

Influence of Flowering and Maturity Dates on Yield among Winter Canola Cultivars

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INTRODUCTION

Cotton



Soybean

Planting
date

April

15

May

15

June

15

Cropping System in Northern Alabama

Canola field in northern Alabama



Canola harvest

Current

Canola harvest

Average seed yield 2001 / 2002

3,015 Kg ha⁻¹

2,827 Kg ha⁻¹

Rationale

Mild winter weather in northern Alabama allows spring-type canola that is planted in the fall and during mid-winter to flower and mature in early and late spring respectively, but with very poor yield.



➤ **Maturity among canola (*Brassica napus*) cultivars greatly influenced seed yield.**

Objectives

- 1) Create new canola lines with early maturity**
- 2) Select canola lines with earlier maturity and other desirable traits for Alabama and the mid-south to:**
 - ✓ **escape diseases and insect pests**
 - ✓ **produce economical yield**
 - ✓ **facilitate double cropping with traditional summer crops**

METHODS



Screening existing public germplasm for genetic variations for maturity

Select cultivars with high oil and seed yields

Identify other favorable yield components:

plant type (number of branches and pods/plant...)

seeds/pod, seed size...

Winter survival



Yes! Snow in Alabama

Experimental Details

**Between 1999-2001
more than 80 Crosses
were made.**

**F_1 plants were
vernalized out-doors in
pots and transferred to
controlled environment
for flowering and
maturity**



Experimental Details

During 2005-06 growing season, we evaluated selected entries from the National Winter Canola Variety Trials, parental cultivars –vs- some advanced early maturing Alabama A&M breeding lines:

Cultivars were classified at senescence as being:

- ✓ **early:** if maturity occurred between: 218 & 225 days
- ✓ **med:** between 226 & 233 days
- ✓ **late:** greater than 233 days.

Samples were collected from 1.8 x 6 m plots, planted in 6 rows, 18-cm row spacing with three replications.

Experimental Details

Agronomic data were collected for:

branches/plant

number of days to 50% flowering

number of days to maturity

insect damage

oil percentage

seed yield

seeds/pod

1000-seed wt.

total pods/plant

winter survival

fall stand

lodging

plant height

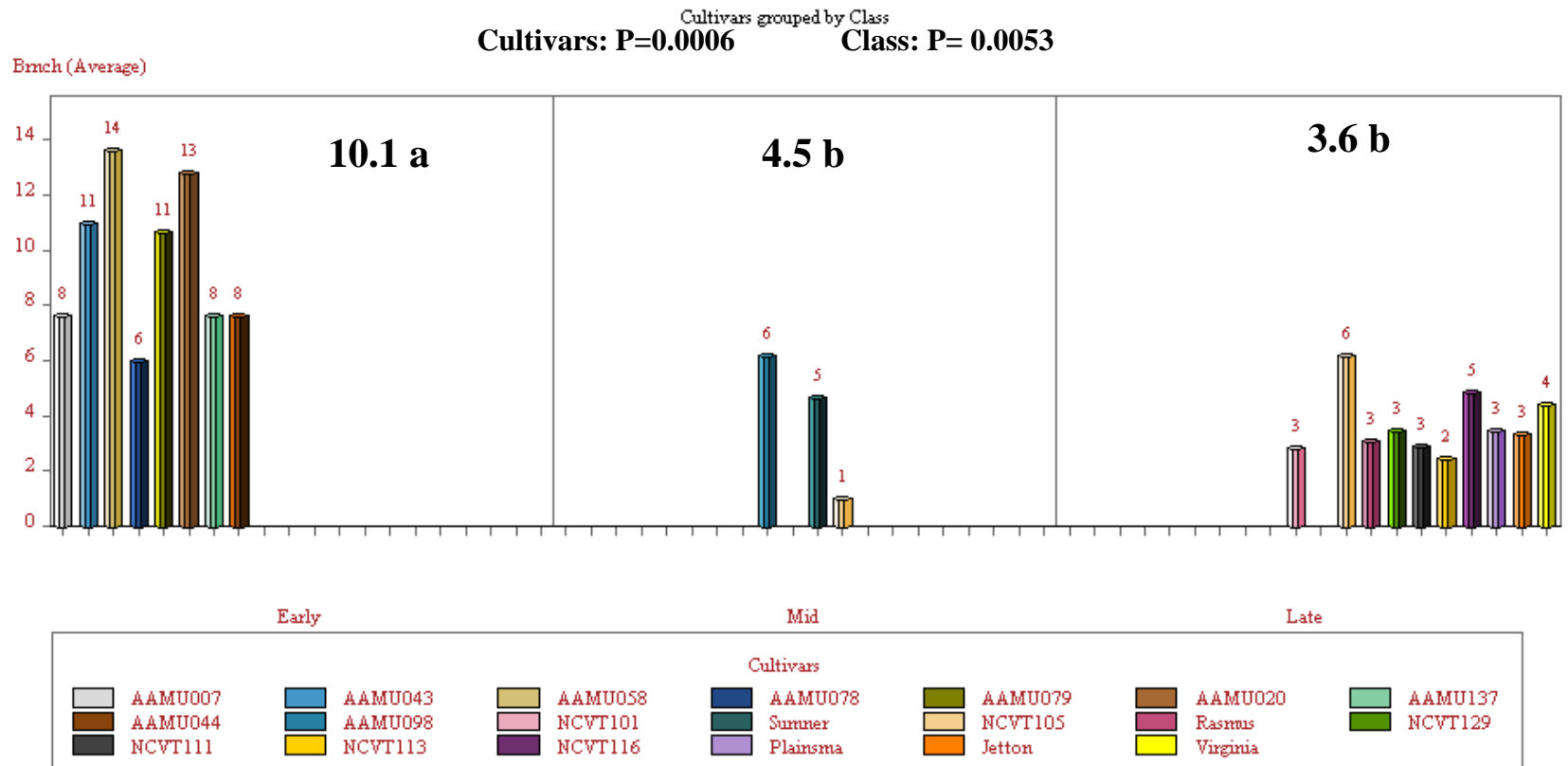
shattering

frost damage

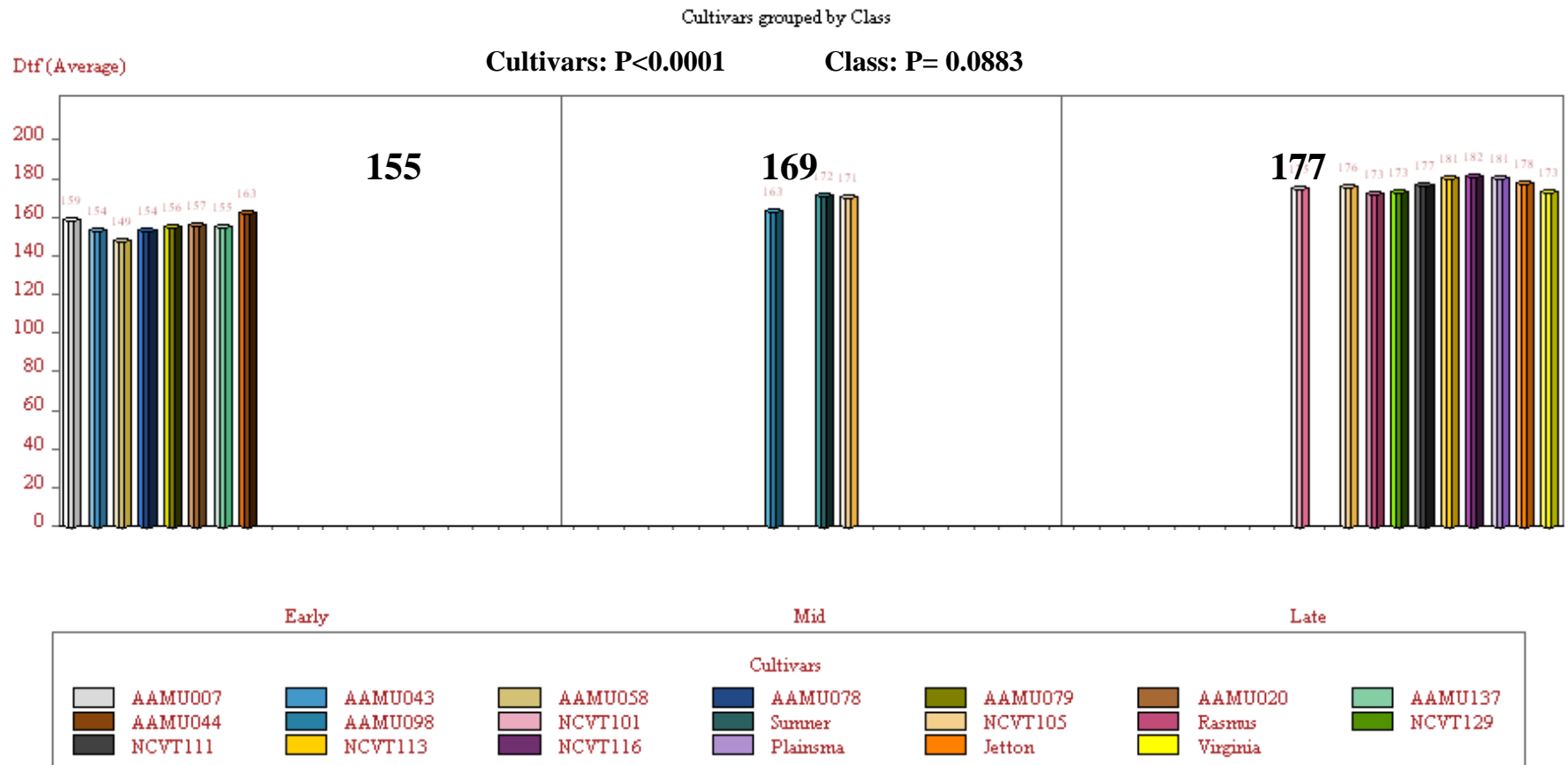
test weight

moisture

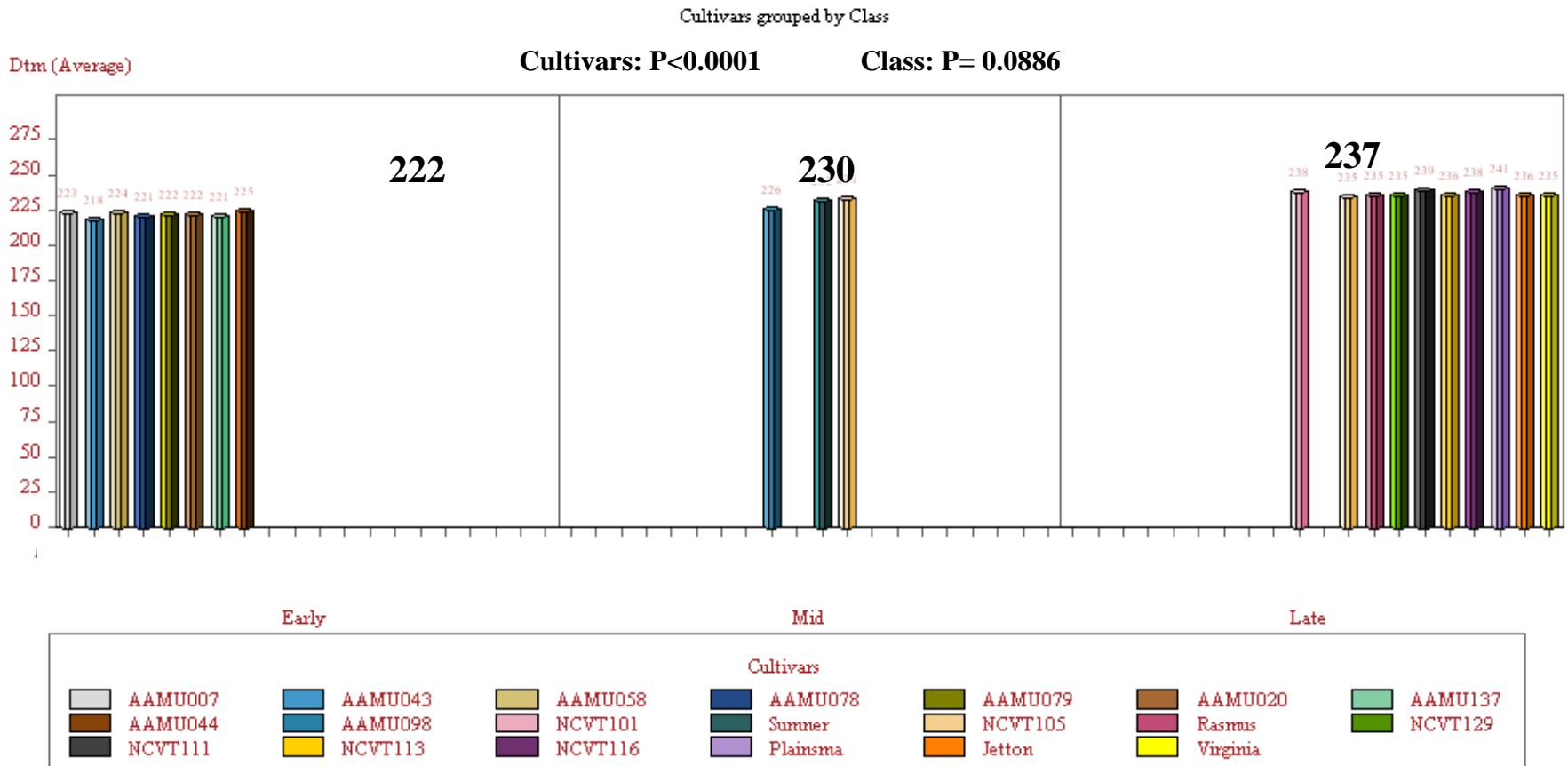
Branches plant⁻¹: Early maturity lines



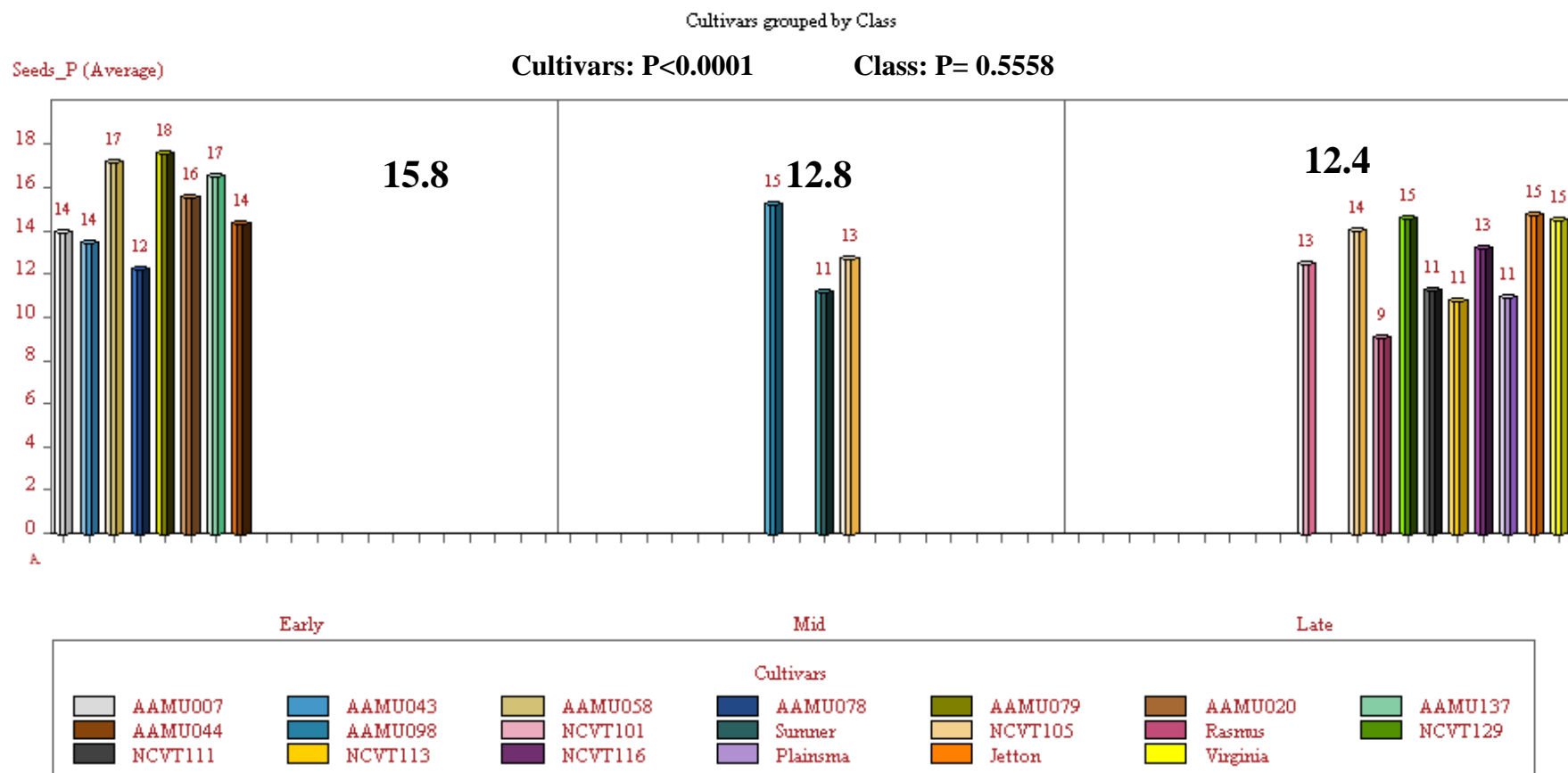
Number of days to flowering: **Early maturity lines**



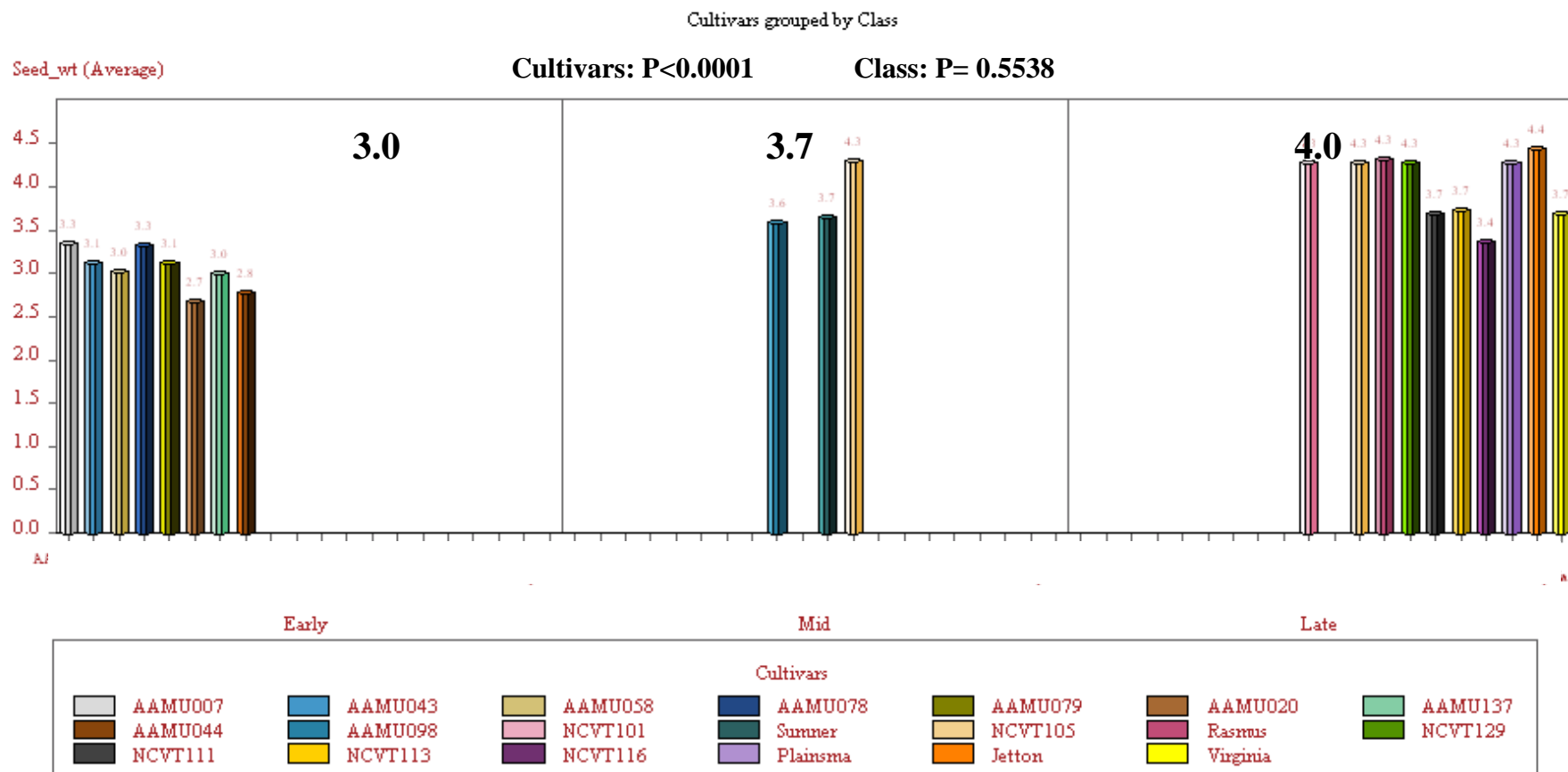
Number of days to maturity: **Early maturity lines = 15 days**



Average number of seed pods⁻¹: **Early maturity lines**



1,000 seed wt (g): Late maturity lines



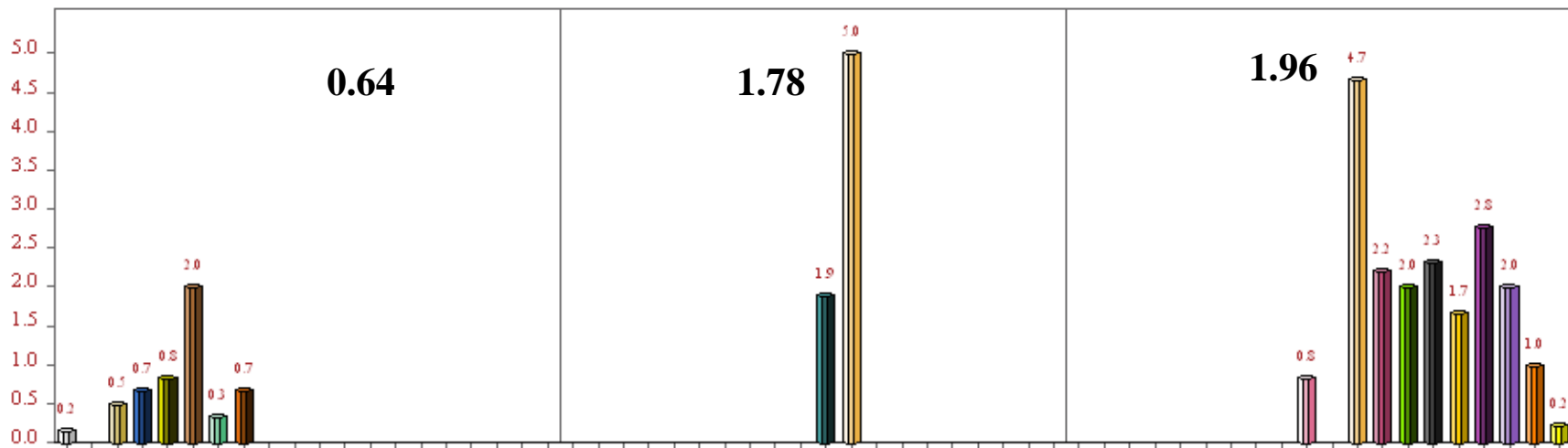
Average number of pods with severe insect from the CSPW: Early maturity lines

Cultivars grouped by Class

Cspw_3 (Average)

Cultivars: $P < 0.0001$

Class: $P = 0.9172$



Early

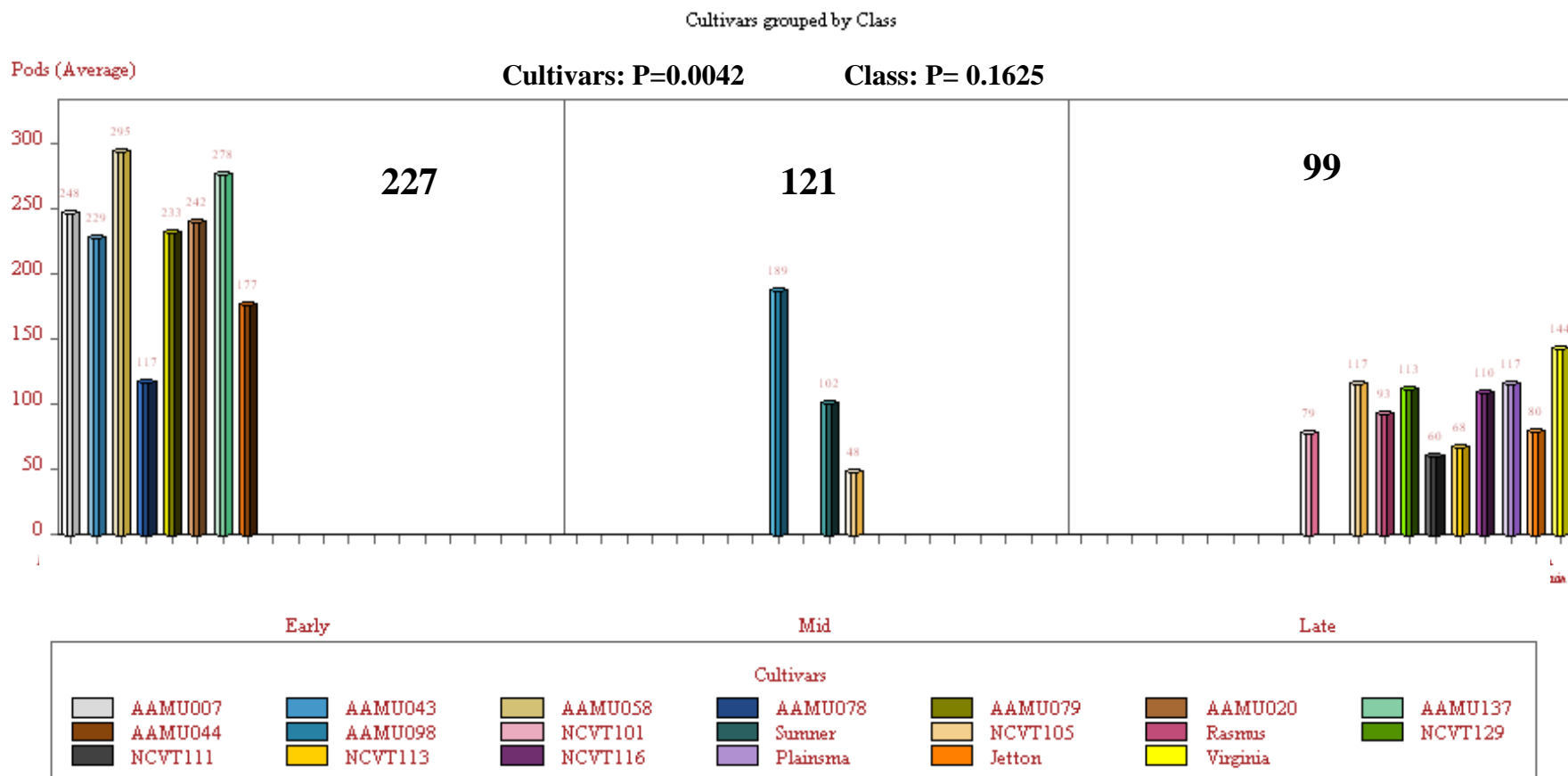
Mid

Late

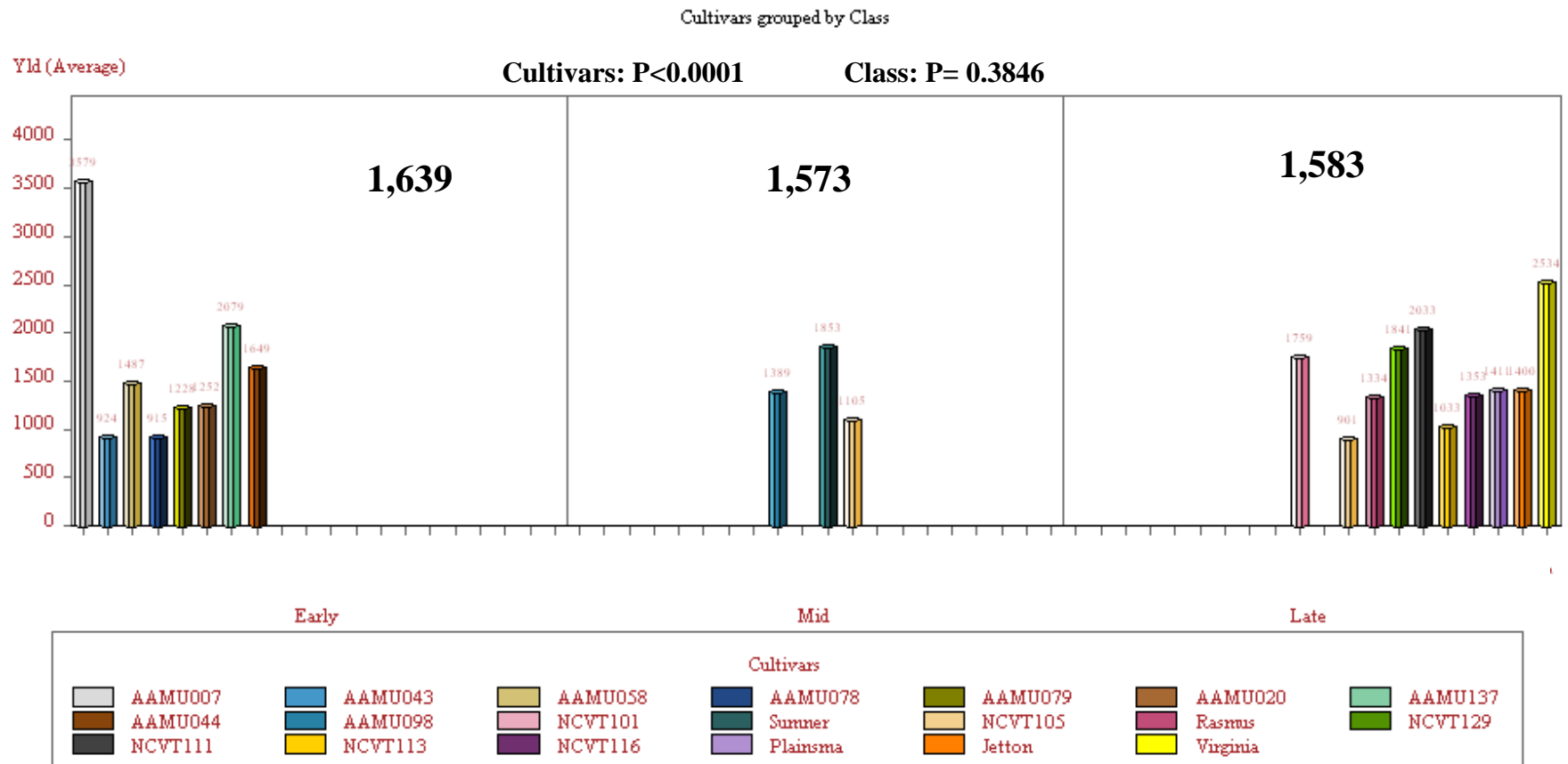
Cultivars



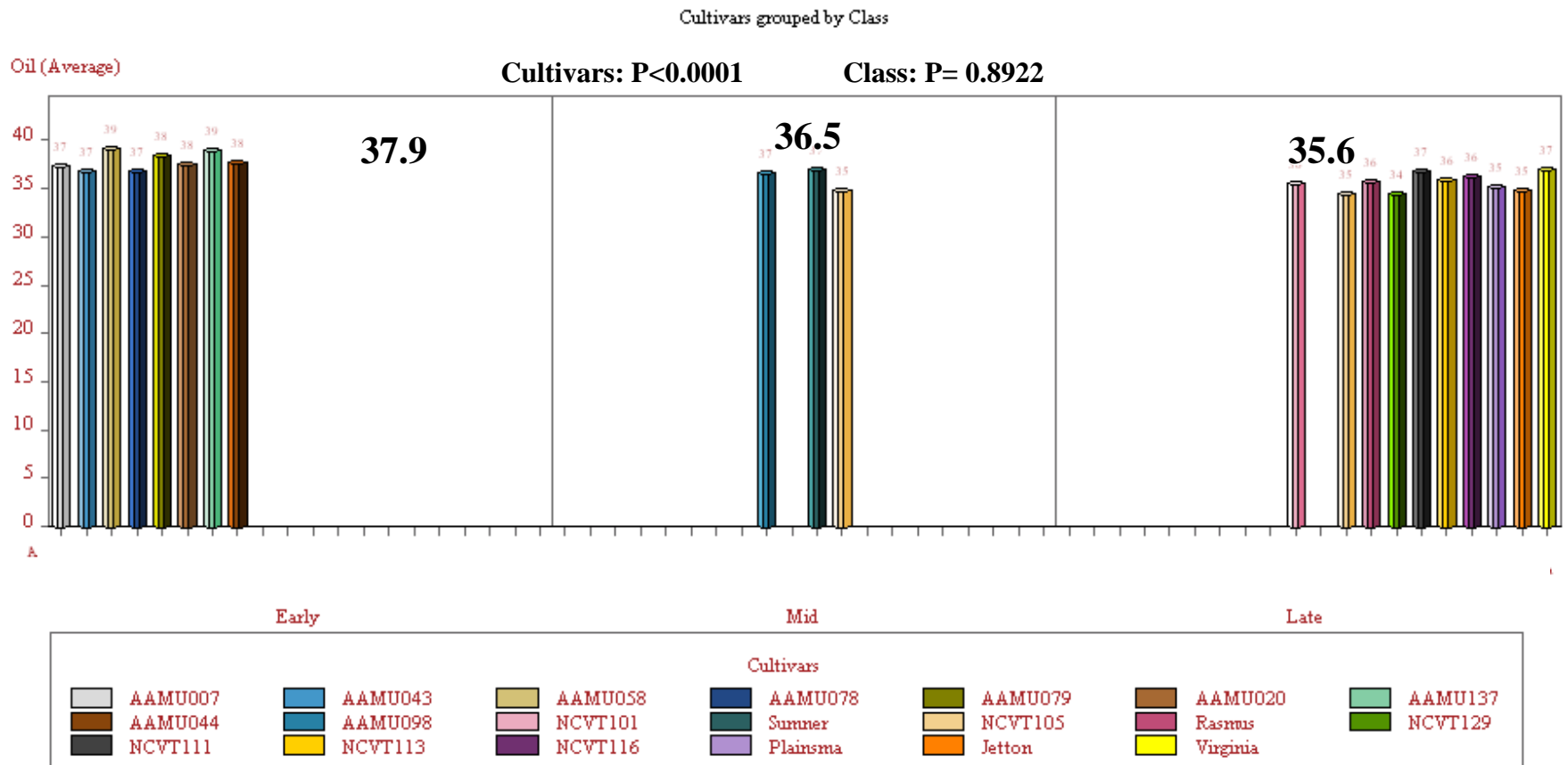
Total number of pods plant⁻¹: **Early maturity lines**



Seed yield (Kg ha⁻¹): Early maturity lines



Oil percentage: Early maturity lines



CONCLUSIONS

- **Winter canola lines with early maturity performed better than most other lines and cultivars tested.**
- **In 2006, AAMU's early maturity lines were harvested on May 16: more than 3 weeks before the traditional harvest date.**
- **Mid-May harvesting of winter canola will facilitate double cropping with other summer crops such as soybean and cotton.**

Thank you