Flue-cured Tobacco Minimum Standards Program

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History

- Coker 139, Coker 140, and Dixie Bright 244 were released for grower planting in 1955.
- Coker 139 was the highest yielding cultivar in the OVT, yielding 32% more than the check cultivars. Curability was excellent.
- Grower acceptance was rapid.

History

- By 1956, 50% of the acreage was planted to Coker 139.
- However, Coker 139 was unacceptable to the industry.
  - Total alkaloid concentration was unacceptably low.
  - Reducing sugar concentration was too high.
  - Smoke flavor and aging characteristics were poor.

History

- Cured leaves were pale-lemon colored and slick. Thus, easily recognized by the buyer.
- Reduced purchases in 1956 resulted in large loan stocks.
- In 1957, USDA instituted the Variety Discount Program.
  - Certification and 50% reduction in price support for low alkaloid cultivars.

Regional Minimum Standards Program

- Industry-wide response to the low flavor crisis.
- Committees formed at the Tobacco Workers' Conference in 1958.
- First field trials conducted in 1963 and 1964.

Regional Minimum Standards Program

- A cooperative program conducted through the Flue-Cured Variety Evaluation Committee.
- Belt-wide field testing along with physical, chemical, and smoke evaluation.
- Potential new cultivars must meet minimum chemical, physical, and smoke standards.
  - Compared to mean of three check cultivars:
    - NC 2326 (released in 1965)
    - NC 95 (released in 1961)
    - K 326 (released in 1981) added as a check in 2011

Regional Minimum Standards Program

- Tobacco is a unique commodity because of physical and chemical quality needs
- Some of which can not be assessed economically at the buying point
- Provides for an unprecedented level of variety quality management
- Not able to do anywhere else in the world

Regional Minimum Standards Program

- Evaluation committee is comprised of
  - University Personnel, Agronomists and Plant Breeders
  - Seed Companies
  - Private plant breeders
  - Leaf dealers
  - Manufactures
- Typically 20-25 voting members
- Meets annually

Regional Minimum Standards Program

- Regional Small Plot Test
  - 6 locations: 3 in NC, 1 in VA, 1 in SC, and 1 in GA.
- Regional Farm Test
  - 9 locations: 4 in NC, 1 in VA, 1 in SC, and 1 in GA.

Regional Minimum Standards Program

- Regional Small Plot
  - approximately 40 entries per year
- Regional Farm Test
  - 15 entries per year
  - Capped
  - Now done on research stations

Regional Minimum Standards Program

- Regional Small Plot
  - Plant height
  - Leaves/Plant
  - Days to 50% flower
  - Yield
  - Grade Index
  - Value/acre
  - Value/100 lb
- Regional Farm Test
  - Yield
  - Value/acre
  - Value/100 lb

Regional Minimum Standards Program

- Regional Small Plot
  - Physical Evaluation
  - Chem. Evaluation
- Regional Farm Test
  - Physical Evaluation
  - Chem. Evaluation
  - Smoke Evaluation

Chemical Standards

Constituent	RSP	RFT
Nicotine		+ 15% to –20% of checks
Red Sugars	+ or – 15% of checks	+ or – 15% of checks
Total Alk.	+ 15% to –20% of checks	
Sec. Alk.		≤ 13% of TA

Physical Standards

Factor	RSP	RFT
Equilibrium Moisture	No formal standards, reject if abnormal	
Filling Value	No formal standards, reject if abnormal	
Mean Usability	≥ 50 of the checks (informal guideline)	≥ Highest Check

Mean Usability = Mean across stalk positions. 4-6 companies rate samples as usable or non-usable for their needs.

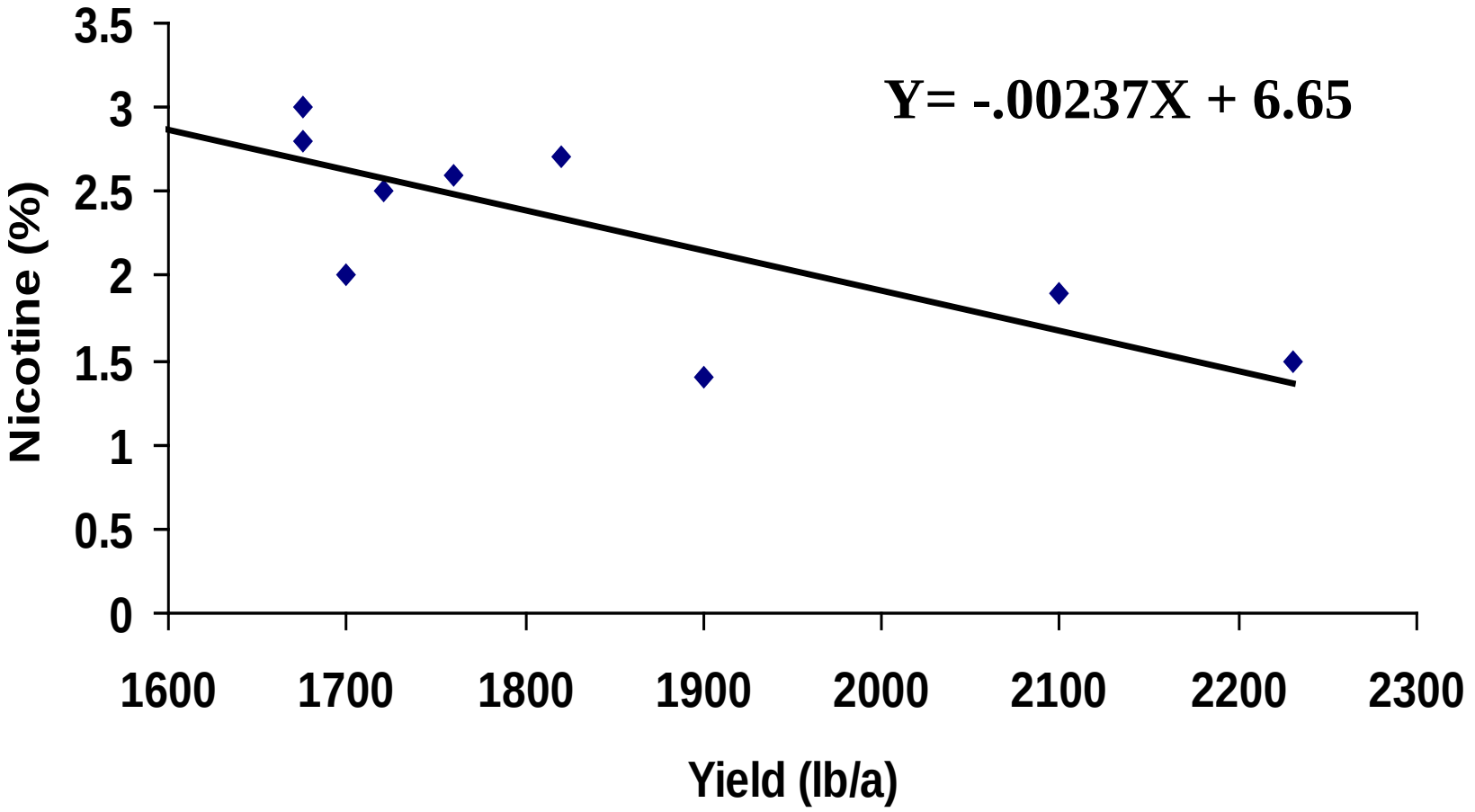
Smoke Standards (Regional Farm Test)

- Samples combined across stalk positions and then bulked over locations.
- AOI cuts the rag and Lorillard manufactures cigarettes.
- 5 Smoke Panels: PMI, RJR, Altria, Lorillard, and JTI.
  - Each entry is rated acceptable or unacceptable compared to the checks.
- Reject if half or more find smoke unacceptable .

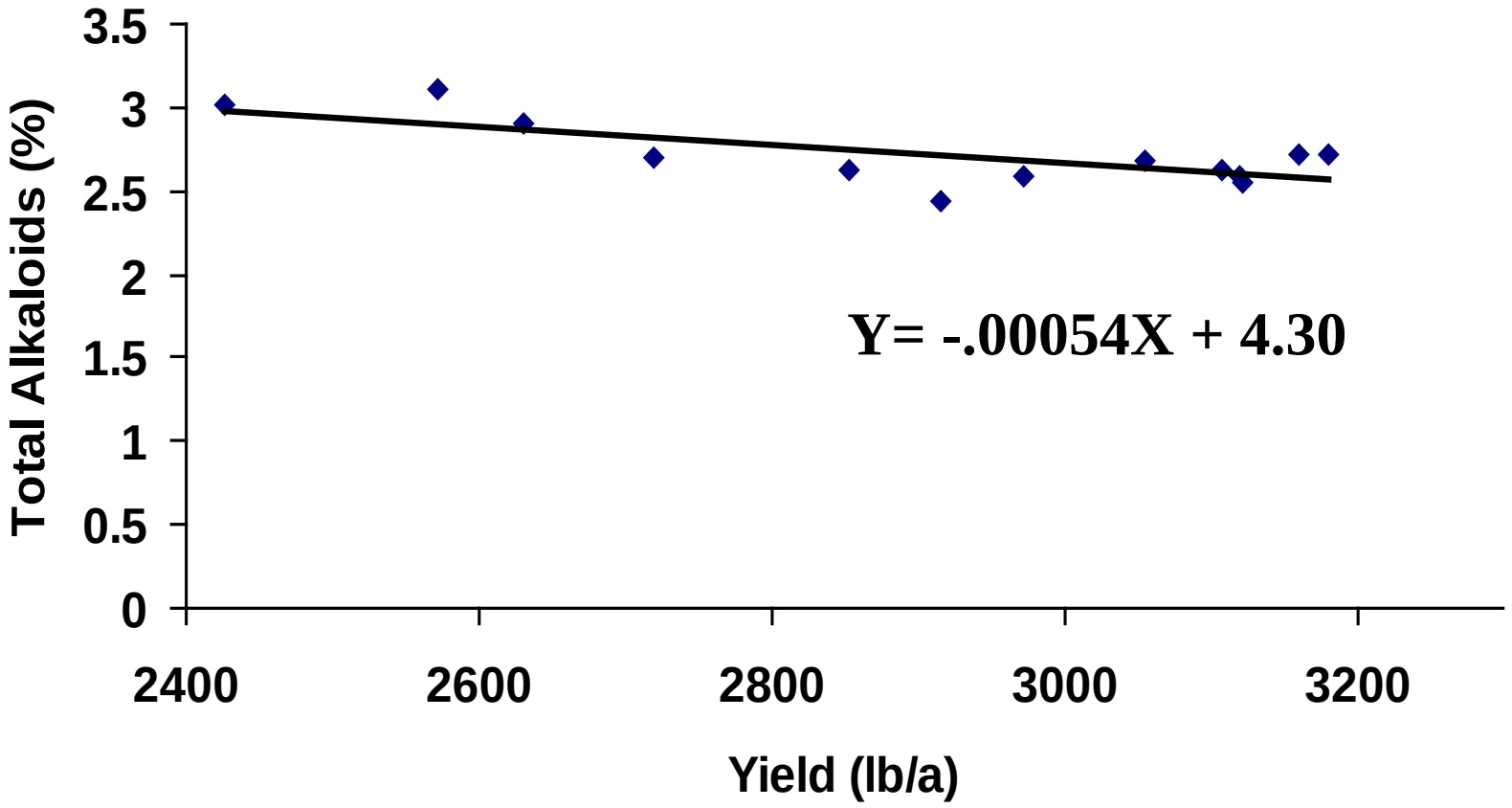
Regional Minimum Standards Program

- Varieties must pass both tests to be sold commercially in NC
- Must go in order, but can be entered multiple times

Yield Vs. Nicotine Levels in the NC OVT, 1955-57



Yield Vs. Total Alkaloid Levels in the NC OVT, 2000-2002



Regional Small Plot year one

- Historically about 1/3 fail in any given year
- Low alkaloids
- High reducing sugars

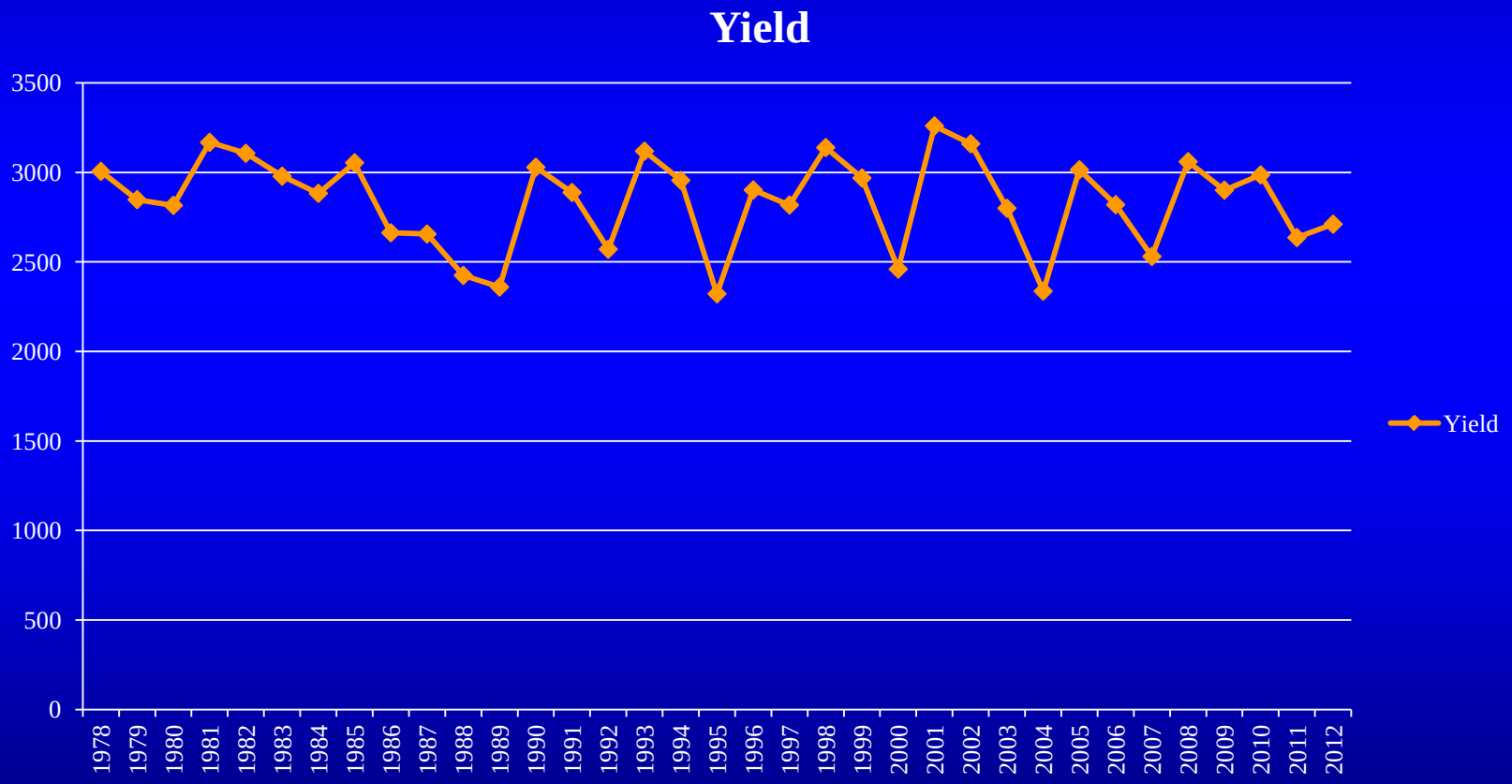
Regional Farm Test year two

- Historically just less than 1/3 fail in any given year
- Mostly by industry smoke panel
- Low nicotine
- High reducing sugars

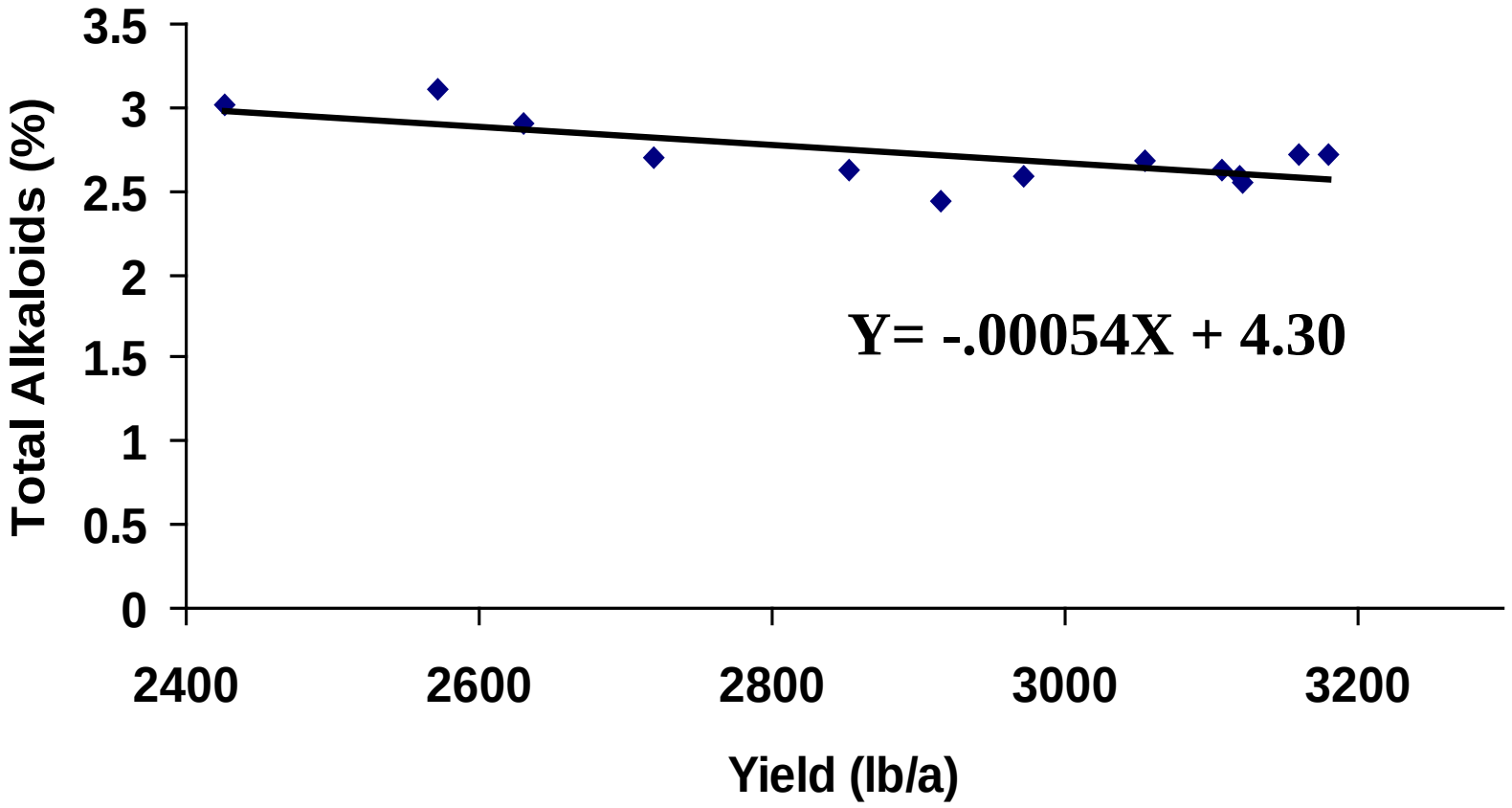
Conclusions

- More than 275 entries approved for release since 1964.
  - Lowest yielding cultivar in the 2012 NC OVT yielded more than the highest yielding cultivar in 1955-57.
  - Highest yielding cultivar in the 2012 NC OVT was 66% higher yielding than the best in 1955-57.

Leaf Yield in the NC Official Variety Test, 1978-2012



Yield Vs. Total Alkaloid Levels in the NC OVT, 2000-2002



Yield of Commercial Cultivars

- For the last 35 years, higher yielding varieties have failed to meet minimum standards
- Most commonly because of low alkaloids, high reducing sugars, unacceptable smoke flavor, or a combination of the any of these three
- Not due to lack of effort by excellent plant breeders, both public and private
- Many gains have been made in disease resistance and yield of those varieties have improved farm yields dramatically

Recent Developments

- Evaluation of current commercial cultivars to “modernize” the check varieties
- Two checks from the 1960’s and one from 1981
- No longer represents what growers are planting and industry is purchasing

Recent Developments

- Commercial varieties chosen for evaluation as potential new checks
  - NC 606
  - SPT 168
  - NC 196
  - PVH 1452
  - CC 27
  - K 346
  - CC 35
- 2-3 years of testing and industry evaluation

Future

- Current program still serves a critical need
- Will there be a future need for varieties that are not similar to current commercial cultivars?
- How do we handle those varieties in the program?
- How do we handle those varieties in the commercial market? How much is needed?
- Contracting provides for a level of oversight not present when the program and seed laws were established