A

TP axis: 0, 50, 100, 150, 200, 250

Ag. LULC (pct, NLCD 2011)

B

(1.33,4.67]   (4.67,8]   (8,18]   (18,28]

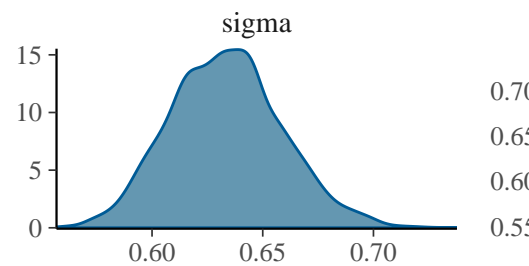tn_corn
model residuals

2
1
0
−1
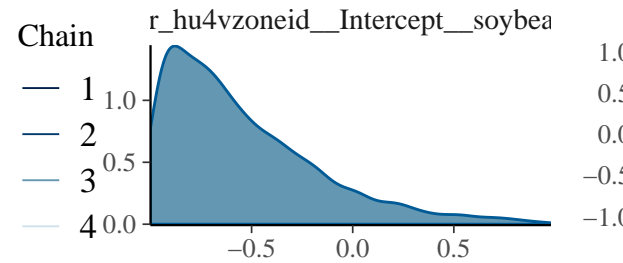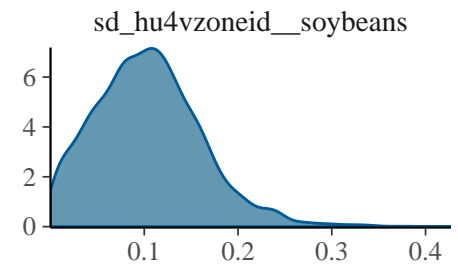
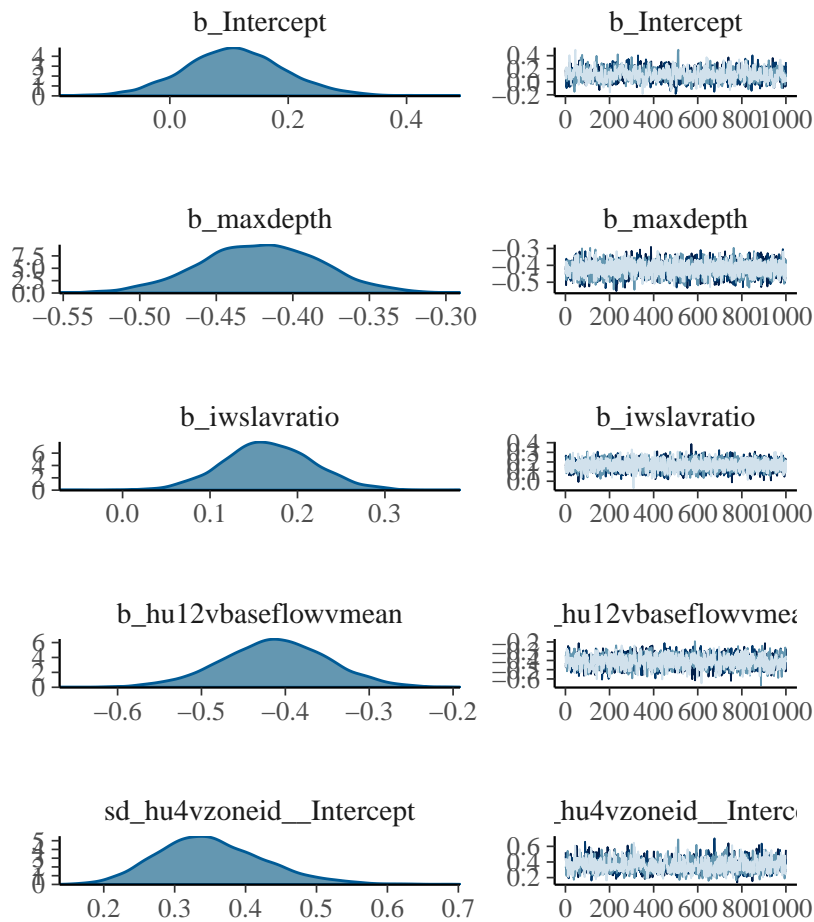```
[1] "fixed effect"

tp ~ ag

elpd_diff se_diff
fit4   0.0   0.0
fit5 -22.5   7.7

0%   5%   50%   95%   100%
-0.30789472 -0.24057110 0.07917483 0.29061015 0.40920220
```

## Density and trace plots

**b_Intercept** (density, x-axis: 0.0, 0.2, 0.4; y-axis: 0, 1, 2, 3, 4)

**b_Intercept** (trace, x-axis: 0 200 400 600 800 1000)

**b_maxdepth** (density, x-axis: −0.55 −0.50 −0.45 −0.40 −0.35 −0.30; y-axis: 0.0, 2.5, 5.0, 7.5)

**b_maxdepth** (trace, x-axis: 0 200 400 600 800 1000)

**b_iwslavratio** (density, x-axis: 0.0, 0.1, 0.2, 0.3; y-axis: 0, 2, 4, 6)

**b_iwslavratio** (trace, x-axis: 0 200 400 600 800 1000)

**b_hu12vbaseflowvmean** (density, x-axis: −0.6 −0.5 −0.4 −0.3 −0.2; y-axis: 0, 2, 4, 6)

**_hu12vbaseflowvmea** (trace, x-axis: 0 200 400 600 800 1000)

**sd_hu4vzoneid__Intercept** (density, x-axis: 0.2 0.3 0.4 0.5 0.6 0.7; y-axis: 0, 1, 2, 3, 4, 5)

**_hu4vzoneid__Interc** (trace, x-axis: 0 200 400 600 800 1000)

**sd_hu4vzoneid__soybeans** (density, x-axis: 0.1 0.2 0.3 0.4; y-axis: 0, 2, 4, 6)

**Chain**
— 1
— 2
— 3
— 4

**r_hu4vzoneid__Intercept__soybea** (density, x-axis: −0.5 0.0 0.5; y-axis: 0.0, 0.5, 1.0)

**sigma** (density, x-axis: 0.60 0.65 0.70; y-axis: 0, 5, 10, 15)
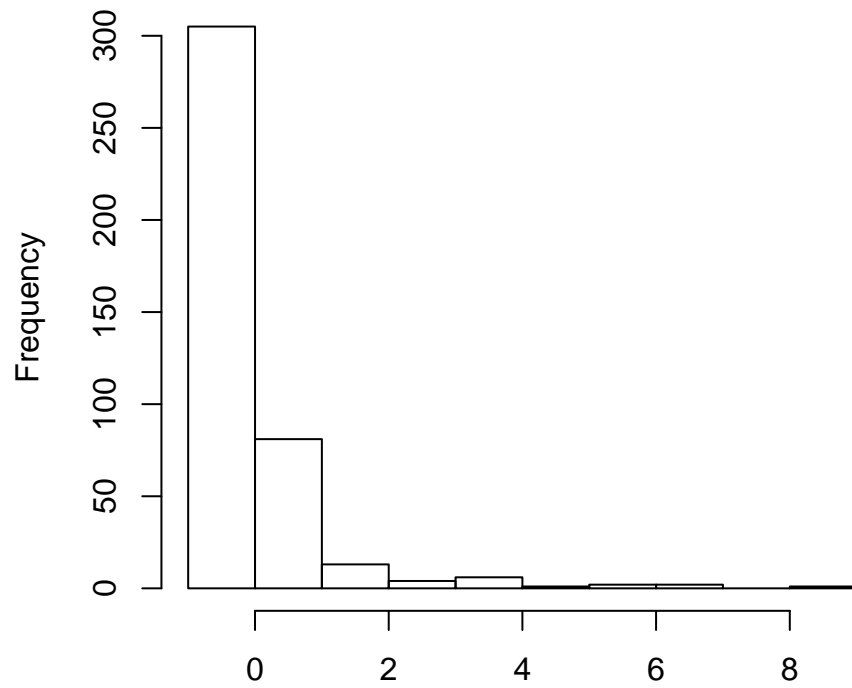
```
Estimate Est.Error   Q2.5   Q97.5
R2 0.4936894 0.03005678 0.430219 0.5479683

Estimate Est.Error   Q2.5   Q97.5
R2 0.619874 0.02188771 0.5741334 0.6586014

Estimate Est.Error   Q2.5   Q97.5
R2 0.6029679 0.02235356 0.5559629 0.6429953

[1] -0.4371738 6.2496196

[1] -0.5482139 8.7782453
```

**ɹram of (dt$iwslavratio – mean(dt$iwslavratio))/sd(dt$iʏ**



(dt$iwslavratio – mean(dt$iwslavratio))/sd(dt$iwslavratio)

```
## [1] "random effects"

## tp ~ maxdepth + (1 + ag | hu4vzoneid)

## [1] "re w/ 2nd level coeffs"

## tp ~ bagvpct * ag
## bagvpct ~ 1 + phosphorusvfertilizervuse + soybeans + (1 | hu4vzoneid)
```