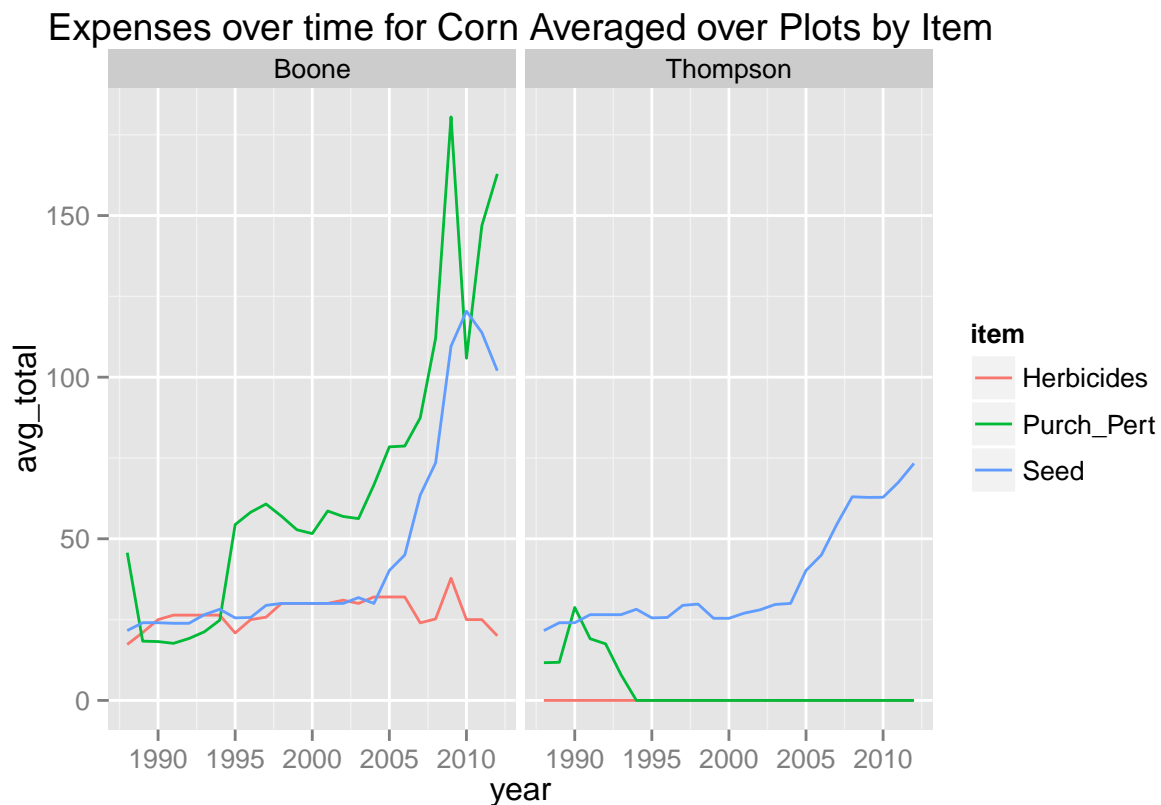
## expenses over time for Corn Averaged Over Plots by Item



### Libraries

Let's just pull out the costs that seem "large"

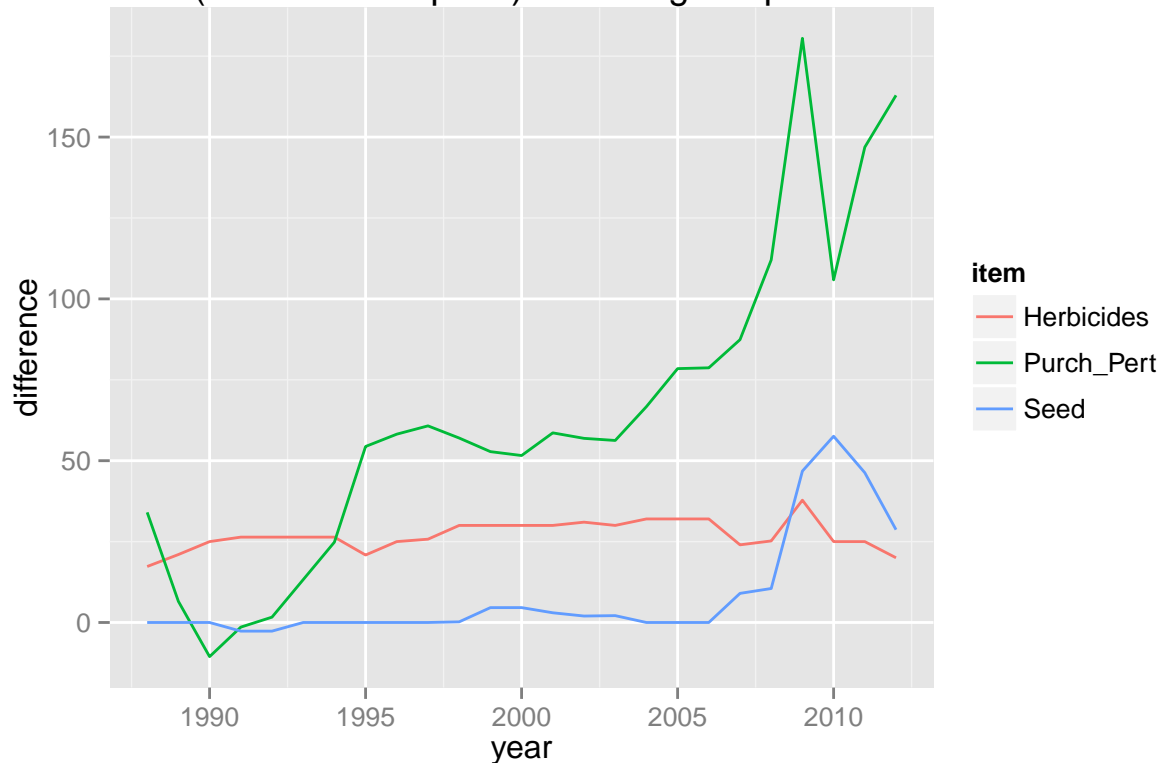
```
pfi[complete.cases(pfi),] %>%
  filter(item_type == "Expense") %>%
  filter(crop %in% c("Corn")) %>%
  filter(item %in% c("Purch_Pert", "Seed", "Herbicides")) %>%
  group_by(farmer, year, crop, field_id, item) %>%
  summarise(total = sum(value)) %>%
  group_by(farmer, year, item) %>%
  summarise(avg_total = mean(total)) %>%
  ggplot() +
  geom_line(aes(x=year, y=avg_total, color=item)) +
  facet_wrap(~farmer) +
  ggtitle('Expenses over time for Corn Averaged over Plots by Item')
```



Let's plot the Difference In Expenses now

```
pfi[complete.cases(pfi),] %>%
  filter(item_type == "Expense") %>%
  filter(crop %in% c("Corn")) %>%
  filter(item %in% c("Purch_Pert", "Seed", "Herbicides")) %>%
  group_by(farmer, year, crop, field_id, item) %>%
  summarise(total = sum(value)) %>%
  group_by(farmer, year, item) %>%
  summarise(avg_total = mean(total)) %>%
  spread(farmer, avg_total) %>%
  mutate(difference = Boone-Thompson) %>%
  ggplot() +
  geom_line(aes(x=year, y=difference, color=item)) +
  ggtitle('Difference (Boone-Thompson) in Average Expenses for Corn')
```

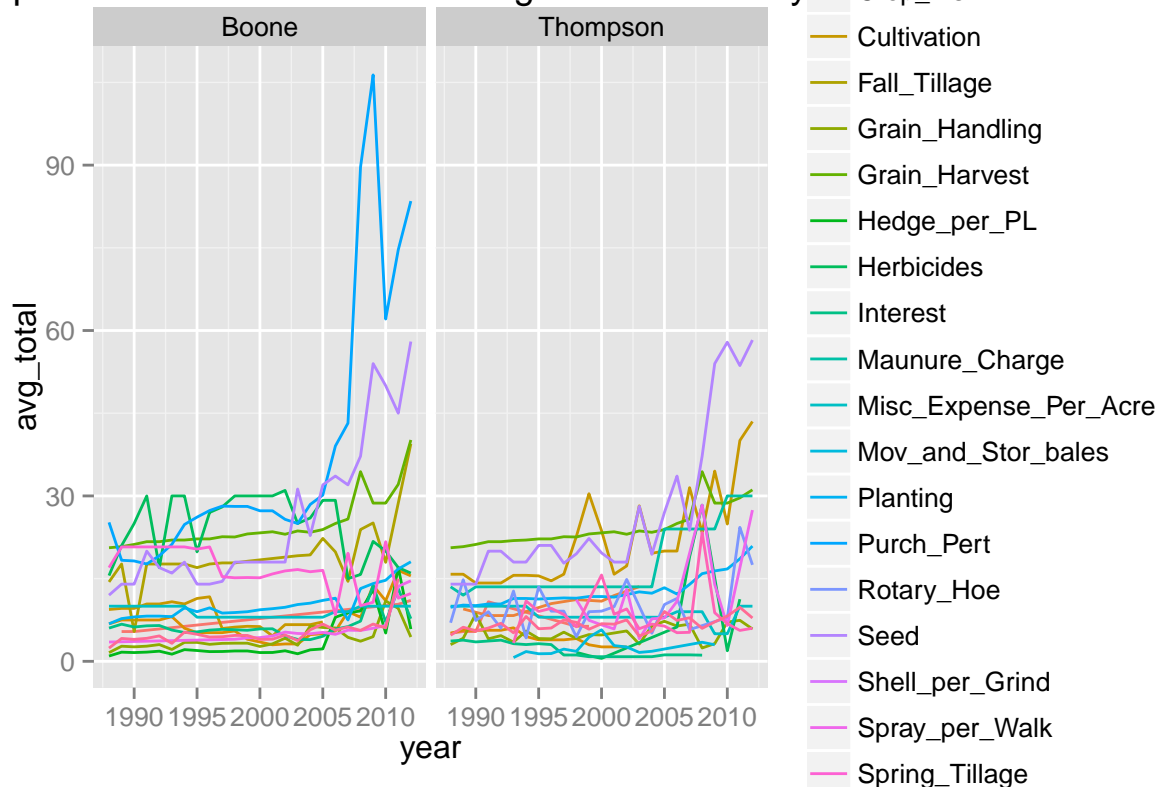
## Difference (Boone–Thompson) in Average Expenses for Corn



Did we confirm what Purch\_Pert is? Let's look just at SB now.

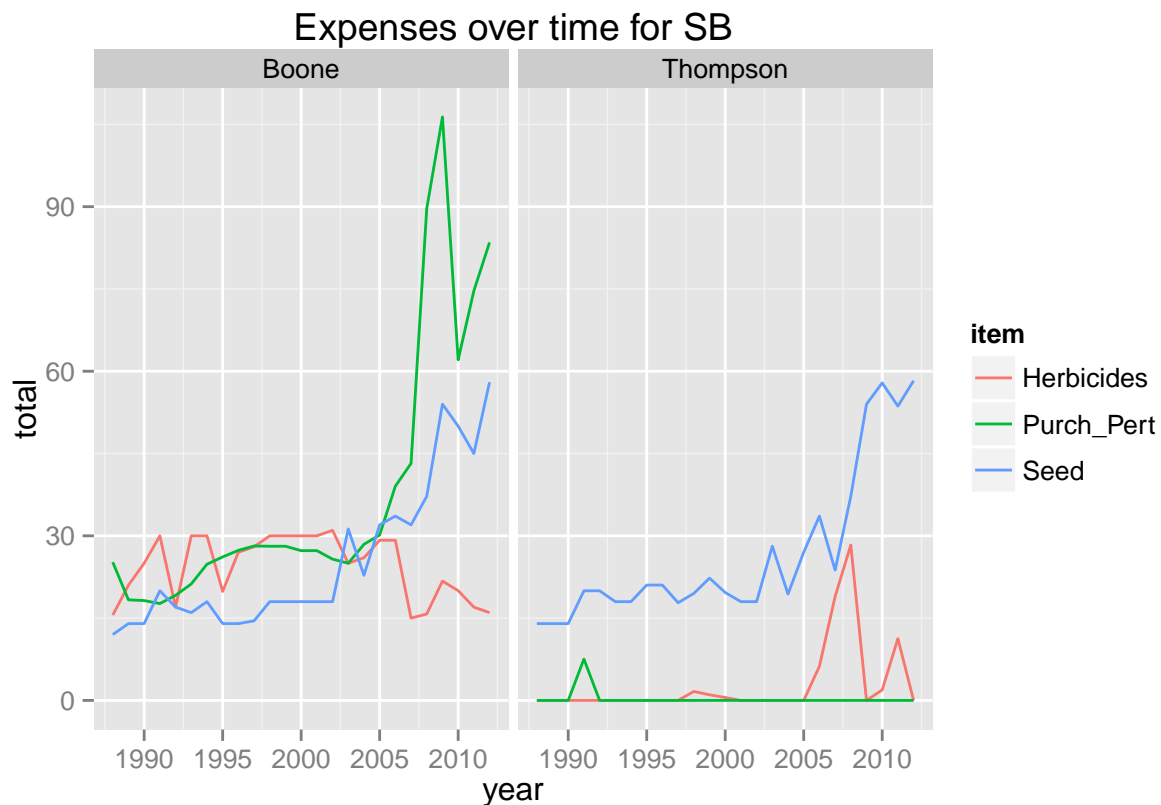
```
pfi[complete.cases(pfi),] %>%
  filter(item_type == "Expense") %>%
  filter(crop %in% c("SB")) %>%
  filter(item != "Land_Change") %>%
  filter(value > .01) %>%
  group_by(farmer, year, crop, field_id, item) %>%
  summarise(total = sum(value)) %>%
  group_by(farmer, year, item) %>%
  summarise(avg_total = mean(total)) %>%
  ggplot() +
  geom_line(aes(x=year, y=avg_total, colour=item)) +
  facet_wrap(~farmer) +
  ggtitle('Expenses over time for SB Averaged Over Plots by Item')
```

## Expenses over time for SB Averaged Over Plots by Item



Let's look at the "large" expenses for SB

```
pfi[complete.cases(pfi),] %>%
  filter(item_type == "Expense") %>%
  filter(crop %in% c("SB")) %>%
  filter(item %in% c("Purch_Pert", "Seed", "Herbicides")) %>%
  group_by(farmer, year, crop, field_id, item) %>%
  summarise(total = sum(value)) %>%
  group_by(farmer, year, item) %>%
  ggplot() +
  geom_line(aes(x=year, y=total, color=item)) +
  facet_wrap(~farmer) +
  ggtitle('Expenses over time for SB')
```



```
q<-pfi[complete.cases(pfi),] %>%
  filter(item_type == "Expense") %>%
  filter(crop %in% c("Corn")) %>%
  filter(item != "Land_Change") %>%
  filter(value==0 & farmer=="Thompson", field_id==1) %>%
  group_by(item)

unique(q$item)
```

Let's try and see all the expenses Thompson records as 0 vs. what Boone pays.

```
## [1] Drying_Cost      Bale_Hay          Stubble_Costs    Hedge_per_PL
## [5] Corn_RSL         Straw_Costs       Herbicides       Windrow_Oats
## [9] Mow_per_Windrow  Rake             Spring_Tillage   Cover_Crop
## [13] Fall_Tillage     Chop_StksCc      Spray_per_Walk   Apply_NH4
## [17] Purch_Pert       Crop_Ins         Interest
## 41 Levels: Apply_NH4 Bale_Hay Chop_StksCc ... Yield_Per_Acre_Bu_per_pound
```

```
boone_extra_expense<-pfi[complete.cases(pfi),] %>%
  filter(item_type == "Expense") %>%
  filter(farmer=="Boone") %>%
  filter(crop %in% c("Corn")) %>%
```

```

filter(item %in% c("Apply_NH4", "Hedge_per_PL", "Corn_RSL", "Herbicides", "Spring_Tillage", "Chop_StksCc",
filter(value>.01) %>%
group_by(year,item) %>%
summarise(total = sum(value)) %>%
ggplot() +
geom_line(aes(x=year, y=total,linetype=item)) +
ggtitle('Boone Extra Expenses for Corn')

```

boone\_extra\_expense

