

Oilseed Yield Advisory Ranges for RAG

This document provides data-driven ranges of feature values associated with low, medium, and high yield for each oilseed crop present in the dataset.

Ranges are computed from the synthetic training dataset by grouping observations of each crop into three yield bands (low, medium, high) based on quantiles of yield_t_ha, and then recording the minimum and maximum value of each feature within each band.

For each crop and feature:

- Low yield band corresponds to the lowest ~33% of yield observations.
- Medium yield band corresponds to the middle ~33% of yield observations.
- High yield band corresponds to the highest ~33% of yield observations.

These ranges are intended to be used by a Retrieval-Augmented Generation (RAG) system to support advisory text generation conditioned on user-provided feature values.

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Crop: SUNFLOWER
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Preferred categories by yield band (categorical features):

Feature: variety_group

Low yield: early (38.7% of records), mid (33.3% of records), late (28.0% of records)
Medium yield: mid (34.4% of records), early (33.3% of records), late (32.3% of records)
High yield: late (41.3% of records), mid (33.1% of records), early (25.6% of records)

Feature: soil_texture

Low yield: sandy (33.9% of records), clay (33.4% of records), loam (32.7% of records)
Medium yield: sandy (34.3% of records), clay (32.9% of records), loam (32.8% of records)
High yield: loam (34.0% of records), sandy (33.7% of records), clay (32.3% of records)

Numeric feature ranges by yield band:

Feature: maturity_days

Low yield: 95.00 – 129.00
Medium yield: 95.00 – 129.00
High yield: 95.00 – 129.00

Feature: base_yield_potential_t_ha

Low yield: 2.38 – 4.20
Medium yield: 2.38 – 4.20
High yield: 2.39 – 4.20

Feature: mean_temp_gs_C

Low yield: 12.00 – 31.99
Medium yield: 12.01 – 32.00
High yield: 12.01 – 32.00

Feature: temp_flowering_C

Low yield: 10.00 – 35.00
Medium yield: 10.00 – 34.99
High yield: 10.00 – 35.00

Feature: seasonal_rain_mm

Low yield: 250.00 – 949.70
Medium yield: 250.20 – 950.00
High yield: 250.30 – 949.70

Feature: rain_flowering_mm

Low yield: 0.00 – 250.00
Medium yield: 0.10 – 250.00
High yield: 0.10 – 250.00

Feature: humidity_mean_pct
Low yield: 35.00 – 90.00
Medium yield: 35.00 – 90.00
High yield: 35.00 – 90.00

Feature: solar_MJ_m2_day
Low yield: 12.00 – 24.99
Medium yield: 12.00 – 25.00
High yield: 12.00 – 25.00

Feature: soil_pH
Low yield: 4.50 – 8.50
Medium yield: 4.50 – 8.50
High yield: 4.50 – 8.50

Feature: soil_oc_pct
Low yield: 0.20 – 1.80
Medium yield: 0.20 – 1.80
High yield: 0.20 – 1.80

Feature: clay_pct
Low yield: 5.00 – 60.00
Medium yield: 5.00 – 60.00
High yield: 5.00 – 60.00

Feature: soil_depth_cm
Low yield: 40.00 – 150.00
Medium yield: 40.00 – 150.00
High yield: 40.00 – 150.00

Feature: soil_N_status_kg_ha
Low yield: 80.00 – 219.90
Medium yield: 80.00 – 220.00
High yield: 80.00 – 220.00

Feature: soil_P_status_kg_ha
Low yield: 5.00 – 40.00
Medium yield: 5.00 – 40.00
High yield: 5.00 – 40.00

Feature: soil_K_status_kg_ha
Low yield: 80.00 – 399.90
Medium yield: 80.10 – 399.90
High yield: 80.00 – 400.00

Feature: fert_N_kg_ha
Low yield: 40.20 – 260.00
Medium yield: 40.00 – 259.90
High yield: 40.00 – 259.90

Feature: fert_P_kg_ha
Low yield: 10.00 – 80.00
Medium yield: 10.00 – 80.00
High yield: 10.00 – 80.00

Feature: fert_K_kg_ha
Low yield: 0.00 – 120.00
Medium yield: 0.00 – 120.00

High yield: 0.00 – 120.00

Feature: sowing_doy

Low yield: 60.00 – 259.00

Medium yield: 60.00 – 259.00

High yield: 60.00 – 259.00

Feature: plant_density_plants_m2

Low yield: 40.02 – 79.99

Medium yield: 40.01 – 79.99

High yield: 40.00 – 79.97

Feature: irrigation_events

Low yield: 0.00 – 5.00

Medium yield: 0.00 – 5.00

High yield: 0.00 – 5.00

Feature: herbicide_apps

Low yield: 0.00 – 2.00

Medium yield: 0.00 – 2.00

High yield: 0.00 – 2.00

Feature: insecticide_apps

Low yield: 0.00 – 3.00

Medium yield: 0.00 – 3.00

High yield: 0.00 – 3.00

Feature: fungicide_apps

Low yield: 0.00 – 2.00

Medium yield: 0.00 – 2.00

High yield: 0.00 – 2.00

Feature: weed_pressure_index

Low yield: 0.00 – 0.90

Medium yield: 0.00 – 0.85

High yield: 0.00 – 0.81

Feature: pest_pressure_index

Low yield: 0.01 – 0.97

Medium yield: 0.01 – 0.95

High yield: 0.01 – 0.92

Feature: disease_pressure_index

Low yield: 0.01 – 0.94

Medium yield: 0.01 – 0.93

High yield: 0.01 – 0.92

Feature: ndvi_early

Low yield: 0.20 – 0.80

Medium yield: 0.20 – 0.80

High yield: 0.20 – 0.80

Feature: ndvi_flowering

Low yield: 0.30 – 0.90

Medium yield: 0.30 – 0.90

High yield: 0.30 – 0.90

Feature: ndvi_peak

Low yield: 0.40 – 0.90

Medium yield: 0.41 – 0.90

High yield: 0.41 – 0.90

Feature: ndvi_late

Low yield: 0.20 – 0.85

Medium yield: 0.20 – 0.85

High yield: 0.21 – 0.85

Feature: ndvi_veg_slope

Low yield: 0.00 – 0.03

Medium yield: 0.00 – 0.03

High yield: 0.00 – 0.03

Feature: seed_moisture_pct

Low yield: 7.00 – 20.00

Medium yield: 7.00 – 20.00

High yield: 7.00 – 20.00

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Crop: MUSTARD

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Preferred categories by yield band (categorical features):

Feature: variety_group

Low yield: early (35.5% of records), mid (33.0% of records), late (31.5% of records)

Medium yield: late (34.2% of records), mid (33.7% of records), early (32.0% of records)

High yield: late (39.0% of records), mid (32.7% of records), early (28.3% of records)

Feature: soil_texture

Low yield: clay (33.8% of records), sandy (33.7% of records), loam (32.5% of records)

Medium yield: loam (34.2% of records), sandy (33.0% of records), clay (32.8% of records)

High yield: clay (34.0% of records), loam (33.4% of records), sandy (32.6% of records)

Numeric feature ranges by yield band:

Feature: maturity_days

Low yield: 100.00 – 139.00

Medium yield: 100.00 – 139.00

High yield: 100.00 – 139.00

Feature: base_yield_potential_t_ha

Low yield: 1.43 – 3.15

Medium yield: 1.43 – 3.15

High yield: 1.44 – 3.15

Feature: mean_temp_gs_C

Low yield: 12.00 – 32.00

Medium yield: 12.06 – 31.96

High yield: 12.00 – 32.00

Feature: temp_flowering_C

Low yield: 10.00 – 35.00

Medium yield: 10.01 – 34.95

High yield: 10.00 – 34.97

Feature: seasonal_rain_mm

Low yield: 250.10 – 950.00

Medium yield: 250.20 – 949.40

High yield: 250.20 – 950.00

Feature: rain_flowering_mm

Low yield: 0.00 – 250.00

Medium yield: 0.10 – 249.90

High yield: 0.00 – 250.00

Feature: humidity_mean_pct
Low yield: 35.00 – 90.00
Medium yield: 35.00 – 90.00
High yield: 35.00 – 90.00

Feature: solar_MJ_m2_day
Low yield: 12.00 – 25.00
Medium yield: 12.01 – 24.95
High yield: 12.00 – 25.00

Feature: soil_pH
Low yield: 4.50 – 8.50
Medium yield: 4.50 – 8.50
High yield: 4.50 – 8.50

Feature: soil_oc_pct
Low yield: 0.20 – 1.80
Medium yield: 0.20 – 1.80
High yield: 0.20 – 1.80

Feature: clay_pct
Low yield: 5.00 – 60.00
Medium yield: 5.00 – 60.00
High yield: 5.00 – 60.00

Feature: soil_depth_cm
Low yield: 40.00 – 150.00
Medium yield: 40.00 – 149.90
High yield: 40.00 – 150.00

Feature: soil_N_status_kg_ha
Low yield: 80.00 – 220.00
Medium yield: 80.00 – 219.90
High yield: 80.00 – 219.90

Feature: soil_P_status_kg_ha
Low yield: 5.00 – 40.00
Medium yield: 5.00 – 39.90
High yield: 5.00 – 40.00

Feature: soil_K_status_kg_ha
Low yield: 80.00 – 400.00
Medium yield: 80.30 – 399.70
High yield: 80.00 – 399.90

Feature: fert_N_kg_ha
Low yield: 40.00 – 259.90
Medium yield: 40.20 – 259.80
High yield: 40.10 – 260.00

Feature: fert_P_kg_ha
Low yield: 10.00 – 80.00
Medium yield: 10.00 – 79.90
High yield: 10.00 – 80.00

Feature: fert_K_kg_ha
Low yield: 0.10 – 120.00
Medium yield: 0.10 – 119.90
High yield: 0.00 – 119.90

Feature: sowing_doy

Low yield: 60.00 – 259.00
Medium yield: 60.00 – 259.00
High yield: 60.00 – 259.00

Feature: plant_density_plants_m2

Low yield: 80.02 – 200.00
Medium yield: 80.04 – 199.95
High yield: 80.02 – 200.00

Feature: irrigation_events

Low yield: 0.00 – 5.00
Medium yield: 0.00 – 5.00
High yield: 0.00 – 5.00

Feature: herbicide_apps

Low yield: 0.00 – 2.00
Medium yield: 0.00 – 2.00
High yield: 0.00 – 2.00

Feature: insecticide_apps

Low yield: 0.00 – 3.00
Medium yield: 0.00 – 3.00
High yield: 0.00 – 3.00

Feature: fungicide_apps

Low yield: 0.00 – 2.00
Medium yield: 0.00 – 2.00
High yield: 0.00 – 2.00

Feature: weed_pressure_index

Low yield: 0.00 – 0.91
Medium yield: 0.01 – 0.81
High yield: 0.00 – 0.83

Feature: pest_pressure_index

Low yield: 0.01 – 0.96
Medium yield: 0.02 – 0.90
High yield: 0.01 – 0.92

Feature: disease_pressure_index

Low yield: 0.01 – 0.95
Medium yield: 0.02 – 0.91
High yield: 0.01 – 0.88

Feature: ndvi_early

Low yield: 0.20 – 0.80
Medium yield: 0.20 – 0.80
High yield: 0.20 – 0.80

Feature: ndvi_flowering

Low yield: 0.30 – 0.90
Medium yield: 0.30 – 0.90
High yield: 0.30 – 0.90

Feature: ndvi_peak

Low yield: 0.40 – 0.90
Medium yield: 0.44 – 0.90
High yield: 0.43 – 0.90

Feature: ndvi_late

Low yield: 0.20 – 0.85

Medium yield: 0.20 – 0.85
High yield: 0.20 – 0.85

Feature: ndvi_veg_slope
Low yield: 0.00 – 0.03
Medium yield: 0.00 – 0.03
High yield: 0.00 – 0.03

Feature: seed_moisture_pct
Low yield: 7.00 – 20.00
Medium yield: 7.00 – 20.00
High yield: 7.00 – 20.00

Crop: SOYBEAN

Preferred categories by yield band (categorical features):

Feature: variety_group
Low yield: early (38.8% of records), mid (32.8% of records), late (28.4% of records)
Medium yield: early (34.2% of records), late (34.1% of records), mid (31.8% of records)
High yield: late (38.7% of records), mid (33.1% of records), early (28.2% of records)

Feature: soil_texture
Low yield: loam (33.6% of records), sandy (33.5% of records), clay (32.8% of records)
Medium yield: sandy (33.4% of records), loam (33.4% of records), clay (33.1% of records)
High yield: loam (33.5% of records), clay (33.3% of records), sandy (33.2% of records)

Numeric feature ranges by yield band:

Feature: maturity_days
Low yield: 95.00 – 124.00
Medium yield: 95.00 – 124.00
High yield: 95.00 – 124.00

Feature: base_yield_potential_t_ha
Low yield: 1.90 – 3.67
Medium yield: 1.90 – 3.67
High yield: 1.90 – 3.67

Feature: mean_temp_gs_C
Low yield: 12.00 – 32.00
Medium yield: 12.01 – 32.00
High yield: 12.00 – 31.99

Feature: temp_flowering_C
Low yield: 10.01 – 34.99
Medium yield: 10.00 – 34.99
High yield: 10.03 – 34.99

Feature: seasonal_rain_mm
Low yield: 250.00 – 949.70
Medium yield: 250.10 – 949.90
High yield: 250.10 – 949.90

Feature: rain_flowering_mm
Low yield: 0.00 – 249.90
Medium yield: 0.10 – 249.80
High yield: 0.00 – 249.90

Feature: humidity_mean_pct

Low yield: 35.00 – 90.00

Medium yield: 35.00 – 90.00

High yield: 35.00 – 90.00

Feature: solar_MJ_m2_day

Low yield: 12.01 – 25.00

Medium yield: 12.01 – 25.00

High yield: 12.00 – 25.00

Feature: soil_pH

Low yield: 4.50 – 8.50

Medium yield: 4.50 – 8.50

High yield: 4.50 – 8.50

Feature: soil_oc_pct

Low yield: 0.20 – 1.80

Medium yield: 0.20 – 1.80

High yield: 0.20 – 1.80

Feature: clay_pct

Low yield: 5.00 – 60.00

Medium yield: 5.00 – 60.00

High yield: 5.00 – 60.00

Feature: soil_depth_cm

Low yield: 40.00 – 150.00

Medium yield: 40.00 – 150.00

High yield: 40.00 – 150.00

Feature: soil_N_status_kg_ha

Low yield: 80.00 – 220.00

Medium yield: 80.00 – 220.00

High yield: 80.00 – 220.00

Feature: soil_P_status_kg_ha

Low yield: 5.00 – 40.00

Medium yield: 5.00 – 40.00

High yield: 5.00 – 40.00

Feature: soil_K_status_kg_ha

Low yield: 80.10 – 400.00

Medium yield: 80.10 – 400.00

High yield: 80.00 – 400.00

Feature: fert_N_kg_ha

Low yield: 40.10 – 260.00

Medium yield: 40.10 – 260.00

High yield: 40.00 – 260.00

Feature: fert_P_kg_ha

Low yield: 10.00 – 80.00

Medium yield: 10.00 – 79.90

High yield: 10.00 – 80.00

Feature: fert_K_kg_ha

Low yield: 0.00 – 120.00

Medium yield: 0.00 – 120.00

High yield: 0.10 – 119.90

Feature: sowing_doy

Low yield: 60.00 – 259.00

Medium yield: 60.00 – 259.00
High yield: 60.00 – 259.00

Feature: plant_density_plants_m2
Low yield: 30.00 – 60.00
Medium yield: 30.03 – 60.00
High yield: 30.00 – 60.00

Feature: irrigation_events
Low yield: 0.00 – 5.00
Medium yield: 0.00 – 5.00
High yield: 0.00 – 5.00

Feature: herbicide_apps
Low yield: 0.00 – 2.00
Medium yield: 0.00 – 2.00
High yield: 0.00 – 2.00

Feature: insecticide_apps
Low yield: 0.00 – 3.00
Medium yield: 0.00 – 3.00
High yield: 0.00 – 3.00

Feature: fungicide_apps
Low yield: 0.00 – 2.00
Medium yield: 0.00 – 2.00
High yield: 0.00 – 2.00

Feature: weed_pressure_index
Low yield: 0.00 – 0.86
Medium yield: 0.01 – 0.89
High yield: 0.00 – 0.87

Feature: pest_pressure_index
Low yield: 0.01 – 0.93
Medium yield: 0.01 – 0.92
High yield: 0.01 – 0.91

Feature: disease_pressure_index
Low yield: 0.00 – 0.94
Medium yield: 0.01 – 0.94
High yield: 0.01 – 0.94

Feature: ndvi_early
Low yield: 0.20 – 0.80
Medium yield: 0.20 – 0.80
High yield: 0.20 – 0.80

Feature: ndvi_flowering
Low yield: 0.30 – 0.90
Medium yield: 0.30 – 0.90
High yield: 0.30 – 0.90

Feature: ndvi_peak
Low yield: 0.40 – 0.90
Medium yield: 0.40 – 0.90
High yield: 0.42 – 0.90

Feature: ndvi_late
Low yield: 0.20 – 0.85
Medium yield: 0.20 – 0.85
High yield: 0.20 – 0.85

Feature: ndvi_veg_slope

Low yield: 0.00 – 0.03

Medium yield: 0.00 – 0.03

High yield: 0.00 – 0.03

Feature: seed_moisture_pct

Low yield: 7.00 – 20.00

Medium yield: 7.00 – 20.00

High yield: 7.00 – 20.00

Crop: SAFFLOWER

Preferred categories by yield band (categorical features):

Feature: variety_group

Low yield: early (42.7% of records), mid (31.6% of records), late (25.7% of records)

Medium yield: late (36.3% of records), early (33.7% of records), mid (30.0% of records)

High yield: late (44.0% of records), mid (29.5% of records), early (26.5% of records)

Feature: soil_texture

Low yield: sandy (34.4% of records), loam (34.1% of records), clay (31.5% of records)

Medium yield: sandy (34.3% of records), clay (34.1% of records), loam (31.6% of records)

High yield: loam (33.9% of records), sandy (33.8% of records), clay (32.3% of records)

Numeric feature ranges by yield band:

Feature: maturity_days

Low yield: 110.00 – 149.00

Medium yield: 110.00 – 149.00

High yield: 110.00 – 149.00

Feature: base_yield_potential_t_ha

Low yield: 2.85 – 5.22

Medium yield: 2.85 – 5.23

High yield: 2.95 – 5.25

Feature: mean_temp_gs_C

Low yield: 12.03 – 31.98

Medium yield: 12.04 – 31.96

High yield: 12.06 – 31.94

Feature: temp_flowering_C

Low yield: 10.05 – 34.98

Medium yield: 10.00 – 34.81

High yield: 10.00 – 34.96

Feature: seasonal_rain_mm

Low yield: 251.20 – 949.80

Medium yield: 250.20 – 948.50

High yield: 250.20 – 949.20

Feature: rain_flowering_mm

Low yield: 0.00 – 250.00

Medium yield: 0.30 – 249.80

High yield: 0.40 – 249.30

Feature: humidity_mean_pct

Low yield: 35.40 – 89.90

Medium yield: 35.20 – 90.00

High yield: 35.00 – 90.00

Feature: solar_MJ_m2_day
Low yield: 12.02 – 24.98
Medium yield: 12.02 – 24.98
High yield: 12.01 – 24.99

Feature: soil_pH
Low yield: 4.50 – 8.49
Medium yield: 4.50 – 8.50
High yield: 4.51 – 8.49

Feature: soil_oc_pct
Low yield: 0.20 – 1.80
Medium yield: 0.20 – 1.80
High yield: 0.20 – 1.80

Feature: clay_pct
Low yield: 5.00 – 59.70
Medium yield: 5.00 – 60.00
High yield: 5.00 – 60.00

Feature: soil_depth_cm
Low yield: 40.20 – 149.10
Medium yield: 40.00 – 149.90
High yield: 40.00 – 149.90

Feature: soil_N_status_kg_ha
Low yield: 80.00 – 219.90
Medium yield: 80.20 – 219.90
High yield: 80.00 – 219.80

Feature: soil_P_status_kg_ha
Low yield: 5.10 – 39.90
Medium yield: 5.00 – 40.00
High yield: 5.00 – 40.00

Feature: soil_K_status_kg_ha
Low yield: 80.00 – 399.90
Medium yield: 81.00 – 399.90
High yield: 80.10 – 399.80

Feature: fert_N_kg_ha
Low yield: 40.40 – 260.00
Medium yield: 40.10 – 259.90
High yield: 40.20 – 258.90

Feature: fert_P_kg_ha
Low yield: 10.10 – 79.90
Medium yield: 10.10 – 80.00
High yield: 10.00 – 79.90

Feature: fert_K_kg_ha
Low yield: 0.00 – 120.00
Medium yield: 0.00 – 120.00
High yield: 0.50 – 119.90

Feature: sowing_doy
Low yield: 60.00 – 259.00
Medium yield: 60.00 – 259.00
High yield: 60.00 – 259.00

Feature: plant_density_plants_m2

Low yield: 70.01 – 159.98

Medium yield: 70.08 – 159.75

High yield: 70.35 – 159.79

Feature: irrigation_events

Low yield: 0.00 – 5.00

Medium yield: 0.00 – 5.00

High yield: 0.00 – 5.00

Feature: herbicide_apps

Low yield: 0.00 – 2.00

Medium yield: 0.00 – 2.00

High yield: 0.00 – 2.00

Feature: insecticide_apps

Low yield: 0.00 – 3.00

Medium yield: 0.00 – 3.00

High yield: 0.00 – 3.00

Feature: fungicide_apps

Low yield: 0.00 – 2.00

Medium yield: 0.00 – 2.00

High yield: 0.00 – 2.00

Feature: weed_pressure_index

Low yield: 0.01 – 0.89

Medium yield: 0.02 – 0.79

High yield: 0.01 – 0.83

Feature: pest_pressure_index

Low yield: 0.02 – 0.91

Medium yield: 0.02 – 0.87

High yield: 0.01 – 0.86

Feature: disease_pressure_index

Low yield: 0.03 – 0.90

Medium yield: 0.04 – 0.88

High yield: 0.01 – 0.94

Feature: ndvi_early

Low yield: 0.20 – 0.80

Medium yield: 0.20 – 0.80

High yield: 0.20 – 0.80

Feature: ndvi_flowering

Low yield: 0.30 – 0.90

Medium yield: 0.30 – 0.90

High yield: 0.30 – 0.90

Feature: ndvi_peak

Low yield: 0.40 – 0.90

Medium yield: 0.41 – 0.90

High yield: 0.40 – 0.90

Feature: ndvi_late

Low yield: 0.20 – 0.85

Medium yield: 0.20 – 0.84

High yield: 0.20 – 0.84

Feature: ndvi_veg_slope

Low yield: 0.00 – 0.03

Medium yield: 0.00 – 0.03
High yield: 0.00 – 0.03

Feature: seed_moisture_pct
Low yield: 7.00 – 20.00
Medium yield: 7.00 – 20.00
High yield: 7.00 – 20.00

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Crop: NIGER SEED
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Preferred categories by yield band (categorical features):

Feature: variety_group
Low yield: early (41.9% of records), mid (32.7% of records), late (25.3% of records)
Medium yield: early (33.7% of records), mid (33.7% of records), late (32.6% of records)
High yield: late (43.2% of records), mid (32.8% of records), early (24.0% of records)

Feature: soil_texture
Low yield: loam (34.4% of records), sandy (33.2% of records), clay (32.4% of records)
Medium yield: loam (34.8% of records), clay (33.6% of records), sandy (31.6% of records)
High yield: loam (34.6% of records), clay (32.9% of records), sandy (32.5% of records)

Numeric feature ranges by yield band:

Feature: maturity_days
Low yield: 110.00 – 149.00
Medium yield: 110.00 – 149.00
High yield: 110.00 – 149.00

Feature: base_yield_potential_t_ha
Low yield: 2.85 – 5.17
Medium yield: 2.85 – 5.24
High yield: 2.96 – 5.25

Feature: mean_temp_gs_C
Low yield: 12.03 – 31.98
Medium yield: 12.03 – 31.99
High yield: 12.01 – 31.98

Feature: temp_flowering_C
Low yield: 10.02 – 34.92
Medium yield: 10.11 – 34.98
High yield: 10.02 – 34.99

Feature: seasonal_rain_mm
Low yield: 250.20 – 949.70
Medium yield: 250.50 – 950.00
High yield: 250.10 – 949.60

Feature: rain_flowering_mm
Low yield: 0.50 – 249.40
Medium yield: 0.10 – 249.90
High yield: 0.60 – 249.50

Feature: humidity_mean_pct
Low yield: 35.00 – 90.00
Medium yield: 35.00 – 90.00
High yield: 35.00 – 89.90

Feature: solar_MJ_m2_day

Low yield: 12.00 – 25.00

Medium yield: 12.01 – 24.99

High yield: 12.01 – 24.98

Feature: soil_pH

Low yield: 4.51 – 8.50

Medium yield: 4.50 – 8.50

High yield: 4.50 – 8.49

Feature: soil_oc_pct

Low yield: 0.20 – 1.80

Medium yield: 0.20 – 1.80

High yield: 0.20 – 1.80

Feature: clay_pct

Low yield: 5.00 – 60.00

Medium yield: 5.10 – 60.00

High yield: 5.20 – 59.90

Feature: soil_depth_cm

Low yield: 40.00 – 149.80

Medium yield: 40.10 – 149.80

High yield: 40.20 – 149.90

Feature: soil_N_status_kg_ha

Low yield: 80.30 – 219.90

Medium yield: 80.20 – 220.00

High yield: 80.50 – 219.90

Feature: soil_P_status_kg_ha

Low yield: 5.00 – 40.00

Medium yield: 5.00 – 40.00

High yield: 5.00 – 40.00

Feature: soil_K_status_kg_ha

Low yield: 80.10 – 400.00

Medium yield: 80.50 – 400.00

High yield: 80.30 – 400.00

Feature: fert_N_kg_ha

Low yield: 40.10 – 259.80

Medium yield: 40.20 – 259.60

High yield: 40.30 – 259.30

Feature: fert_P_kg_ha

Low yield: 10.10 – 79.80

Medium yield: 10.00 – 79.90

High yield: 10.10 – 80.00

Feature: fert_K_kg_ha

Low yield: 0.00 – 119.70

Medium yield: 0.10 – 119.90

High yield: 0.10 – 120.00

Feature: sowing_doy

Low yield: 60.00 – 259.00

Medium yield: 60.00 – 259.00

High yield: 60.00 – 259.00

Feature: plant_density_plants_m2

Low yield: 70.04 – 159.75

Medium yield: 70.05 – 159.98
High yield: 70.12 – 159.99

Feature: irrigation_events
Low yield: 0.00 – 5.00
Medium yield: 0.00 – 5.00
High yield: 0.00 – 5.00

Feature: herbicide_apps
Low yield: 0.00 – 2.00
Medium yield: 0.00 – 2.00
High yield: 0.00 – 2.00

Feature: insecticide_apps
Low yield: 0.00 – 3.00
Medium yield: 0.00 – 3.00
High yield: 0.00 – 3.00

Feature: fungicide_apps
Low yield: 0.00 – 2.00
Medium yield: 0.00 – 2.00
High yield: 0.00 – 2.00

Feature: weed_pressure_index
Low yield: 0.01 – 0.89
Medium yield: 0.01 – 0.87
High yield: 0.02 – 0.82

Feature: pest_pressure_index
Low yield: 0.00 – 0.92
Medium yield: 0.04 – 0.88
High yield: 0.02 – 0.87

Feature: disease_pressure_index
Low yield: 0.01 – 0.92
Medium yield: 0.01 – 0.88
High yield: 0.04 – 0.88

Feature: ndvi_early
Low yield: 0.20 – 0.80
Medium yield: 0.20 – 0.80
High yield: 0.20 – 0.80

Feature: ndvi_flowering
Low yield: 0.30 – 0.90
Medium yield: 0.30 – 0.90
High yield: 0.30 – 0.90

Feature: ndvi_peak
Low yield: 0.40 – 0.90
Medium yield: 0.42 – 0.90
High yield: 0.43 – 0.90

Feature: ndvi_late
Low yield: 0.20 – 0.82
Medium yield: 0.20 – 0.85
High yield: 0.20 – 0.85

Feature: ndvi_veg_slope
Low yield: 0.00 – 0.03
Medium yield: 0.00 – 0.03
High yield: 0.00 – 0.03

Feature: seed_moisture_pct

Low yield: 7.00 – 20.00

Medium yield: 7.00 – 20.00

High yield: 7.00 – 19.90

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Crop: GROUNDNUT

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Preferred categories by yield band (categorical features):

Feature: variety_group

Low yield: early (40.2% of records), mid (33.6% of records), late (26.2% of records)

Medium yield: early (34.3% of records), mid (33.2% of records), late (32.5% of records)

High yield: late (42.1% of records), mid (32.6% of records), early (25.3% of records)

Feature: soil_texture

Low yield: loam (33.5% of records), sandy (33.5% of records), clay (33.0% of records)

Medium yield: sandy (33.5% of records), loam (33.3% of records), clay (33.1% of records)

High yield: clay (33.8% of records), sandy (33.3% of records), loam (32.9% of records)

Numeric feature ranges by yield band:

Feature: maturity_days

Low yield: 110.00 – 149.00

Medium yield: 110.00 – 149.00

High yield: 110.00 – 149.00

Feature: base_yield_potential_t_ha

Low yield: 2.85 – 5.13

Medium yield: 2.86 – 5.24

High yield: 2.86 – 5.25

Feature: mean_temp_gs_C

Low yield: 12.02 – 32.00

Medium yield: 12.01 – 32.00

High yield: 12.05 – 31.99

Feature: temp_flowering_C

Low yield: 10.01 – 35.00

Medium yield: 10.01 – 34.97

High yield: 10.00 – 34.93

Feature: seasonal_rain_mm

Low yield: 250.60 – 949.70

Medium yield: 250.30 – 950.00

High yield: 250.00 – 949.90

Feature: rain_flowering_mm

Low yield: 0.20 – 250.00

Medium yield: 0.00 – 249.90

High yield: 0.40 – 249.90

Feature: humidity_mean_pct

Low yield: 35.10 – 90.00

Medium yield: 35.10 – 90.00

High yield: 35.00 – 90.00

Feature: solar_MJ_m2_day

Low yield: 12.00 – 25.00

Medium yield: 12.00 – 24.99

High yield: 12.01 – 25.00

Feature: soil_pH

Low yield: 4.50 – 8.50

Medium yield: 4.50 – 8.50

High yield: 4.50 – 8.50

Feature: soil_oc_pct

Low yield: 0.20 – 1.80

Medium yield: 0.20 – 1.80

High yield: 0.20 – 1.80

Feature: clay_pct

Low yield: 5.00 – 60.00

Medium yield: 5.00 – 60.00

High yield: 5.00 – 59.90

Feature: soil_depth_cm

Low yield: 40.00 – 150.00

Medium yield: 40.10 – 149.90

High yield: 40.20 – 150.00

Feature: soil_N_status_kg_ha

Low yield: 80.10 – 220.00

Medium yield: 80.00 – 220.00

High yield: 80.00 – 219.90

Feature: soil_P_status_kg_ha

Low yield: 5.00 – 40.00

Medium yield: 5.00 – 40.00

High yield: 5.00 – 40.00

Feature: soil_K_status_kg_ha

Low yield: 80.60 – 399.80

Medium yield: 80.20 – 399.80

High yield: 80.20 – 399.70

Feature: fert_N_kg_ha

Low yield: 40.10 – 259.90

Medium yield: 40.10 – 260.00

High yield: 40.10 – 260.00

Feature: fert_P_kg_ha

Low yield: 10.00 – 80.00

Medium yield: 10.00 – 80.00

High yield: 10.10 – 80.00

Feature: fert_K_kg_ha

Low yield: 0.00 – 120.00

Medium yield: 0.00 – 119.90

High yield: 0.00 – 119.90

Feature: sowing_doy

Low yield: 60.00 – 259.00

Medium yield: 60.00 – 259.00

High yield: 60.00 – 259.00

Feature: plant_density_plants_m2

Low yield: 70.01 – 159.91

Medium yield: 70.05 – 159.84

High yield: 70.04 – 159.97

Feature: irrigation_events

Low yield: 0.00 – 5.00

Medium yield: 0.00 – 5.00

High yield: 0.00 – 5.00

Feature: herbicide_apps

Low yield: 0.00 – 2.00

Medium yield: 0.00 – 2.00

High yield: 0.00 – 2.00

Feature: insecticide_apps

Low yield: 0.00 – 3.00

Medium yield: 0.00 – 3.00

High yield: 0.00 – 3.00

Feature: fungicide_apps

Low yield: 0.00 – 2.00

Medium yield: 0.00 – 2.00

High yield: 0.00 – 2.00

Feature: weed_pressure_index

Low yield: 0.01 – 0.87

Medium yield: 0.01 – 0.84

High yield: 0.00 – 0.82

Feature: pest_pressure_index

Low yield: 0.01 – 0.92

Medium yield: 0.03 – 0.94

High yield: 0.00 – 0.89

Feature: disease_pressure_index

Low yield: 0.01 – 0.93

Medium yield: 0.01 – 0.91

High yield: 0.02 – 0.91

Feature: ndvi_early

Low yield: 0.20 – 0.80

Medium yield: 0.20 – 0.80

High yield: 0.20 – 0.80

Feature: ndvi_flowering

Low yield: 0.30 – 0.90

Medium yield: 0.30 – 0.90

High yield: 0.30 – 0.90

Feature: ndvi_peak

Low yield: 0.40 – 0.90

Medium yield: 0.40 – 0.90

High yield: 0.40 – 0.90

Feature: ndvi_late

Low yield: 0.20 – 0.85

Medium yield: 0.20 – 0.85

High yield: 0.20 – 0.85

Feature: ndvi_veg_slope

Low yield: 0.00 – 0.03

Medium yield: 0.00 – 0.03

High yield: 0.00 – 0.03

Feature: seed_moisture_pct

Low yield: 7.00 – 20.00

Medium yield: 7.00 – 20.00
High yield: 7.00 – 20.00

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Crop: CASTOR
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Preferred categories by yield band (categorical features):

Feature: variety_group
Low yield: early (38.8% of records), mid (35.0% of records), late (26.2% of records)
Medium yield: early (34.9% of records), mid (33.1% of records), late (31.9% of records)
High yield: late (40.1% of records), mid (34.2% of records), early (25.7% of records)

Feature: soil_texture
Low yield: clay (37.6% of records), loam (32.0% of records), sandy (30.4% of records)
Medium yield: clay (35.2% of records), loam (32.9% of records), sandy (31.9% of records)
High yield: loam (34.8% of records), clay (33.7% of records), sandy (31.5% of records)

Numeric feature ranges by yield band:

Feature: maturity_days
Low yield: 110.00 – 149.00
Medium yield: 110.00 – 149.00
High yield: 110.00 – 149.00

Feature: base_yield_potential_t_ha
Low yield: 2.85 – 5.20
Medium yield: 2.91 – 5.23
High yield: 2.97 – 5.24

Feature: mean_temp_gs_C
Low yield: 12.03 – 31.98
Medium yield: 12.01 – 31.93
High yield: 12.02 – 31.98

Feature: temp_flowering_C
Low yield: 10.00 – 34.97
Medium yield: 10.00 – 34.99
High yield: 10.01 – 34.93

Feature: seasonal_rain_mm
Low yield: 252.10 – 949.50
Medium yield: 250.90 – 947.70
High yield: 250.10 – 947.70

Feature: rain_flowering_mm
Low yield: 0.40 – 249.80
Medium yield: 0.20 – 249.90
High yield: 0.40 – 249.80

Feature: humidity_mean_pct
Low yield: 35.40 – 89.90
Medium yield: 35.10 – 89.90
High yield: 35.00 – 89.90

Feature: solar_MJ_m2_day
Low yield: 12.06 – 24.97
Medium yield: 12.04 – 24.91
High yield: 12.01 – 25.00

Feature: soil_ph

Low yield: 4.50 – 8.48

Medium yield: 4.53 – 8.50

High yield: 4.51 – 8.50

Feature: soil_oc_pct

Low yield: 0.20 – 1.78

Medium yield: 0.20 – 1.79

High yield: 0.20 – 1.80

Feature: clay_pct

Low yield: 5.10 – 60.00

Medium yield: 5.00 – 59.70

High yield: 5.00 – 60.00

Feature: soil_depth_cm

Low yield: 40.40 – 149.70

Medium yield: 40.20 – 149.30

High yield: 40.40 – 150.00

Feature: soil_N_status_kg_ha

Low yield: 80.30 – 219.80

Medium yield: 80.00 – 220.00

High yield: 80.40 – 219.30

Feature: soil_P_status_kg_ha

Low yield: 5.10 – 40.00

Medium yield: 5.00 – 40.00

High yield: 5.00 – 39.80

Feature: soil_K_status_kg_ha

Low yield: 81.40 – 399.70

Medium yield: 80.60 – 399.50

High yield: 80.70 – 400.00

Feature: fert_N_kg_ha

Low yield: 40.80 – 259.90

Medium yield: 41.30 – 259.70

High yield: 40.20 – 259.50

Feature: fert_P_kg_ha

Low yield: 10.20 – 79.90

Medium yield: 10.20 – 80.00

High yield: 10.10 – 80.00

Feature: fert_K_kg_ha

Low yield: 0.00 – 119.60

Medium yield: 0.10 – 119.90

High yield: 0.80 – 119.50

Feature: sowing_doy

Low yield: 60.00 – 258.00

Medium yield: 60.00 – 259.00

High yield: 60.00 – 259.00

Feature: plant_density_plants_m2

Low yield: 70.26 – 159.99

Medium yield: 70.06 – 160.00

High yield: 70.29 – 159.70

Feature: irrigation_events

Low yield: 0.00 – 5.00

Medium yield: 0.00 – 5.00
High yield: 0.00 – 5.00

Feature: herbicide_apps
Low yield: 0.00 – 2.00
Medium yield: 0.00 – 2.00
High yield: 0.00 – 2.00

Feature: insecticide_apps
Low yield: 0.00 – 3.00
Medium yield: 0.00 – 3.00
High yield: 0.00 – 3.00

Feature: fungicide_apps
Low yield: 0.00 – 2.00
Medium yield: 0.00 – 2.00
High yield: 0.00 – 2.00

Feature: weed_pressure_index
Low yield: 0.02 – 0.82
Medium yield: 0.02 – 0.75
High yield: 0.01 – 0.76

Feature: pest_pressure_index
Low yield: 0.04 – 0.88
Medium yield: 0.03 – 0.89
High yield: 0.05 – 0.85

Feature: disease_pressure_index
Low yield: 0.01 – 0.89
Medium yield: 0.02 – 0.94
High yield: 0.02 – 0.88

Feature: ndvi_early
Low yield: 0.20 – 0.79
Medium yield: 0.20 – 0.80
High yield: 0.20 – 0.80

Feature: ndvi_flowering
Low yield: 0.30 – 0.90
Medium yield: 0.30 – 0.90
High yield: 0.30 – 0.90

Feature: ndvi_peak
Low yield: 0.40 – 0.90
Medium yield: 0.42 – 0.90
High yield: 0.45 – 0.90

Feature: ndvi_late
Low yield: 0.20 – 0.83
Medium yield: 0.20 – 0.85
High yield: 0.20 – 0.84

Feature: ndvi_veg_slope
Low yield: 0.00 – 0.03
Medium yield: 0.00 – 0.03
High yield: 0.00 – 0.03

Feature: seed_moisture_pct
Low yield: 7.00 – 19.90
Medium yield: 7.10 – 20.00
High yield: 7.00 – 19.90

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Crop: SESAME

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Preferred categories by yield band (categorical features):

Feature: variety_group

Low yield: early (42.5% of records), mid (32.9% of records), late (24.6% of records)

Medium yield: early (34.6% of records), mid (33.7% of records), late (31.7% of records)

High yield: late (41.1% of records), mid (32.1% of records), early (26.8% of records)

Feature: soil_texture

Low yield: clay (35.0% of records), loam (33.4% of records), sandy (31.6% of records)

Medium yield: clay (33.9% of records), loam (33.6% of records), sandy (32.5% of records)

High yield: sandy (35.3% of records), clay (32.5% of records), loam (32.2% of records)

Numeric feature ranges by yield band:

Feature: maturity_days

Low yield: 110.00 – 149.00

Medium yield: 110.00 – 149.00

High yield: 110.00 – 149.00

Feature: base_yield_potential_t_ha

Low yield: 2.85 – 4.96

Medium yield: 2.87 – 5.24

High yield: 2.96 – 5.25

Feature: mean_temp_gs_C

Low yield: 12.06 – 32.00

Medium yield: 12.04 – 31.97

High yield: 12.00 – 31.92

Feature: temp_flowering_C

Low yield: 10.03 – 35.00

Medium yield: 10.00 – 34.99

High yield: 10.02 – 34.95

Feature: seasonal_rain_mm

Low yield: 250.30 – 948.70

Medium yield: 251.10 – 949.90

High yield: 250.50 – 949.20

Feature: rain_flowering_mm

Low yield: 0.00 – 249.80

Medium yield: 0.00 – 250.00

High yield: 0.30 – 249.90

Feature: humidity_mean_pct

Low yield: 35.00 – 89.90

Medium yield: 35.00 – 89.90

High yield: 35.10 – 89.90

Feature: solar_MJ_m2_day

Low yield: 12.06 – 24.98

Medium yield: 12.01 – 24.95

High yield: 12.01 – 24.96

Feature: soil_pH

Low yield: 4.50 – 8.49

Medium yield: 4.50 – 8.50

High yield: 4.50 – 8.49

Feature: soil_oc_pct

Low yield: 0.20 – 1.80

Medium yield: 0.20 – 1.80

High yield: 0.20 – 1.80

Feature: clay_pct

Low yield: 5.00 – 59.90

Medium yield: 5.00 – 59.90

High yield: 5.00 – 60.00

Feature: soil_depth_cm

Low yield: 40.00 – 149.90

Medium yield: 40.30 – 150.00

High yield: 40.10 – 150.00

Feature: soil_N_status_kg_ha

Low yield: 80.10 – 219.50

Medium yield: 80.50 – 219.50

High yield: 80.40 – 220.00

Feature: soil_P_status_kg_ha

Low yield: 5.00 – 39.90

Medium yield: 5.00 – 40.00

High yield: 5.00 – 40.00

Feature: soil_K_status_kg_ha

Low yield: 80.50 – 399.90

Medium yield: 80.00 – 399.90

High yield: 81.30 – 399.90

Feature: fert_N_kg_ha

Low yield: 40.00 – 259.60

Medium yield: 40.00 – 259.50

High yield: 40.40 – 259.90

Feature: fert_P_kg_ha

Low yield: 10.00 – 80.00

Medium yield: 10.10 – 79.90

High yield: 10.00 – 79.80

Feature: fert_K_kg_ha

Low yield: 0.10 – 119.90

Medium yield: 0.20 – 119.90

High yield: 0.20 – 119.70

Feature: sowing_doy

Low yield: 60.00 – 259.00

Medium yield: 60.00 – 259.00

High yield: 60.00 – 259.00

Feature: plant_density_plants_m2

Low yield: 70.01 – 159.72

Medium yield: 70.08 – 159.97

High yield: 70.12 – 159.91

Feature: irrigation_events

Low yield: 0.00 – 5.00

Medium yield: 0.00 – 5.00

High yield: 0.00 – 5.00

Feature: herbicide_apps

Low yield: 0.00 – 2.00

Medium yield: 0.00 – 2.00

High yield: 0.00 – 2.00

Feature: insecticide_apps

Low yield: 0.00 – 3.00

Medium yield: 0.00 – 3.00

High yield: 0.00 – 3.00

Feature: fungicide_apps

Low yield: 0.00 – 2.00

Medium yield: 0.00 – 2.00

High yield: 0.00 – 2.00

Feature: weed_pressure_index

Low yield: 0.00 – 0.82

Medium yield: 0.01 – 0.83

High yield: 0.01 – 0.81

Feature: pest_pressure_index

Low yield: 0.01 – 0.88

Medium yield: 0.04 – 0.96

High yield: 0.01 – 0.88

Feature: disease_pressure_index

Low yield: 0.04 – 0.93

Medium yield: 0.01 – 0.89

High yield: 0.03 – 0.92

Feature: ndvi_early

Low yield: 0.20 – 0.79

Medium yield: 0.20 – 0.80

High yield: 0.20 – 0.80

Feature: ndvi_flowering

Low yield: 0.30 – 0.90

Medium yield: 0.30 – 0.90

High yield: 0.30 – 0.90

Feature: ndvi_peak

Low yield: 0.40 – 0.90

Medium yield: 0.40 – 0.90

High yield: 0.42 – 0.90

Feature: ndvi_late

Low yield: 0.20 – 0.84

Medium yield: 0.20 – 0.84

High yield: 0.23 – 0.84

Feature: ndvi_veg_slope

Low yield: 0.00 – 0.03

Medium yield: 0.00 – 0.03

High yield: 0.00 – 0.03

Feature: seed_moisture_pct

Low yield: 7.00 – 20.00

Medium yield: 7.00 – 20.00

High yield: 7.00 – 19.90