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Model Report: LightGBM (Pixel-Level)
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Generated: 2026-02-09 10:05:33
Script: /home/mmann1123/Documents/github/South_Africa_Crop_Comp/deep_learn/src/Classical Machine Learning/pi

Data Split:
  train_count: 6058481
  test_count: 1484625
  random_seed: 42
  split_method: fid-wise

Metrics (test set):
  Accuracy:      0.6837
  Cohen Kappa:   0.5787
  F1 Weighted:   0.6725
  F1 Macro:      0.6311

Hyperparameters:
  boosting_type: gbdt
  class_weight: None
  colsample_bytree: 1.0
  importance_type: split
  learning_rate: 0.1
  max_depth: -1
  min_child_samples: 20
  min_child_weight: 0.001
  min_split_gain: 0.0
  n_estimators: 100
  n_jobs: -1
  num_leaves: 31
  objective: None
  random_state: None
  reg_alpha: 0.0
  reg_lambda: 0.0
  subsample: 1.0
  subsample_for_bin: 200000
  subsample_freq: 0
```
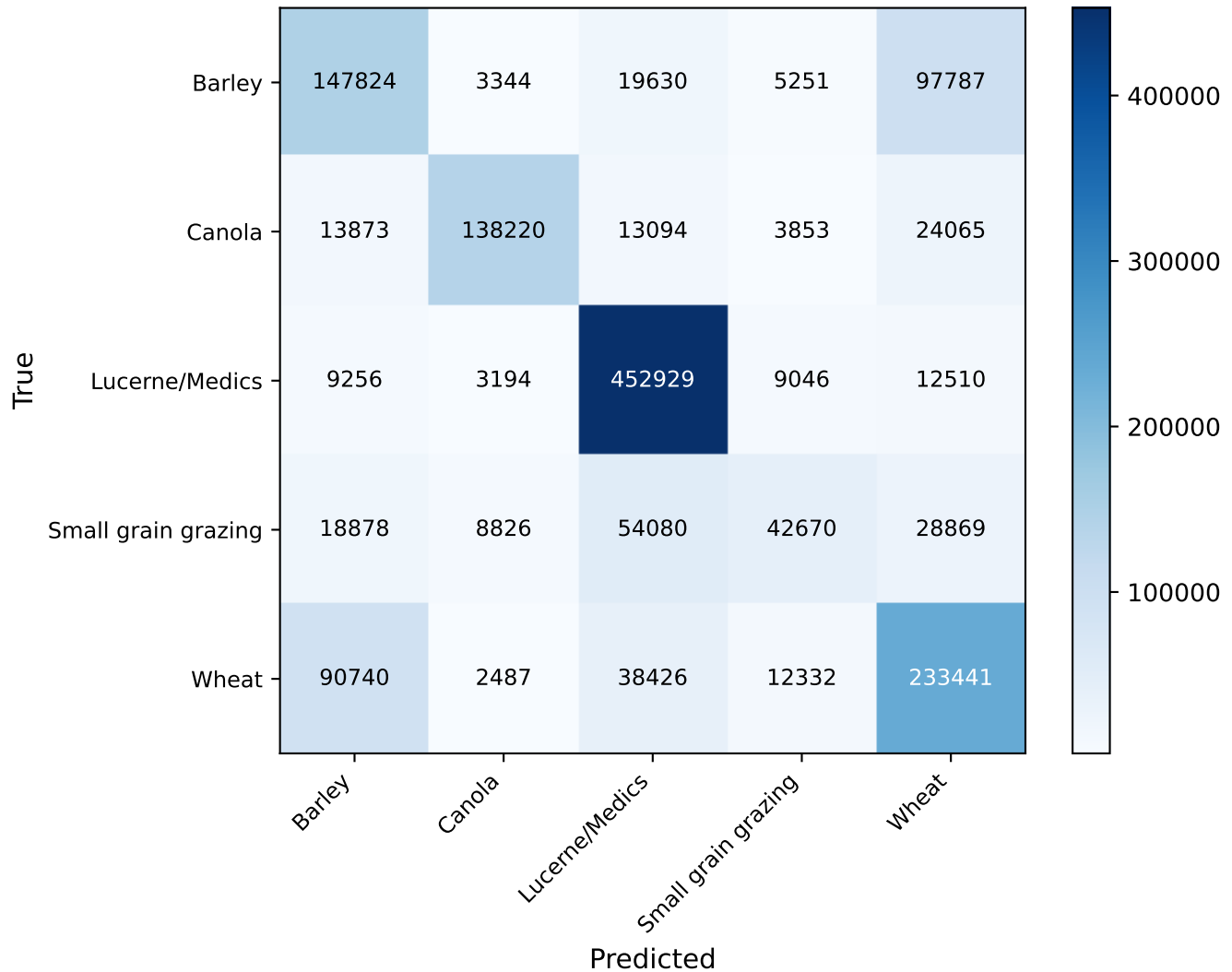
Per-Class Metrics

Class	Precision	Recall	F1-Score	Support
Barley	0.527	0.540	0.533	273836
Canola	0.886	0.716	0.792	193105
Lucerne/Medics	0.783	0.930	0.850	486935
Small grain grazing	0.583	0.278	0.377	153323
Wheat	0.588	0.619	0.603	377426

Confusion Matrix

	Barley	Canola	Lucerne/Medics	Small grain grazing	Wheat
Barley	147824	3344	19630	5251	97787
Canola	13873	138220	13094	3853	24065
Lucerne/Medics	9256	3194	452929	9046	12510
Small grain grazing	18878	8826	54080	42670	28869
Wheat	90740	2487	38426	12332	233441

Top 20 Feature Importances