Coffee Roast Analysis: Guatemala R16

Roast Overview

- **Bean Origin**: Guatemala from 2024/04
- **Roast Date**: September 27, 2025 (14:33:27)
- **Batch Number**: R16
- **Green Weight**: 150g
- **Final Weight**: 128g
- **Weight Loss**: 15% (23g)
- **Total Roast Time**: 10:10 (610.5 seconds)

Temperature Profile Analysis

Key Temperature Milestones

- **Charge Temperature**: ET 105.7°C, BT 151.4°C
- **Turning Point**: 69 seconds at ET 102.1°C, BT 119.1°C
- **Dry End**: 270 seconds (4:30) at ET 118.2°C, BT 152.7°C
- **First Crack Start**: 436.5 seconds (7:16) at ET 130.8°C, BT 168.6°C
- **Drop**: 610.5 seconds (10:10) at ET 138.8°C, BT 181.1°C

Phase Analysis

Drying Phase (0-270 seconds, 4:30)

- **Duration**: 44% of total roast time
- **Temperature Rise**: 33.6°C
- **Average RoR**: 10.0°C/min
- **Assessment**: Well-paced drying phase with good moisture removal

Maillard Phase (270-436.5 seconds, 2:46)

- **Duration**: 27% of total roast time (166.5 seconds)
- **Temperature Rise**: 15.9°C
- **Average RoR**: 5.7°C/min
- **Assessment**: Appropriate duration for flavor development

Development Phase (436.5-610.5 seconds, 2:54)

- **Duration**: 29% of total roast time (174 seconds)
- **Temperature Rise**: 12.5°C
- **Average RoR**: 4.3°C/min
- **Development Ratio**: 28.5% (174/610.5)

Rate of Rise (RoR) Analysis

- **Overall RoR**: 6.9°C/min
- **First Crack RoR**: 3.1°C/min
- **Pattern**: Shows good declining RoR throughout the roast

Roast Quality Assessment

Strengths

1. **Balanced Phase Distribution**: Good proportion between drying (44%), Maillard (27%), and development (29%) phases
2. **Appropriate Development Time**: 28.5% development ratio is within optimal range (20-30%)
3. **Controlled RoR Decline**: Smooth deceleration from 10°C/min to 4.3°C/min
4. **Reasonable Weight Loss**: 15% indicates proper moisture removal without over-roasting
5. **Clean Temperature Progression**: No major crashes or flicks in the profile

Areas for Improvement

1. **High Charge Temperature**: BT charge at 151.4°C is quite high - consider reducing by 10-15°C
2. **Aggressive Early Phase**: Initial RoR of 10°C/min might be too fast for optimal flavor development
3. **Long Total Time**: 10:10 is on the longer side - could aim for 8:30-9:30 for better brightness

Specific Recommendations

Temperature Management

1. **Lower Charge Temperature**: Reduce initial BT to 135-140°C for gentler start
2. **Extend Drying Phase**: Allow more gradual temperature rise in first 3-4 minutes
3. **Monitor Turning Point**: Current TP at 69 seconds is acceptable but could be extended to 90-120 seconds

Heat Application

1. **Reduce Initial Heat**: Start with lower burner setting to achieve gentler RoR curve
2. **Progressive Heat Reduction**: More aggressive heat cuts after dry end
3. **First Crack Management**: Consider slight heat increase just before FC for better crack definition

Timing Adjustments

1. **Target Total Time**: Aim for 8:30-9:30 total roast time
2. **Shorter Drying**: Reduce drying phase to 3:30-4:00
3. **Maintain Development**: Keep development time around 2:30-3:00

Expected Cup Profile

Based on this profile, expect:

- **Body**: Medium to full (longer roast time builds body)
- **Acidity**: Moderate (balanced development preserves some brightness)
- **Sweetness**: Good (adequate Maillard time)
- **Balance**: Should be well-balanced but potentially lacking brightness

Next Roast Suggestions

1. Charge at 140°C BT instead of 151°C
2. Target 9:00 total time
3. Aim for turning point at 90 seconds
4. Dry end at 3:45-4:00
5. First crack at 6:30-7:00
6. Development time 2:30-3:00

This roast shows good fundamentals but could benefit from a more aggressive approach to highlight the Guatemala's natural characteristics.