

The Pattern of B α P and TSNA Accumulation in Fire-Cured Tobacco: A Comparison of Two Barn Types

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2012



2015



Objectives

- To compare the accumulation pattern during fire-curing in two different barns of:
 - TSNAs
 - BaP (Benzo- α -Pyrene)





PROCEDURE

Sampling

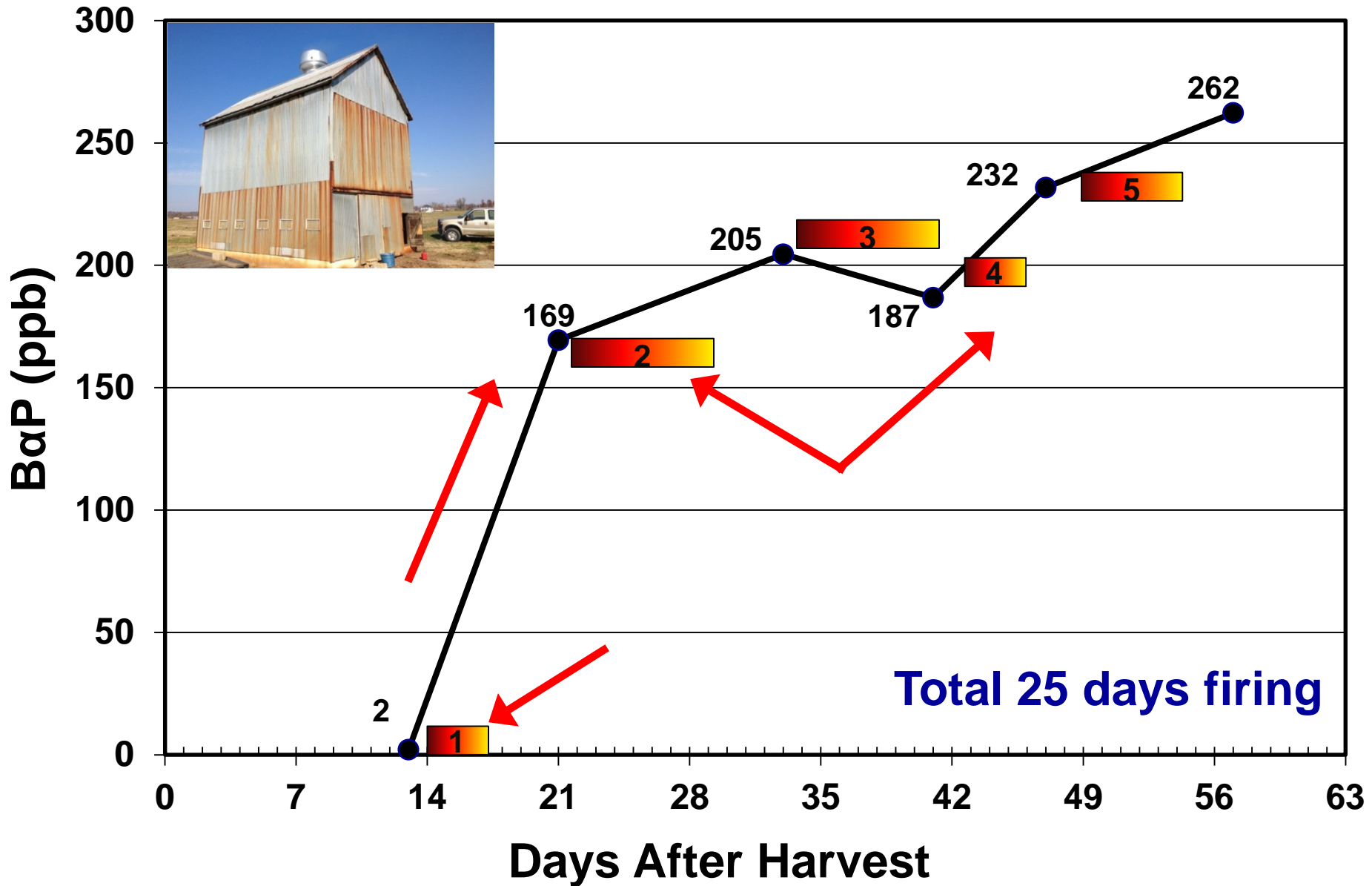
- 2012 – 5 firings, 6 sampling times
 - samples 1 – 5 before each firing
 - sample 6 takedown
- 2015 – 3 firings, 4 sampling times
 - samples 1 – 3 before each firing
 - samples 4 takedown





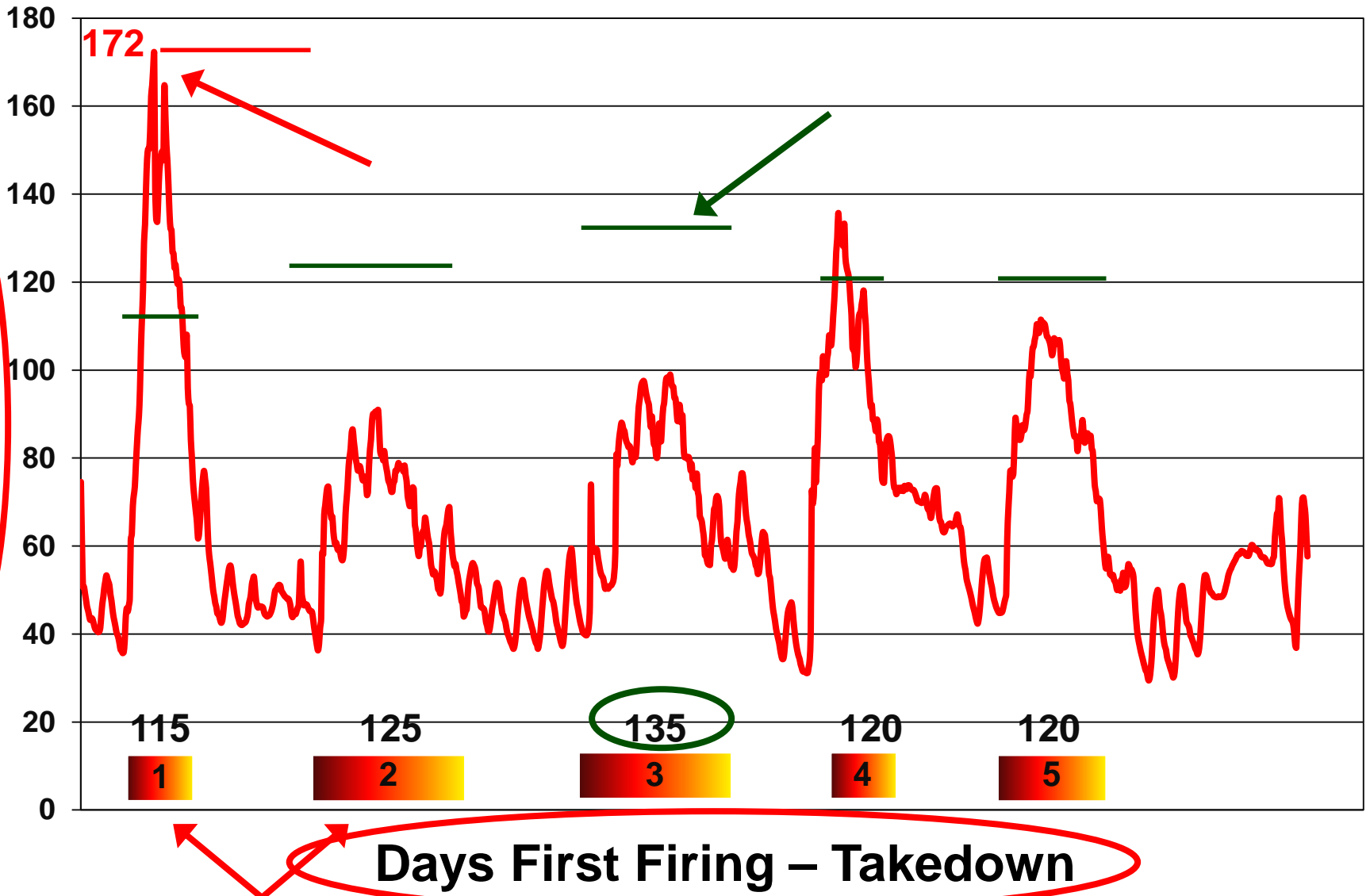
RESULTS

2012 BaP (ppb)

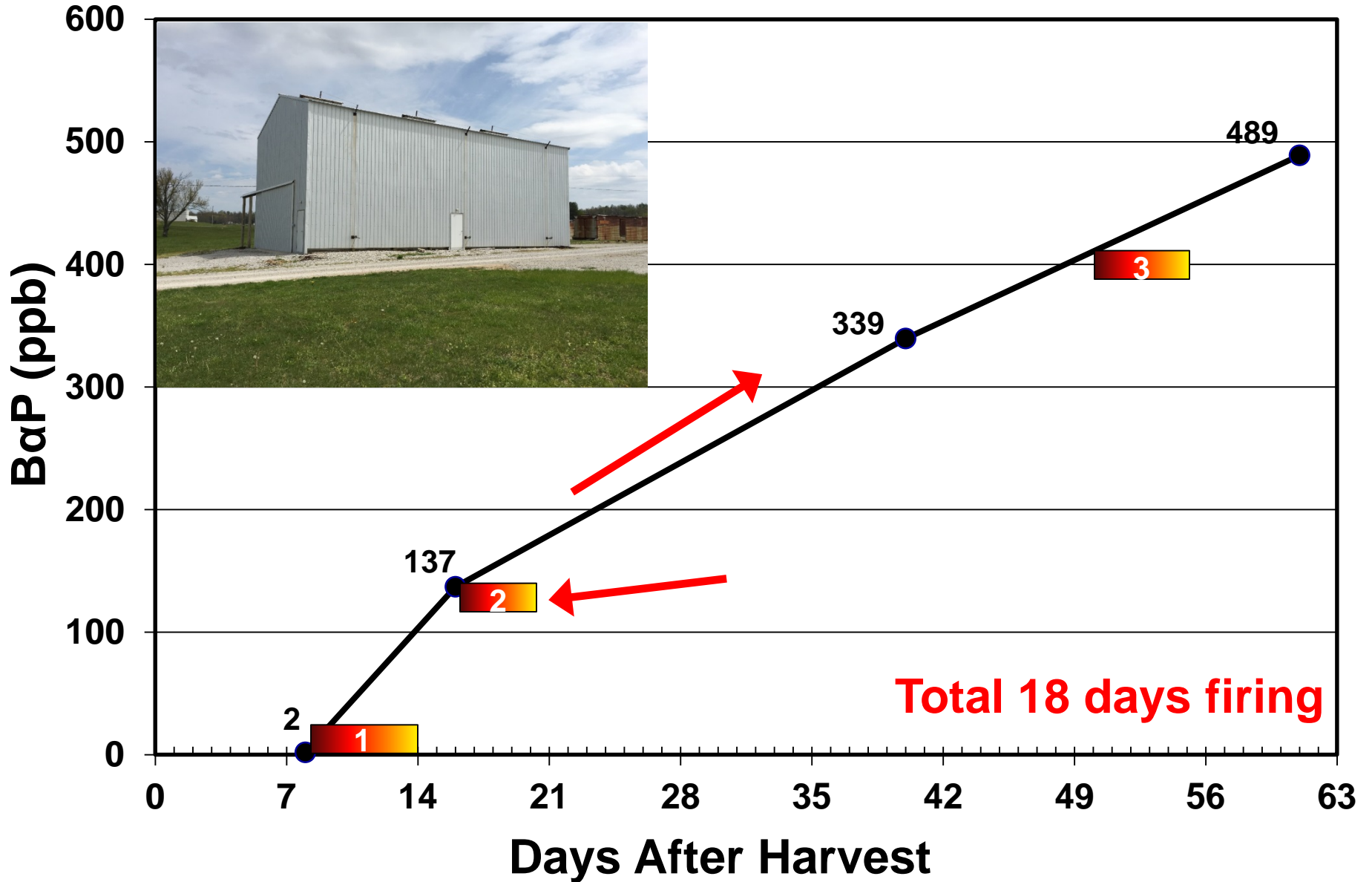


2012 Temperature (°F) During Curing

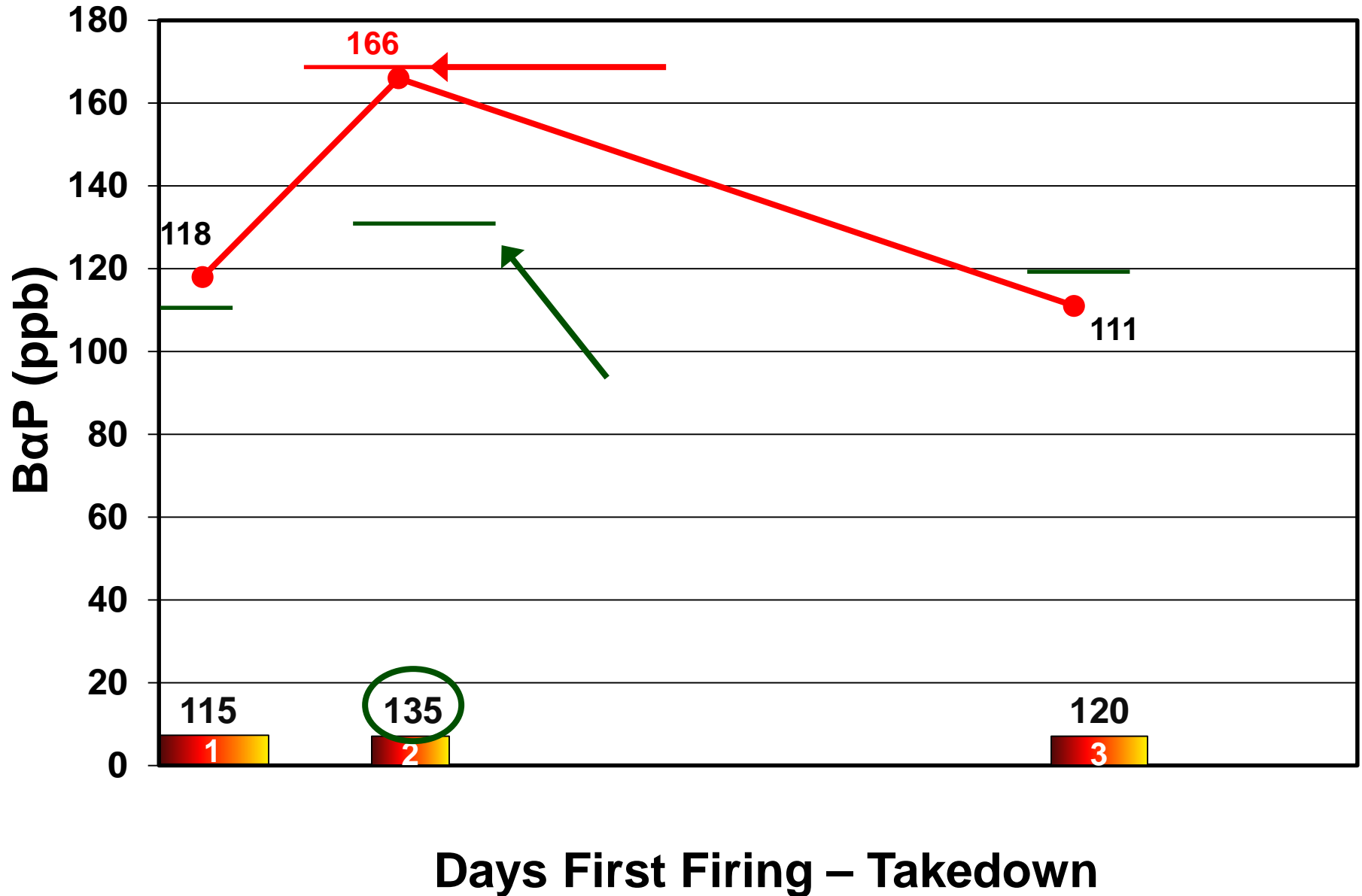
Temperature °F



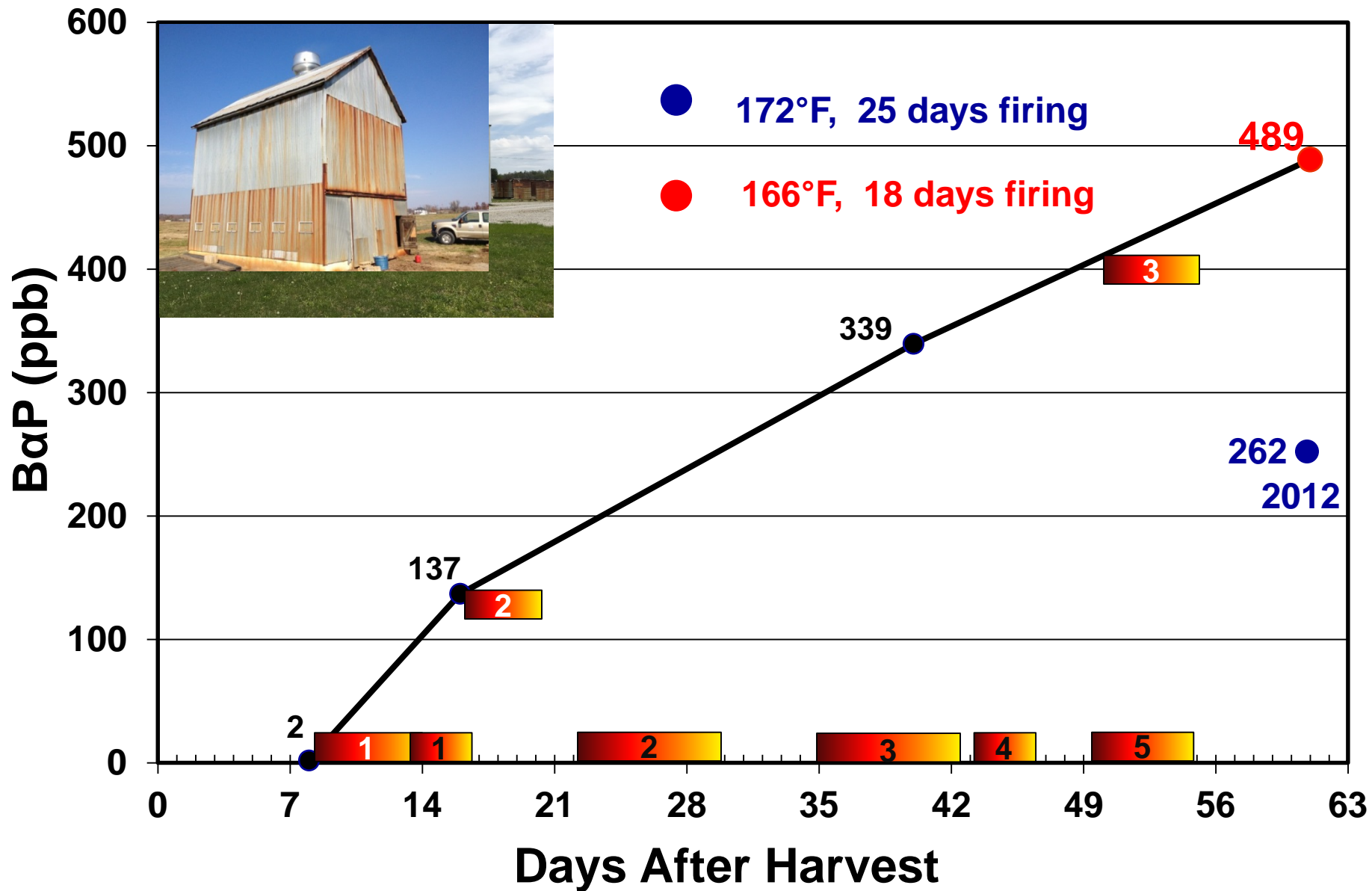
2015 BαP (ppb)



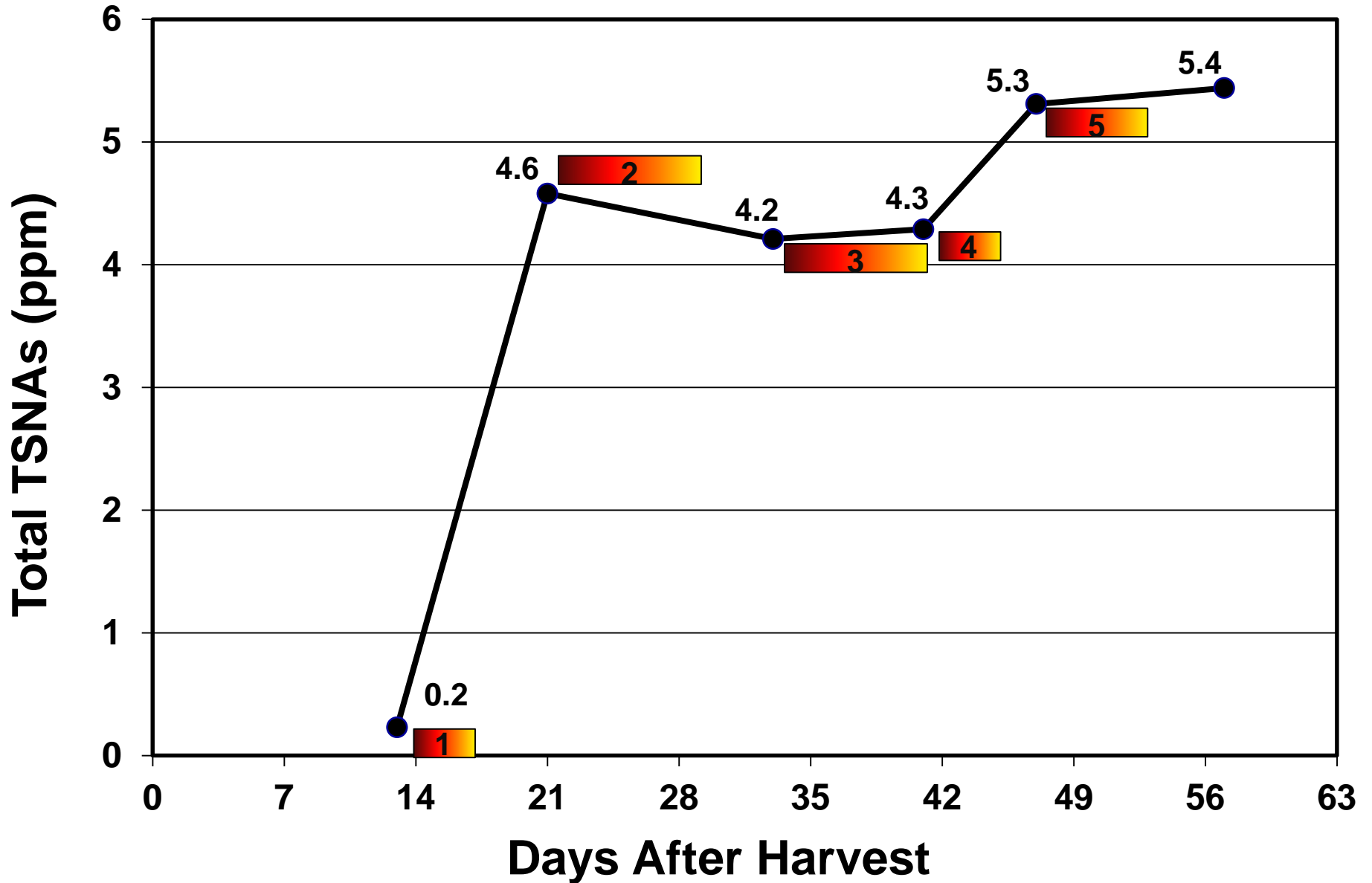
2015 Max Temperature (°F) During Curing



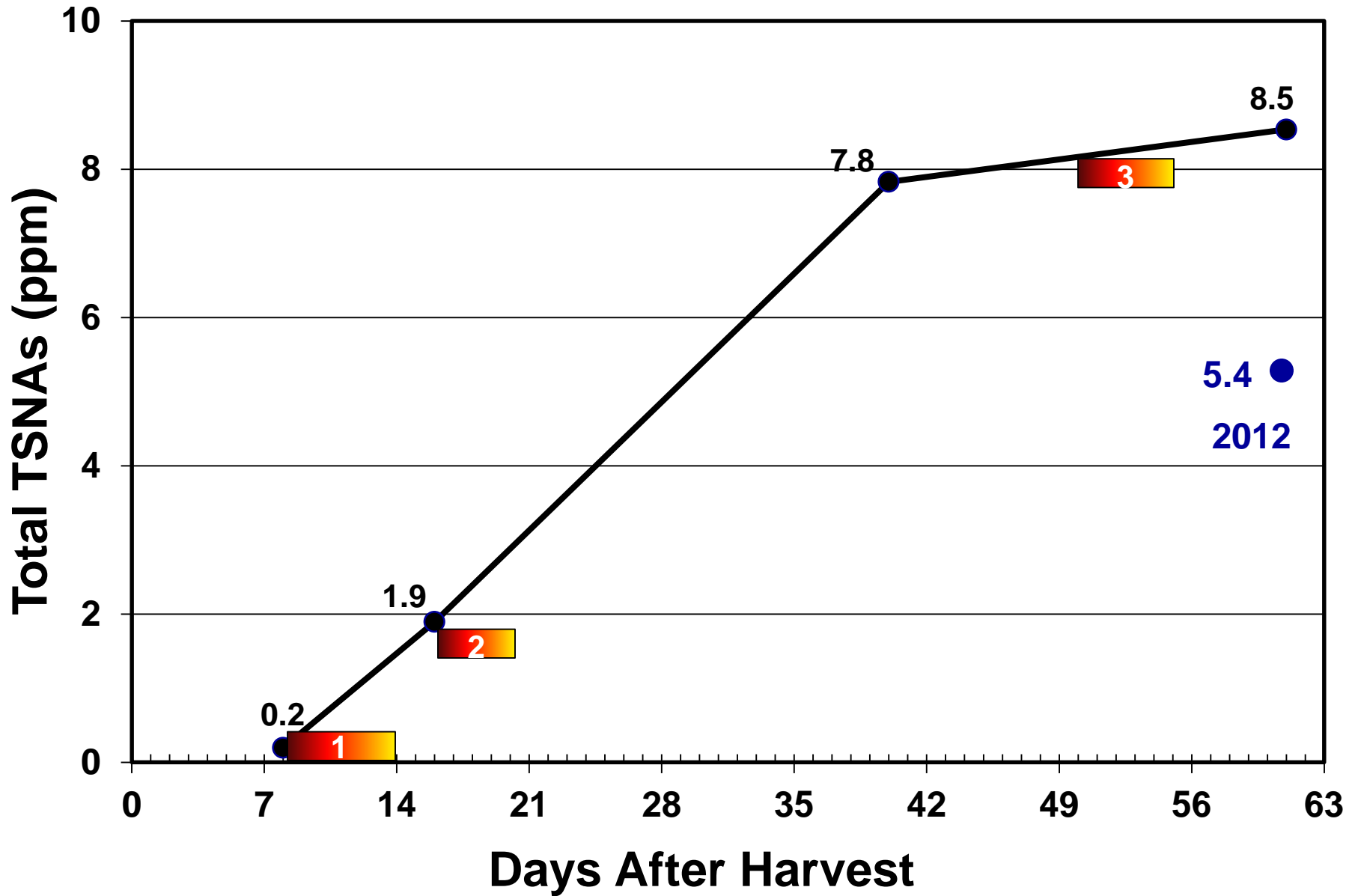
2015 BαP (ppb)



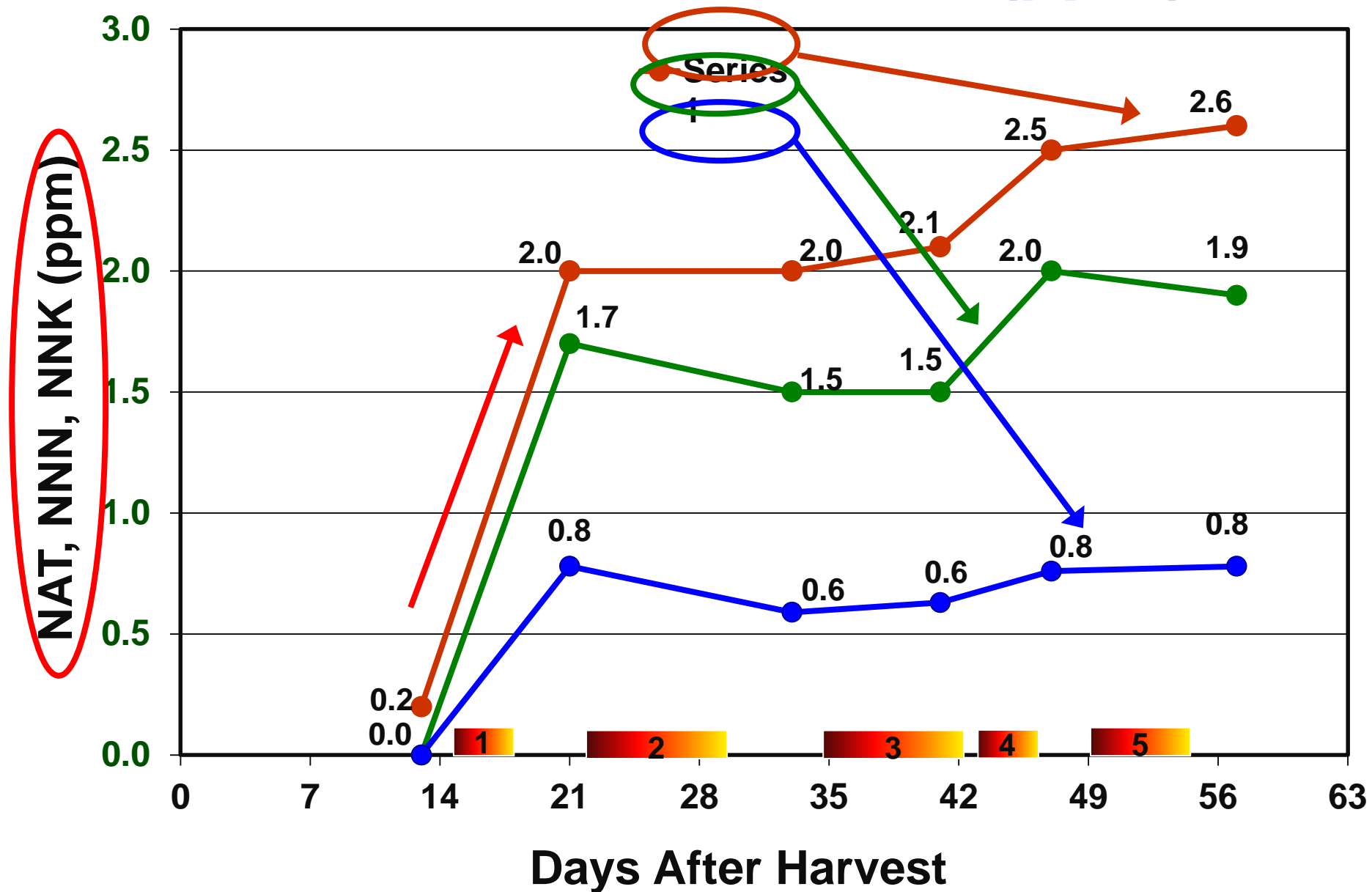
2012 Total TSNAs (ppm)



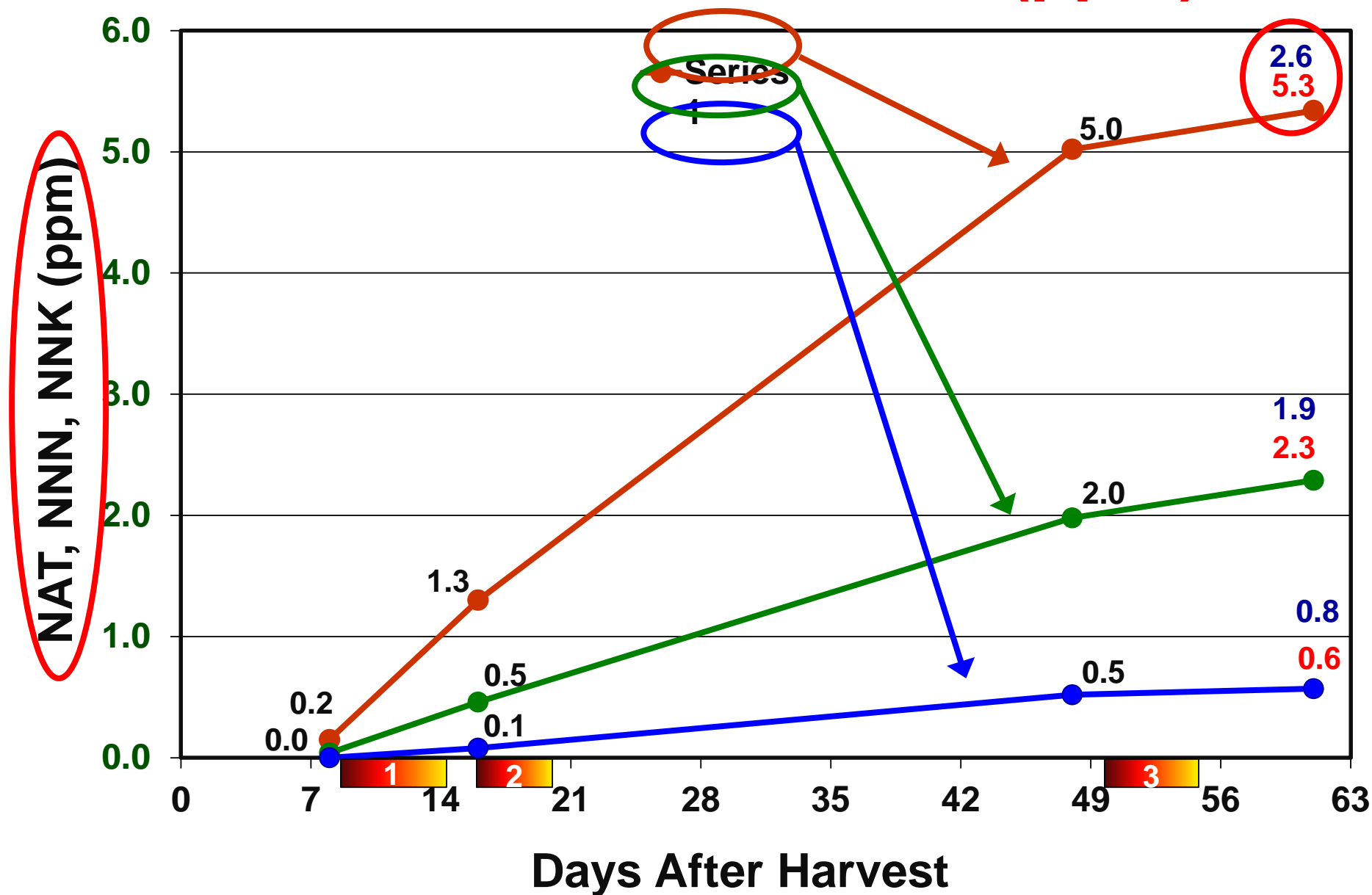
2015 Total TSNAs (ppm)



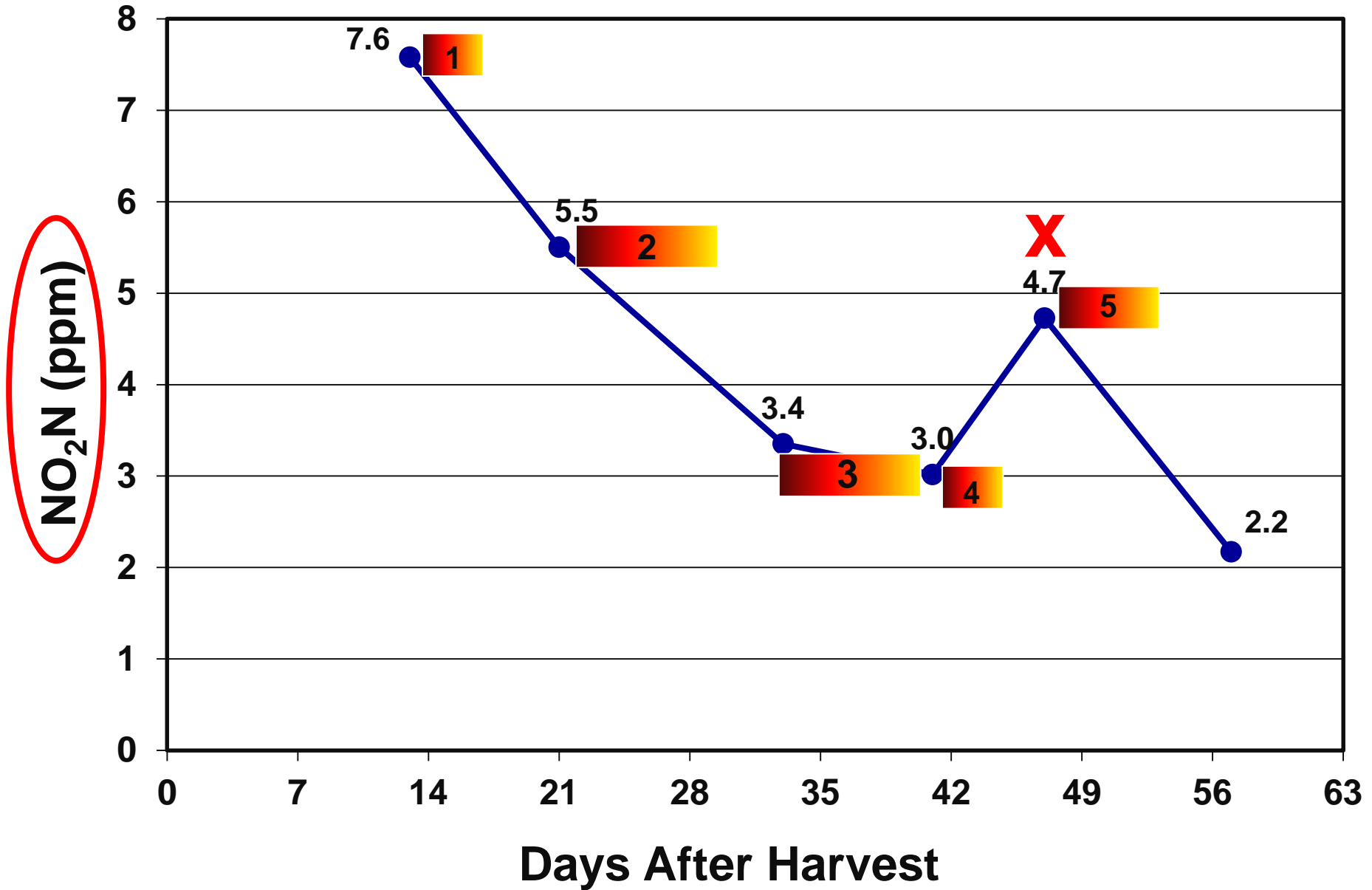
2012 Individual TSNAs (ppm)



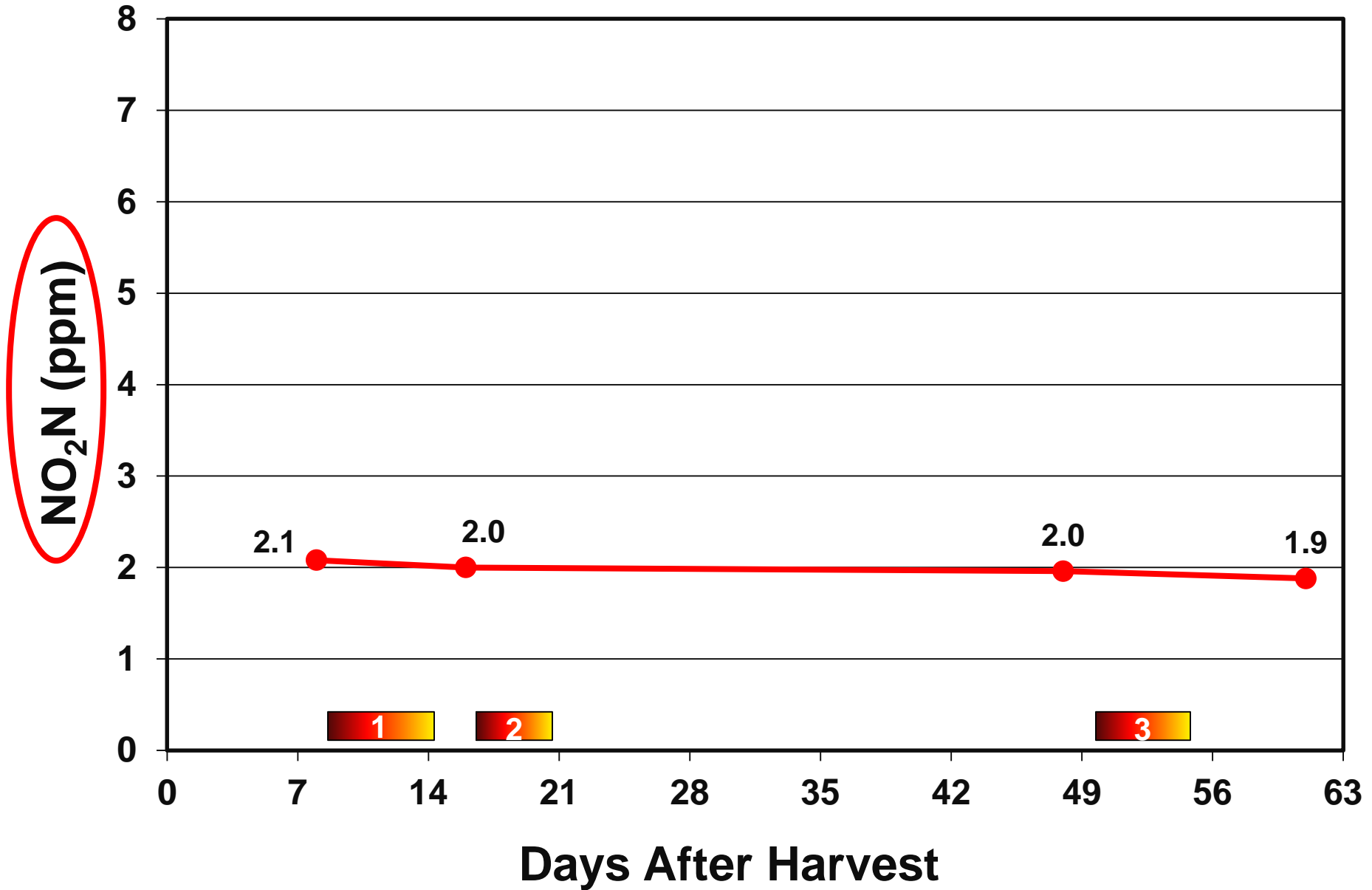
2015 Individual TSNAs (ppm)



2012 NO₂N (ppm)



2015 NO₂N (ppm)

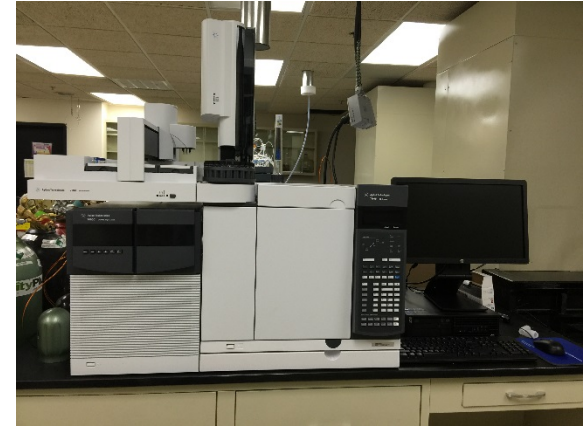




SUMMARY

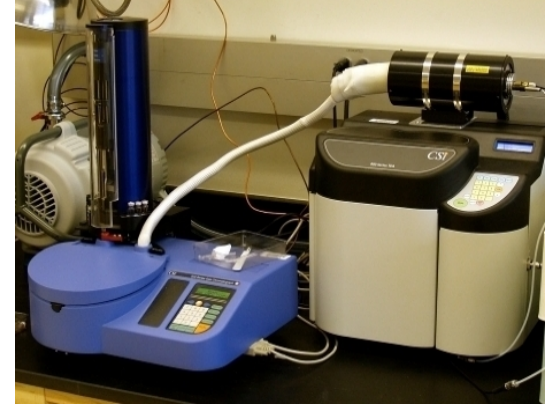
Summary BαPs

- **Final value BαP:**
 - **2012 – 262 ppb**
 - **2015 – 489 ppb**



Summary Total TSNAs

- **Final value TSNAs:**
 - **2012 – 5.4 ppm**
 - **NAT = 1 $\frac{1}{3}$ x NNN**
 - **2015 – 8.5 ppm**
 - **NAT > 2 x NNN**



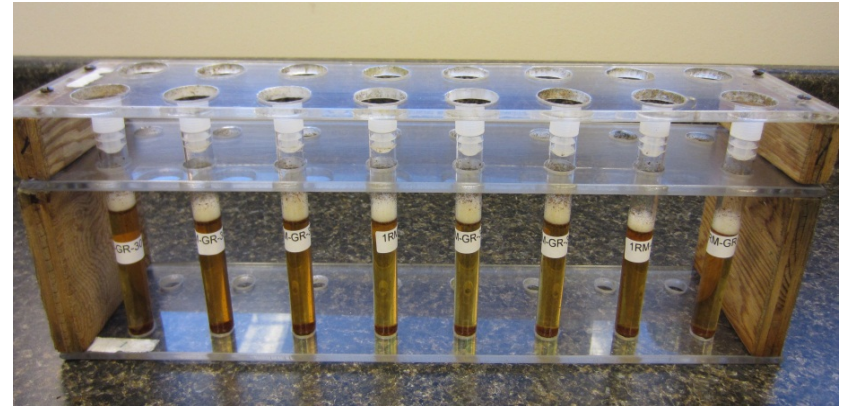
Summary Curing

- **2012**
 - Maximum temperature 172°F
 - 25 days of firing
- **2015**
 - Maximum temperature 166°F
 - 18 days of firing



Summary NO₂N

- **2012**
 - Initial 7.6 ppm
- **2015**
 - Initial 2.1 ppm



CONCLUSIONS



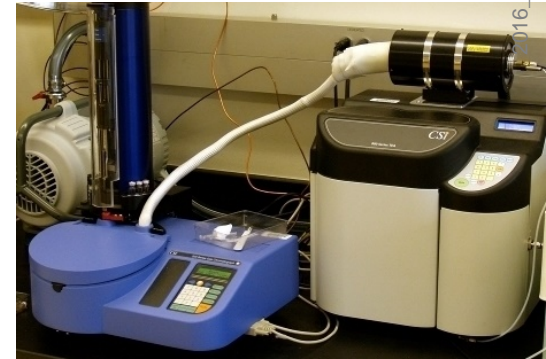
Conclusions

BαP & TSNAs:

- **2015** > **2012**
 - **NAT** > **2x NNN**

Despite

- max temp **2015** < **2012**
- days of firing **2015** < **2012**
- initial NO_2N **2015** < **2012**





BaP & TSNAs:

- Barns?
 - Air?
- Season?
- Firing?



Acknowledgements

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BAT

RJR

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