Farm Vision Apples Analysis

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Summary

The following code loads all data (calibration and actual scan data), bootstraps the calibration data's H/W and HW ratios, then uses the sample mean distributions per row to estimate HW ratios for all scan observations (even rows use nearest odd row's calibration sample distribution). Using this sampled HW ratio, we then calculate a volume of an oblate ellipsoid, using the radius the major axis (width), an estimating height. We then use literature an estimated density calculation (0.8 g/cm3) to estimate yields per row, per cultivar, and total overall.

```
## Loading required package: mvtnorm
```

```
## Loading required package: triangle
```

Total apples weight per row (lbs)
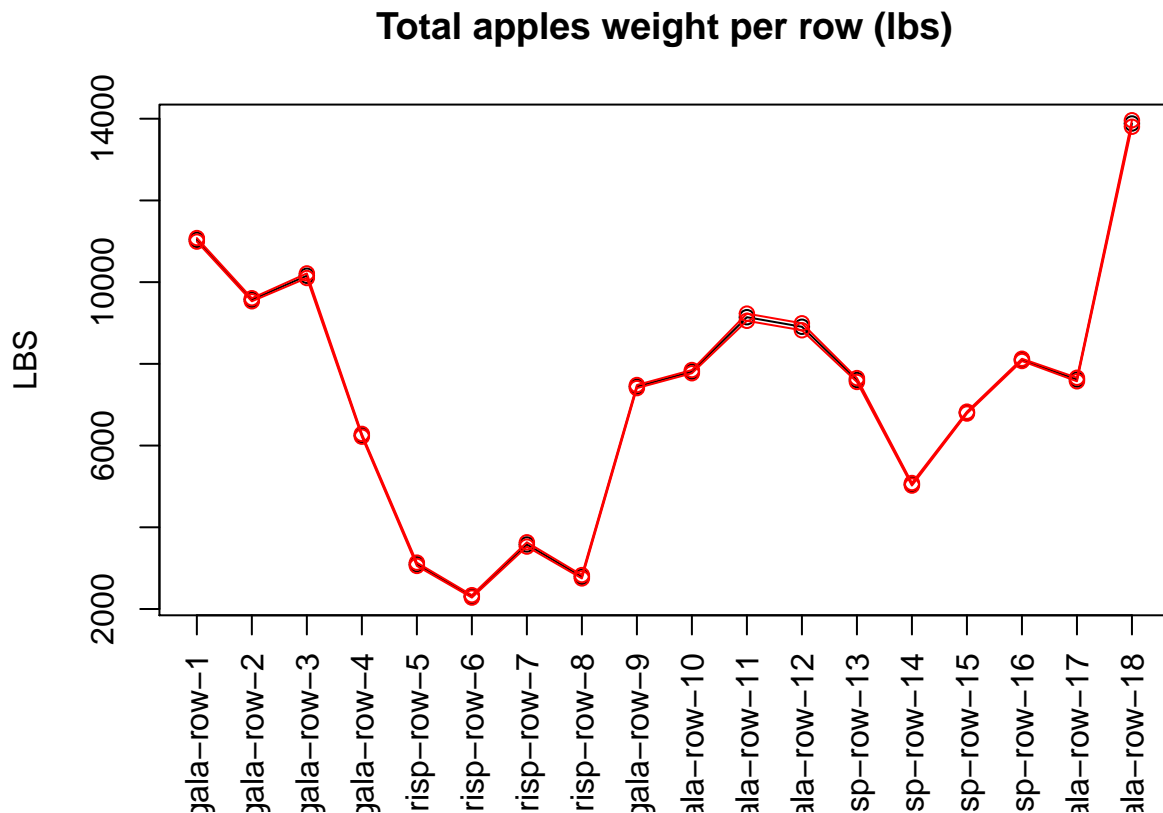
```r
library(knitr)

kable(finalweight[, c(1,8:10)])
```

name	weight_bottom_kg	weight_lbs	weight_top_lbs
b-gala-row-1	5025.521	11036.026	10992.178
b-gala-row-2	4357.701	9569.501	9531.474
b-gala-row-3	4632.924	10156.796	10101.068
b-gala-row-4	2851.501	6251.468	6217.069
b-honeycrisp-row-5	1422.067	3094.687	3054.090
b-honeycrisp-row-6	1060.888	2308.927	2278.406
b-honeycrisp-row-7	1647.772	3579.705	3527.542
b-honeycrisp-row-8	1283.663	2789.002	2748.060
b-gala-row-9	3393.934	7444.081	7406.211
b-gala-row-10	3560.506	7809.430	7769.701
b-gala-row-11	4186.538	9142.234	9053.752
b-gala-row-12	4079.430	8908.261	8822.123
b-honeycrisp-row-13	3470.947	7604.464	7556.624
b-honeycrisp-row-14	2305.946	5052.071	5020.292
b-honeycrisp-row-15	3098.178	6807.087	6783.514
b-honeycrisp-row-16	3685.506	8097.480	8069.478
b-gala-row-17	3474.539	7616.446	7572.883
b-gala-row-18	6333.410	13883.203	13803.897

```r
all_table <- data.frame(colSums(finalweight[c(9:11)]))
colnames(all_table) <- c("gala and honeycrisp")
kable(all_table)
```

	gala and honeycrisp
weight_lbs	131150.9
weight_top_lbs	130308.4
weight_bottom_lbs	131992.9

```r
honeycrisp_table <- data.frame(colSums(honeycrisp_finalweight[c(9:11)]))
colnames(honeycrisp_table) <- c("honeycrisp")
kable(honeycrisp_table)
```

	honeycrisp
weight_lbs	51122.83
weight_top_lbs	50663.88
weight_bottom_lbs	51580.98

```r
gala_table <- data.frame(colSums(gala_finalweight[c(9:11)]))
colnames(gala_table) <- c("gala")
kable(gala_table)
```

	gala
weight_lbs	91817.45
weight_top_lbs	91270.36
weight_bottom_lbs	92364.88