LOG Supplemental Appendix in support of PAPER TITLE
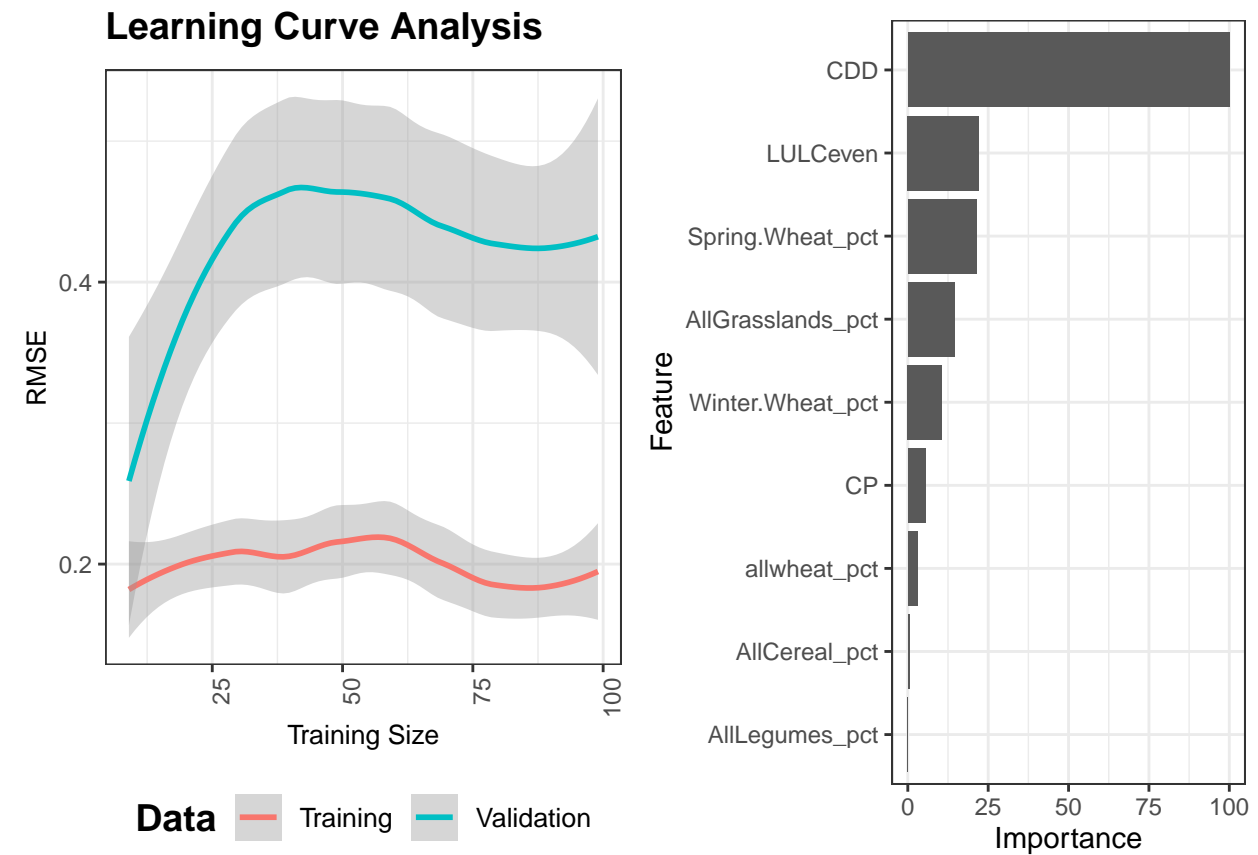
Subodh Adhikari, Sanford Eigenbrode, Erich Seamon

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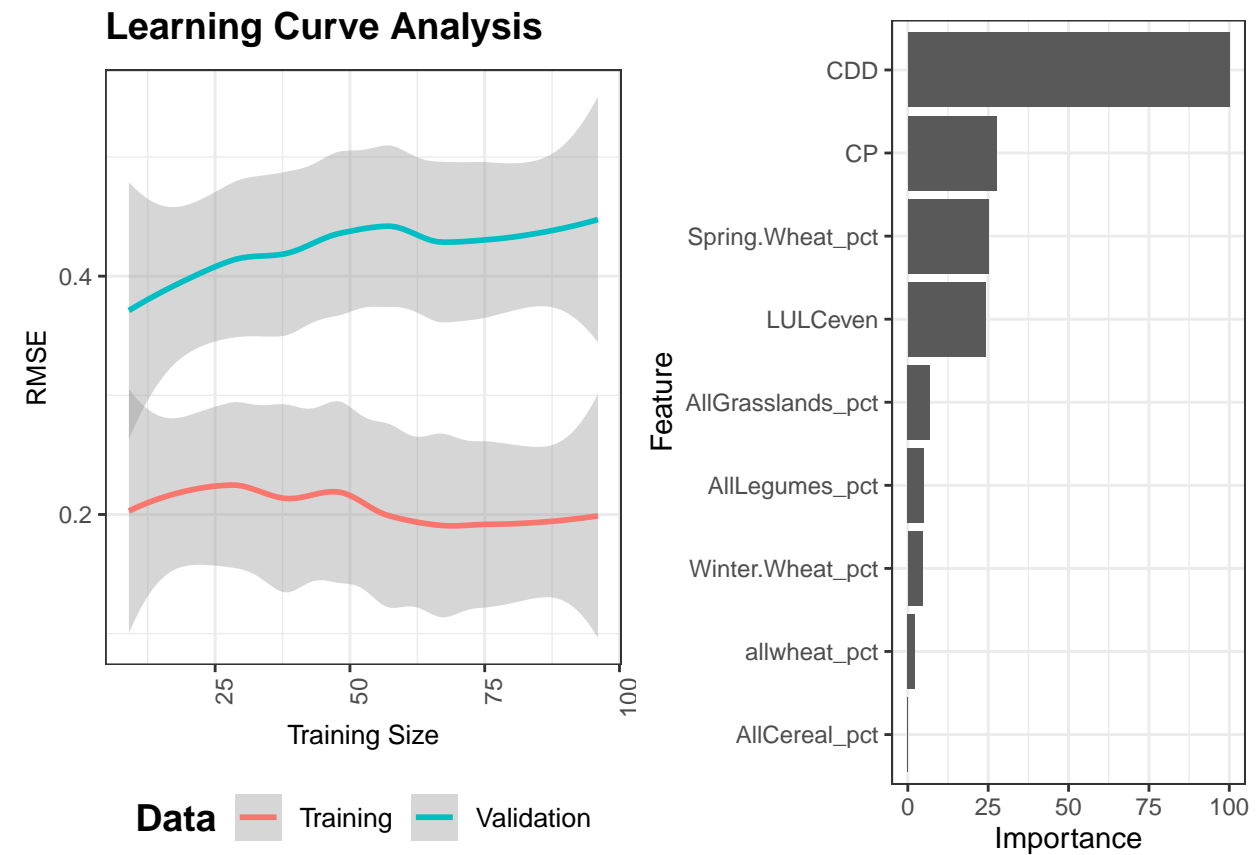## Contents

Total Aphids Model

Learning Curve Analysis


```
## Random Forest
##
## 99 samples
##  9 predictors
##
## No pre-processing
## Resampling: Cross-Validated (10 fold, repeated 1 times)
## Summary of sample sizes: 89, 90, 89, 89, 88, 89, ...
## Resampling results across tuning parameters:
##
##   mtry  RMSE       Rsquared   MAE
##   2     0.4623113  0.2923363  0.3778123
##   5     0.4528953  0.3123748  0.3677315
##   9     0.4544393  0.3283200  0.3719614
##
## RMSE was used to select the optimal model using the smallest value.
## The final value used for the model was mtry = 5.
```

Total Aphids No Mfc Model
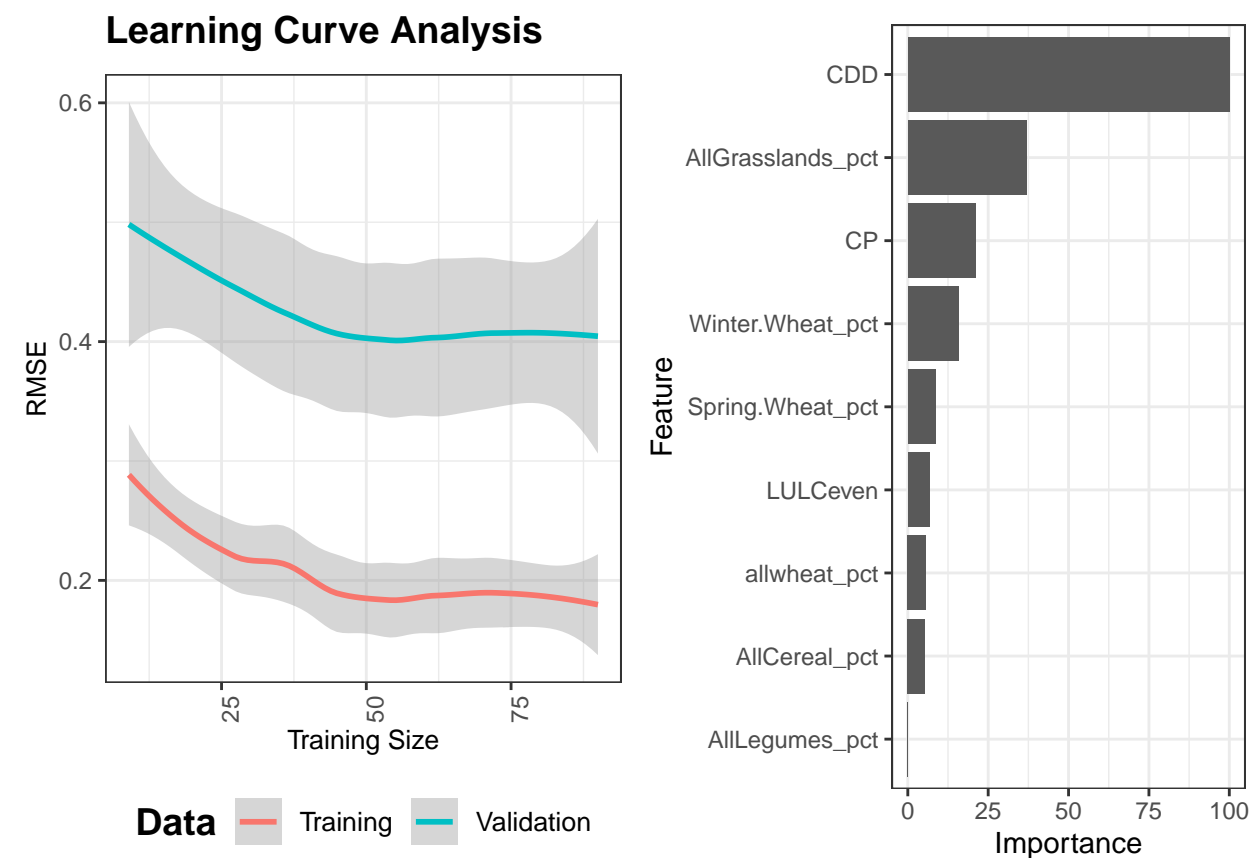
Learning Curve Analysis


```
## Random Forest
##
## 96 samples
##  9 predictors
##
## No pre-processing
## Resampling: Cross-Validated (10 fold, repeated 1 times)
## Summary of sample sizes: 88, 86, 85, 86, 87, 87, ...
## Resampling results across tuning parameters:
##
##   mtry  RMSE       Rsquared   MAE
##   2     0.4459081  0.2683325  0.3582540
##   5     0.4465060  0.2360530  0.3611294
##   9     0.4556958  0.2194093  0.3721423
##
## RMSE was used to select the optimal model using the smallest value.
## The final value used for the model was mtry = 2.
```

Relative Abundance Mfc Model
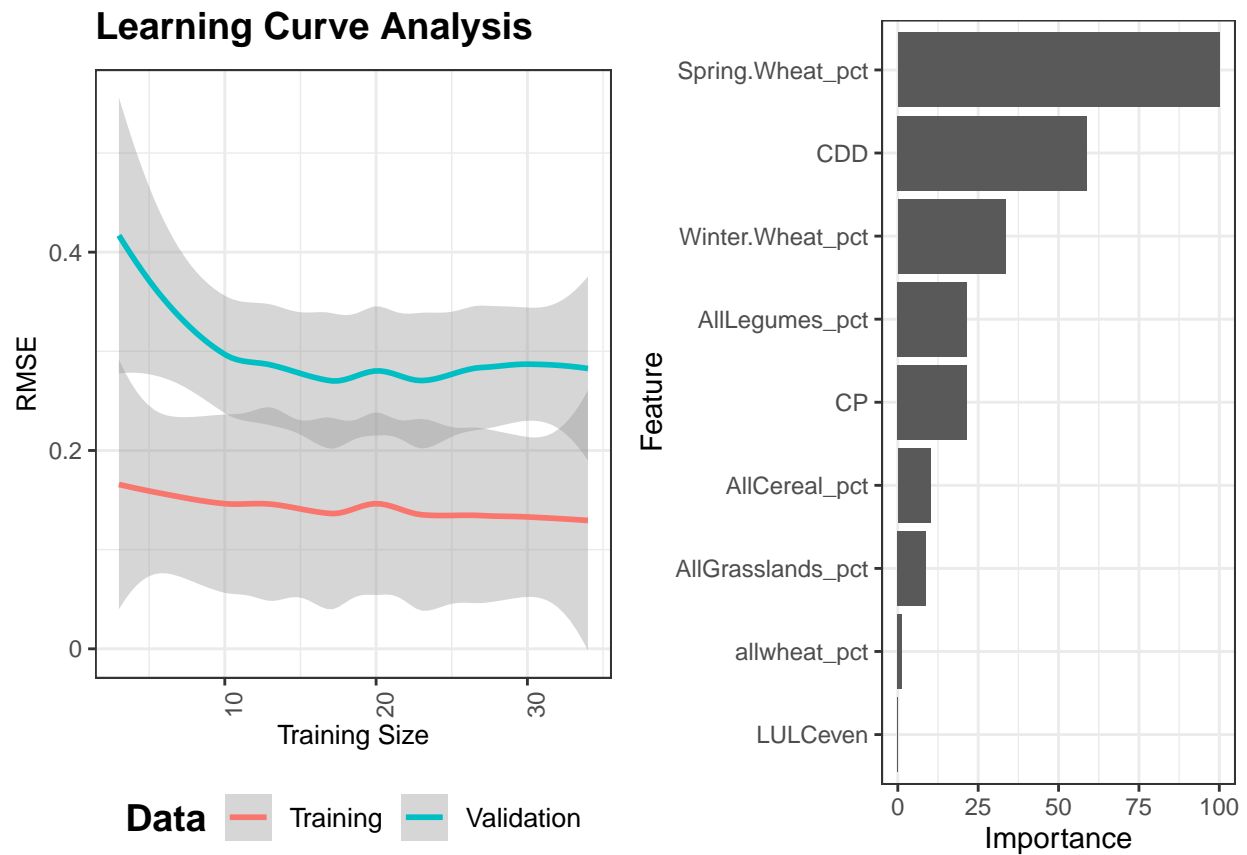
Learning Curve Analysis


```
## Random Forest
##
## 90 samples
##  9 predictors
##
## No pre-processing
## Resampling: Cross-Validated (10 fold, repeated 1 times)
## Summary of sample sizes: 81, 81, 82, 81, 82, 81, ...
## Resampling results across tuning parameters:
##
##   mtry  RMSE       Rsquared   MAE
##   2     0.4145840  0.2718757  0.3477791
##   5     0.4119090  0.2728665  0.3488128
##   9     0.4174716  0.2501613  0.3539596
##
## RMSE was used to select the optimal model using the smallest value.
## The final value used for the model was mtry = 5.
```

Individual Aphids: Rp
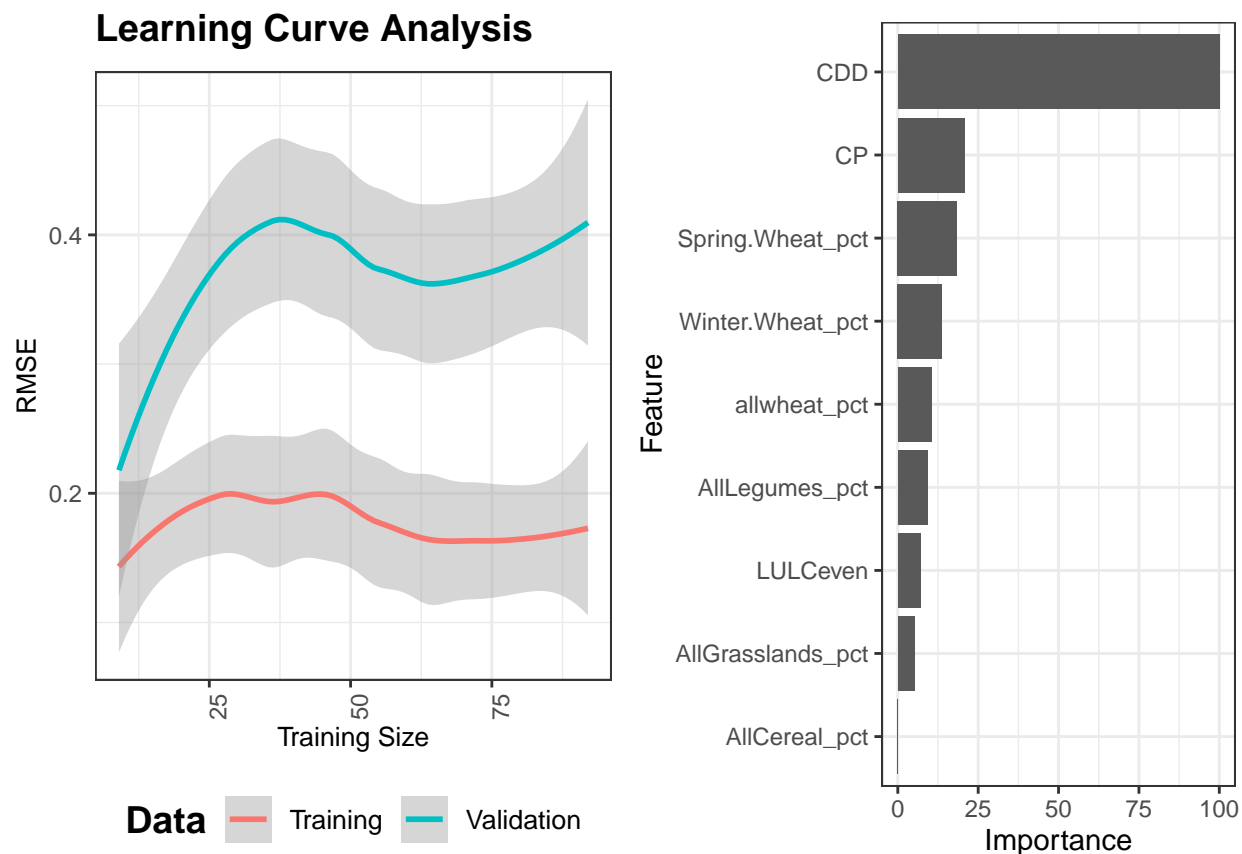
Learning Curve Analysis


```
## Random Forest
##
## 34 samples
##  9 predictors
##
## No pre-processing
## Resampling: Cross-Validated (10 fold, repeated 1 times)
## Summary of sample sizes: 30, 31, 31, 30, 30, 31, ...
## Resampling results across tuning parameters:
##
##   mtry  RMSE       Rsquared   MAE
##   2     0.2914067  0.4891834  0.2582597
##   5     0.2875561  0.4707543  0.2516205
##   9     0.2845810  0.4611975  0.2435131
##
## RMSE was used to select the optimal model using the smallest value.
## The final value used for the model was mtry = 9.
```

Individual Aphids: Sa
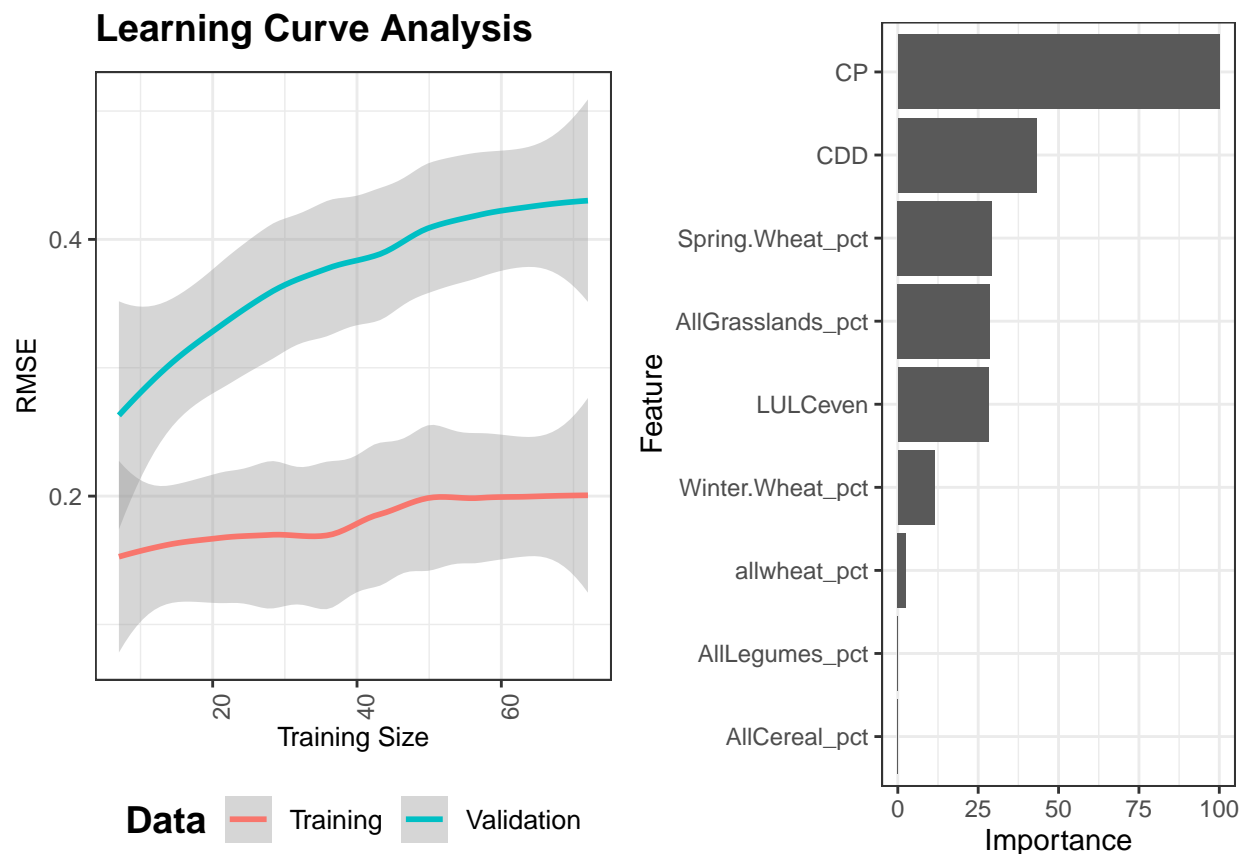

Learning Curve Analysis

```
## Random Forest
##
## 92 samples
##  9 predictors
##
## No pre-processing
## Resampling: Cross-Validated (10 fold, repeated 1 times)
## Summary of sample sizes: 82, 83, 84, 84, 84, 82, ...
## Resampling results across tuning parameters:
##
##   mtry  RMSE       Rsquared   MAE
##   2     0.3977009  0.3654843  0.3092461
##   5     0.3816767  0.4059289  0.3039471
##   9     0.3822543  0.3997199  0.3096091
##
## RMSE was used to select the optimal model using the smallest value.
## The final value used for the model was mtry = 5.
```

Individual Aphids: Md
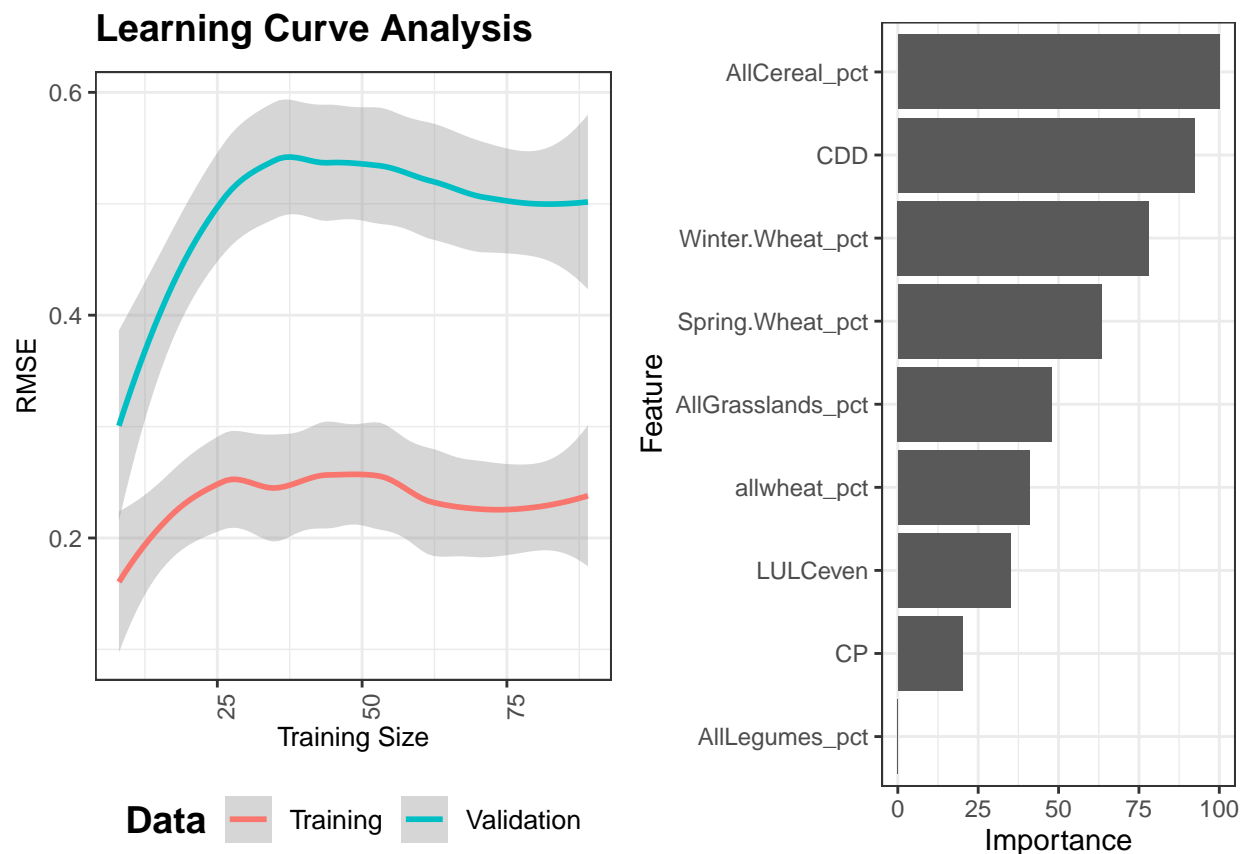
Learning Curve Analysis


```
## Random Forest
##
## 72 samples
##  9 predictors
##
## No pre-processing
## Resampling: Cross-Validated (10 fold, repeated 1 times)
## Summary of sample sizes: 65, 66, 65, 65, 64, 65, ...
## Resampling results across tuning parameters:
##
##   mtry  RMSE       Rsquared   MAE
##   2     0.4259522  0.1084991  0.3563788
##   5     0.4325599  0.1194257  0.3604265
##   9     0.4395631  0.1078876  0.3642582
##
## RMSE was used to select the optimal model using the smallest value.
## The final value used for the model was mtry = 2.
```

Individual Aphids: Mfc

Learning Curve Analysis


```
## Random Forest
##
## 89 samples
##  9 predictors
##
## No pre-processing
## Resampling: Cross-Validated (10 fold, repeated 1 times)
## Summary of sample sizes: 80, 80, 81, 81, 81, 80, ...
## Resampling results across tuning parameters:
##
##   mtry  RMSE       Rsquared    MAE
##   2     0.5154378  0.07663063  0.4360164
##   5     0.5252403  0.07366646  0.4462455
##   9     0.5282298  0.07834688  0.4468809
##
## RMSE was used to select the optimal model using the smallest value.
## The final value used for the model was mtry = 2.
```

Feature Importance Comparison: Total Aphids vs. Mfc

Feature Importance Comparison: Other Aphids

Biotic Collection Sites by Agroecological Zone