Agri Production in India

Introduction :

India’s agriculture is composed of many crops, with the foremost food staples being rice and wheat.  
Indian farmers also grow pulses, potatoes, sugarcane, oilseeds, and such non-food items as cotton, tea, coffee, rubber, and jute.  
Despite the overwhelming size of the agricultural sector, however, yields per hectare of crops in India are generally low compared to international standards.  
Improper water management is another problem affecting India’s agriculture.  
At a time of increasing water shortages and environmental crises, for example, the rice crop in India is allocated disproportionately high amounts of water.  
It is estimated that as much as one-fifth of the total agricultural output is lost due to inefficiencies in harvesting, transport, and storage of government-subsidized crops.

So lets us analyse more about the crop cultivation, cost invested, seasons for cultivation.  
Have used **Lattice** package for Visualization

### 1) Crop Variety

str(crop\_var)

## 'data.frame': 78 obs. of 5 variables:

## $ Crop : Factor w/ 29 levels "Barley","Bengal Gram",..: 22 22 22 22 22 22 22 22 28 28 ...

## $ Variety : Factor w/ 78 levels "(CNI 383-5-11)",..: 6 1 32 33 11 13 12 68 47 40 ...

## $ Season..duration.in.days: Factor w/ 40 levels "","-","100","103-111",..: 39 1 40 39 21 25 24 15 11 6 ...

## $ Recommended.Zone : Factor w/ 77 levels "","Andhra Pradesh, Karnataka, Tamil Nadu and Maharashtra under normal Kharif season.",..: 6 1 11 9 38 7 61 65 28 33 ...

## $ X : logi NA NA NA NA NA NA ...

head(crop\_var)

## Crop Variety Season..duration.in.days

## 1 Paddy Chinsurah Rice (IET 19140) Medium

## 2 Paddy (CNI 383-5-11)

## 3 Paddy IGKVR-1 (IET 19569) Mid-early

## 4 Paddy IGKVR-2 (IET 19795) Medium

## 5 Paddy CR Dhan 401 (REETA) 145-150

## 6 Paddy CR Dhan 601 (IET 18558) 160

## Recommended.Zone

## 1 Andhra Pradesh, Tamil Nadu, Gujarat, Orissa, and West Bengal under irrigated conditions.

## 2

## 3 Chhattisgarh, Madhya Pradesh and Orissa under both irrigated and rainfed conditions.

## 4 Chhattisgarh, Bihar and Orissa under both irrigated and rainfed conditions.

## 5 Orissa, West Bengal, Tamil Nadu and Andhra Pradesh under irrigated late sown conditions as well as shallow rainfed lowland.

## 6 Boro Area of Orissa, West Bengal and Assam.

## X

## 1 NA

## 2 NA

## 3 NA

## 4 NA

## 5 NA

## 6 NA

### 2) Crop Cultivation and Yeild Cost

Glimpse of data

str(crop\_cost)

## 'data.frame': 49 obs. of 6 variables:

## $ Crop : Factor w/ 10 levels "ARHAR","COTTON",..: 1 1 1 1 1 2 2 2 2 2 ...

## $ State : Factor w/ 13 levels "Andhra Pradesh",..: 12 5 3 1 7 7 9 1 3 4 ...

## $ Cost.of.Cultivation....Hectare..A2.FL: num 9794 10593 13469 17052 17131 ...

## $ Cost.of.Cultivation....Hectare..C2 : num 23077 16529 19552 24172 25270 ...

## $ Cost.of.Production....Quintal..C2 : num 1942 2172 1898 3671 2776 ...

## $ Yield..Quintal..Hectare.. : num 9.83 7.47 9.59 6.42 8.72 ...

head(crop\_cost)

## Crop State Cost.of.Cultivation....Hectare..A2.FL

## 1 ARHAR Uttar Pradesh 9794.05

## 2 ARHAR Karnataka 10593.15

## 3 ARHAR Gujarat 13468.82

## 4 ARHAR Andhra Pradesh 17051.66

## 5 ARHAR Maharashtra 17130.55

## 6 COTTON Maharashtra 23711.44

## Cost.of.Cultivation....Hectare..C2 Cost.of.Production....Quintal..C2

## 1 23076.74 1941.55

## 2 16528.68 2172.46

## 3 19551.90 1898.30

## 4 24171.65 3670.54

## 5 25270.26 2775.80

## 6 33116.82 2539.47

## Yield..Quintal..Hectare..

## 1 9.83

## 2 7.47

## 3 9.59

## 4 6.42

## 5 8.72

## 6 12.69

Total Yeild for crops .. Which crop Yeilds more in India?

## # A tibble: 10 x 2

## Crop yeild

## <fctr> <dbl>

## 1 ARHAR 42.03

## 2 COTTON 93.86

## 3 GRAM 52.79

## 4 GROUNDNUT 51.44

## 5 MAIZE 153.99

## 6 MOONG 20.98

## 7 PADDY 231.48

## 8 RAPESEED AND MUSTARD 71.60

## 9 SUGARCANE 3952.48

## 10 WHEAT 135.60

What is the cost of Production(Quintal) for crops?

What is the cost of Cultivation(Hectare) for crops?

Major Crops yeilds - Major Contributors

3)Crops

str(crop)

## 'data.frame': 13 obs. of 9 variables:

## $ Crop : Factor w/ 13 levels "","All Agriculture",..: 10 13 3 9 12 6 7 4 8 11 ...

## $ X2004.05: int 100 100 100 100 100 100 100 100 100 100 ...

## $ X2005.06: int 101 101 107 108 109 99 97 102 86 96 ...

## $ X2006.07: int 99 112 110 134 103 99 98 101 85 91 ...

## $ X2007.08: int 105 115 115 124 118 98 98 100 97 87 ...

## $ X2008.09: int 112 117 113 124 113 102 98 99 104 80 ...

## $ X2009.10: int 121 127 123 146 124 104 112 116 103 81 ...

## $ X2010.11: int 117 120 122 137 128 114 123 133 99 109 ...

## $ X2011.12: int 110 108 136 129 115 119 124 137 102 107 ...

head(crop)

## Crop X2004.05 X2005.06 X2006.07 X2007.08 X2008.09 X2009.10

## 1 Rice 100 101 99 105 112 121

## 2 Wheat 100 101 112 115 117 127

## 3 Coarse Cereals 100 107 110 115 113 123

## 4 Pulses 100 108 134 124 124 146

## 5 Vegetables 100 109 103 118 113 124

## 6 Fruits 100 99 99 98 102 104

## X2010.11 X2011.12

## 1 117 110

## 2 120 108

## 3 122 136

## 4 137 129

## 5 128 115

## 6 114 119

This dataset has year columns as rows, so lets convert it with tidyr- gather().

crop1<-gather(crop,"Year","Value",X2004.05:X2011.12)

head(crop1)

## Crop Year Value

## 1 Rice X2004.05 100

## 2 Wheat X2004.05 100

## 3 Coarse Cereals X2004.05 100

## 4 Pulses X2004.05 100

## 5 Vegetables X2004.05 100

## 6 Fruits X2004.05 100

colors <- brewer.pal(n = nlevels(crop1$Crop), name = "Set1")

## Warning in brewer.pal(n = nlevels(crop1$Crop), name = "Set1"): n too large, allowed maximum for palette Set1 is 9

## Returning the palette you asked for with that many colors

crop1$Value[is.na(crop1$Value)]<-0

crop1$Year<-as.factor(crop1$Year)

xyplot(Value ~ Year,group=Crop,

data = crop1, lty = 1, col = colors,ylab = "Y",

type = c("l"), distribute.type = TRUE,

key = list(text = list(levels(crop1$Crop)),

lines = TRUE, space = "bottom",col=colors))