

Model Report: SMOTE Stacked Ensemble

=====

Generated: 2026-02-09 09:53:22

Script: /home/mmann1123/Documents/github/South_Africa_Crop_Comp/deep_learn/src/Classical Machine Learning/Fi

Data Split:

```
train_count: 2653
val_count: 664
test_count: 830
random_seed: 42
split_method: fid-wise
```

Metrics (test set):

```
Accuracy: 0.7494
Cohen Kappa: 0.6491
F1 Weighted: 0.7404
F1 Macro: 0.6840
```

Hyperparameters:

```
base_rf: {'n_estimators': 300, 'max_depth': 20, 'class_weight': 'balanced'}
base_xgb: {'n_estimators': 300, 'max_depth': 8, 'learning_rate': 0.1, 'subsample': 0.8, 'colsample_bytree': 0.8}
meta: LogisticRegression(max_iter=1000, class_weight='balanced')
resampler: SMOTETomek(random_state=42)
```

Per-Class Metrics

Class	Precision	Recall	F1-Score	Support
Barley	0.595	0.522	0.556	138
Canola	0.909	0.805	0.854	87
Lucerne/Medics	0.855	0.957	0.903	352
Small grain grazing	0.614	0.398	0.483	88
Wheat	0.597	0.655	0.624	165

Confusion Matrix

