Science Societies

Planting date and seeding rate impacted hybrid winter rye grain yield across U.S. regions

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Farmers have shown renewed interest in incorporating small grains, such as rye, in their crop rotations, with the goal to harvest them for grain. Niche food-grade marketing opportunities for rye grain are growing due to distilling and milling industries. For farmers to integrate hybrid winter rye into their cropping systems, they need basic agronomic information on optimum planting dates and seeding rates. This experiment set out to determine the influence of planting date and seeding rate on winter hybrid rye grain yield in four states (Kentucky, Ohio, Wisconsin, and Minnesota).

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1. What was the primary objective of the multi-state hybrid winter rye study?

a. To compare rye with wheat for forage quality.

b. To determine fertilizer requirements for rye.

c. To evaluate the effects of planting date and seeding rate on hybrid rye grain yield.

d. To develop new rye cultivars.

2. In this study, maximum grain yield occurred when rye was planted within the ___ week period following the fly free data at seeding rates ≥ ___ million seeds acre^{-1}.

a. 2; ≥0.8

b. 1; ≥0.6

c. 3; ≥0.7

d. 4; ≥0.9

3. In which U.S. states were the hybrid rye planting date × seeding rate trials conducted?

a. North Dakota, South Dakota, and Montana.

b. Iowa, Wisconsin, and Michigan.

c. Kentucky, Ohio, Wisconsin, and Minnesota.

d. Nebraska, Kansas, and Missouri.

4. Greater seeding rates always resulted in higher rye grain yields regardless of environment.

a. True.

b. False.

5. Which factor(s) influenced rye grain yield?

a. Seeding rate.

b. Planting date.

c. Row spacing

d. Both a and b.

e. Both b and c.

6. According to the article, what was the main purpose for winter rye cultivation in the United States in 2023?

a. Grain production.

b. Fiber production.

c. Cover cropping.

d. Hay production.

7. Which seeding rate range was tested in this study?

a. 0.2–0.8 million seeds acre□.

b. 0.4–0.5 million seeds acre□.

c. 0.4–1.2 million seeds acre□.

d. 0.5–2.0 million seeds acre□.

8. The interaction between planting date and seeding rate was significant across all sites.

a. True.

b. False.

9. Across planting dates, winter hybrid rye grain yield was lowest when seeded at

a. 0.2–0.8 million seeds acre□.

b. 0.4–0.6 million seeds acre□.

c. 1.0–2.0 million seeds acre□.

d. 0.5–2.0 million seeds acre^{-1}.

10. During the 2022–2023 growing season, the Crookston, MN site had unsuccessful plant establishment. Which of the following did the authors cite as the reason(s)?

a. Prolonged drought conditions at planting.

b. Winter kill.

c. Bird damage.

d. Herbicide drift.

e. Both b and c.

f. Both b and d.

11. What was the median yield of hybrid winter rye across planting dates, seeding rates, and environments?

a. 65 bu acre^{-1}.

b. ≥90 bu acre^{-1}.

c. 40 bu acre^{-1}.

d. 50 bu acre^{-1}.

12. In Ohio, in late planting scenarios, higher seeding rates can compensate for lost yield potential.

a. True.

b. False.

13. Which hybrid winter rye cultivar was used across all sites in the study?

a. Bono.

b. Tayo.

c. Hazlet.

d. Musketeer.

14. What is one management recommendation from the study for maximizing hybrid rye grain yield?

a. Delay planting until late October to avoid fall growth.

b. Plant within the two-week period following the Hessian fly-free date and at seeding rates greater than 0.8 million seeds $acre^{-1}$.

c. Use very high seeding rates regardless of timing.

d. Reduce seeding rates when planting early.

15. Based on the study results, the authors conclude that

a. hybrid rye should only be grown for the malting industry.

b. hybrid rye cannot be grown successfully anywhere in the country.

c. hybrid rye can be grown successfully in Kentucky, Ohio, Wisconsin, and Minnesota, but planting date and seeding rate influenced grain yield.

d. hybrid rye can be grown successfully anywhere in the U.S. regardless of planting date and seeding rate.

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