Take your durum breeding expertise to the next level
Introduction

Cari Communications

On Darwin Wheel Field Physiology

Genetic Improvement Effects

Chapter 13
Numerous advances have been made in bread wheat yield during the century. Improved cultivation practices, including the use of chemicals and new strains of wheat, have contributed to increased yields. The use of irrigation has also been a significant factor in boosting productivity.

In the twentieth century, yield gains were primarily achieved through the development of new varieties of wheat. These varieties were bred to have higher yields and better disease resistance. The use of fertilizers and improved cultivation also contributed to increased yields.

During the 1950s and 1960s, agricultural scientists made significant advances in understanding the genetics of crops. This led to the development of new varieties that were better adapted to different environments. The use of hybridization also contributed to increased yields, as hybrid wheat plants are typically more productive than their non-hybrid counterparts.

In recent decades, the use of biotechnology has also been a factor in increased yields. Genetically modified crops have been developed that are resistant to pests and diseases, allowing farmers to use less input and have higher yields.

Current research is focused on developing even more productive wheat varieties. This includes work on improving water use efficiency, disease resistance, and stress tolerance. The goal is to develop crops that can be grown in a wider range of environments, allowing farmers to produce more food with less input.

In conclusion, the increase in bread wheat yield during the century has been the result of a combination of factors, including improved cultivation practices, the development of new varieties of wheat, and the use of biotechnology. Continued research and innovation will be necessary to sustain these gains in the future.
Figure 13.2. Average yields of four old (increased before 1930) and four modern cultivars.

(a) Italian cultivars
(b) Spanish cultivars
(c) Missouri cultivars
(d) Canadian cultivars

Figure 13.1. Yield of durum wheat cultivars with their year of release in Canada.

Yield (bushels/acre) 1996
Year of Release 1996
Changes in yield components

...
CHANGES IN DWAY-MATTER PRODUCTION

Figure 13.2: Relationship between the shaded area of the
leaf area index (left) and the rate of photosynthesis in a well
irrigated, well-watered, and well-fertilized rice plant.

The shaded area is proportional to the rate of photosynthesis, and
the unshaded area is proportional to the rate of transpiration.
CONCLUSION

Accepted data points.

Figure 13.7: Biomass at maturity (a) and harvest index (b) of different maize varieties during different periods in Mexico. The regression equations for yield of these varieties are given in Figure 13.7a.

**Figure 13.7**

- **a)** Harvest index vs. year of release (after 1900).
- **b)** Biomass (Mg/ha) vs. year of release.
COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA

COMPLIANCE WITH WMCA