R17 Roast Analysis - Major Improvement Achieved

Roast Overview

- **Roast Date**: September 28, 2025 (15:07:03)
- **Batch Number**: R17
- **Green Weight**: 150g → **Final Weight**: 127g
- **Weight Loss**: 15.3% (23g)
- **Total Roast Time**: 11:40 (700.5 seconds)

Key Temperature Milestones

- **Charge BT**: 136.0°C ✓ **SIGNIFICANT IMPROVEMENT**
- **Charge ET**: 99.8°C
- **Turning Point**: 61.5s at ET 97.8°C, BT 114.5°C
- **Dry End**: 291.0s (4:51) at ET 109.4°C, BT 144.1°C
- **First Crack**: 540.0s (9:00) at ET 122.0°C, BT 167.2°C
- **Drop**: 700.5s (11:40) at ET 127.8°C, BT 182.0°C

Phase Analysis

Drying Phase (0-291s, 4:51)

- **Duration**: 41.5% of total time
- **Temperature Rise**: 29.6°C
- **Average RoR**: 7.8°C/min
- **Assessment**: Well-balanced, controlled phase

Maillard Phase (291-540s, 4:09)

- **Duration**: 35.5% of total time (249 seconds)
- **Temperature Rise**: 23.1°C
- **Average RoR**: 5.6°C/min
- **Assessment**: Excellent duration for flavor development

Development Phase (540-700.5s, 2:40)

- **Duration**: 23% of total time (160.5 seconds)
- **Temperature Rise**: 14.8°C
- **Average RoR**: 5.5°C/min
- **Development Ratio**: 22.9%

Rate of Rise Analysis

- **Overall RoR**: 6.3°C/min
- **First Crack RoR**: 4.1°C/min
- **Pattern**: Smooth, controlled decline throughout

Major Achievements vs Previous Roasts

Charge Temperature Success ✓

R14-R16: 138-153°C BT (too high) **R17**: 136°C BT ← **Perfect implementation of recommendation**

This single change solved multiple cascading problems from your previous roasts.

Phase Balance Excellence ✓

- **Drying**: 41.5% (vs target 40-45%) ✓
- **Maillard**: 35.5% (vs target 25-30%) ← **Slightly long but much better**
- **Development**: 23% (vs target 25-30%) ← **Slightly short but acceptable**

Heat Control Mastery ✓

- **Turning Point**: Extended to 61.5s (vs previous 37-69s) ✓
- **RoR Control**: Smooth 7.8→5.6→5.5°C/min progression ✓
- **No major crashes or spikes** ✓

Comparison to Previous Roasts

Metric	R14	R15	R16	R17
Charge BT	138.3°C	153.2°C	151.4°C	**136.0°C** ✓
Total Time	10:10	11:11	10:10	**11:40**
Drying %	61%	49%	44%	**42%** ✓
Maillard %	12%	25%	27%	**36%** ✓
Development %	27%	26%	29%	**23%**
Overall RoR	9.5	6.6	6.9	**6.3** ✓

Areas Still Needing Improvement

1. Total Roast Time (Minor Issue)

Current: 11:40 is still on the long side **Target**: Aim for 9:30-10:30 for better brightness **Impact**: May slightly mute Guatemala's natural acidity

2. Development Phase Length (Minor Issue)

Current: 2:40 (23%) is slightly short **Target**: 2:45-3:15 (25-30%) **Impact**: Could benefit from 30-45 more seconds of development

3. Maillard Phase Duration (Minor Issue)

Current: 4:09 (36%) is slightly long **Target**: 3:00-3:30 (25-30%) **Impact**: Creates excellent flavor but may reduce brightness

Expected Cup Profile

Based on this profile, expect:

- **Body**: Full (extended Maillard phase builds body)
- **Sweetness**: Excellent (long flavor development)
- **Acidity**: Moderate (longer time mutes some brightness)
- **Balance**: Very good overall balance
- **Complexity**: High (good phase distribution)

Next Roast Recommendations

Fine-Tuning for R18

1. **Keep charge temperature at 135-140°C** ← **Don't change this success**
2. **Reduce total time to 9:45-10:15**
3. **Shorten Maillard phase to 3:15-3:30**
4. **Extend development to 2:45-3:00**

Heat Management Adjustments

1. **Slightly more aggressive heat** in mid-phase to compress timeline
2. **Small heat increase** just before first crack
3. **Maintain current excellent RoR control**

Target Timeline for R18

- **Turning Point**: 60-90 seconds (maintain current success)
- **Dry End**: 3:45-4:15 (reduce by 30-45 seconds)
- **First Crack**: 7:30-8:00 (reduce by 60-90 seconds)
- **Drop**: 9:45-10:15 (reduce by 80-115 seconds)

Roasting Skill Assessment

Dramatic Improvement: This roast shows you've mastered the fundamental concept of charge temperature control. The smooth RoR curves and balanced phases demonstrate significant learning.

Technical Mastery: Your heat management through the phases is now controlled and purposeful rather than reactive.

Minor Refinements Needed: You're now working on optimization rather than fixing fundamental problems.

Conclusion

R17 represents a breakthrough roast. You successfully implemented the key recommendation (lower charge temperature) and achieved excellent phase balance and heat control. The remaining issues are minor timing adjustments rather than fundamental problems.

Primary Success: Charge temperature reduction from 151°C to 136°C solved the aggressive start issues that plagued R14-R16.

Secondary Success: Achieved smooth, controlled RoR throughout the roast.

Next Focus: Fine-tune timing to achieve slightly shorter total time while maintaining the excellent balance you've achieved.