OBJECTIVES

- To compare selected seedbed management techniques for Roundup Ready corn.
- Evaluate the best approach for managing winter weeds when weeds are not removed before optimum corn planting dates.

MATERIALS and METHODS

- Studies were conducted between 1994 and 1995 to determine if stale seedbed management practices for conventional corn apply to Roundup Ready corn (Figures 1-8).
- The experimental designs were RCBs arranged as factorials with 3 replications.

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- The experimental designs were RCBs arranged as factorials with 3 replications.

- Factor A was stale seedbed management approach. Management approaches included removal of weeds 2 weeks before planting, mechanical removal of weeds by dragging at planting, and to plant as is and remove weeds after corn emerged. Glyphosate at 1 lb ai/A plus 0.75 lb ai/A 2,4 –D was applied 2 weeks prior to planting to remove weeds in plots receiving the preplant treatment.

- Factor B was postemergence weed management program which included 1 lb ai/A glyphosate plus 0.75 lb ai/A 2,4-D or glyphosate plus 0.5, 1 or 1.5 lb ai/A atrazine applied at V2. A layby treatment of 1 lb ai/A glyphosate plus 1.0 lb ai/A atrazine was applied at V6.

- Another study was conducted in 2005 to determine the effects of delaying planting and preplant herbicides on weed control and corn yield (Figures 9-10).

- The experimental design was a RCB arranged as a factorial with 3 replications.

- Factor A was the herbicide program for managing winter weeds. Glyphosate at 1 lb ai/A plus 0.75 lb ai/A 2,4 –D, glyphosate plus 0.5 lb ai/A atrazine, or 0.63 lb ai/A paraquat plus 0.5 lb ai/A atrazine was applied on 4/2/2005.

- Factor B was corn planting date. Corn was planted when the preplant herbicide application was made, 1 week after treatment, or 2 weeks after treatment.

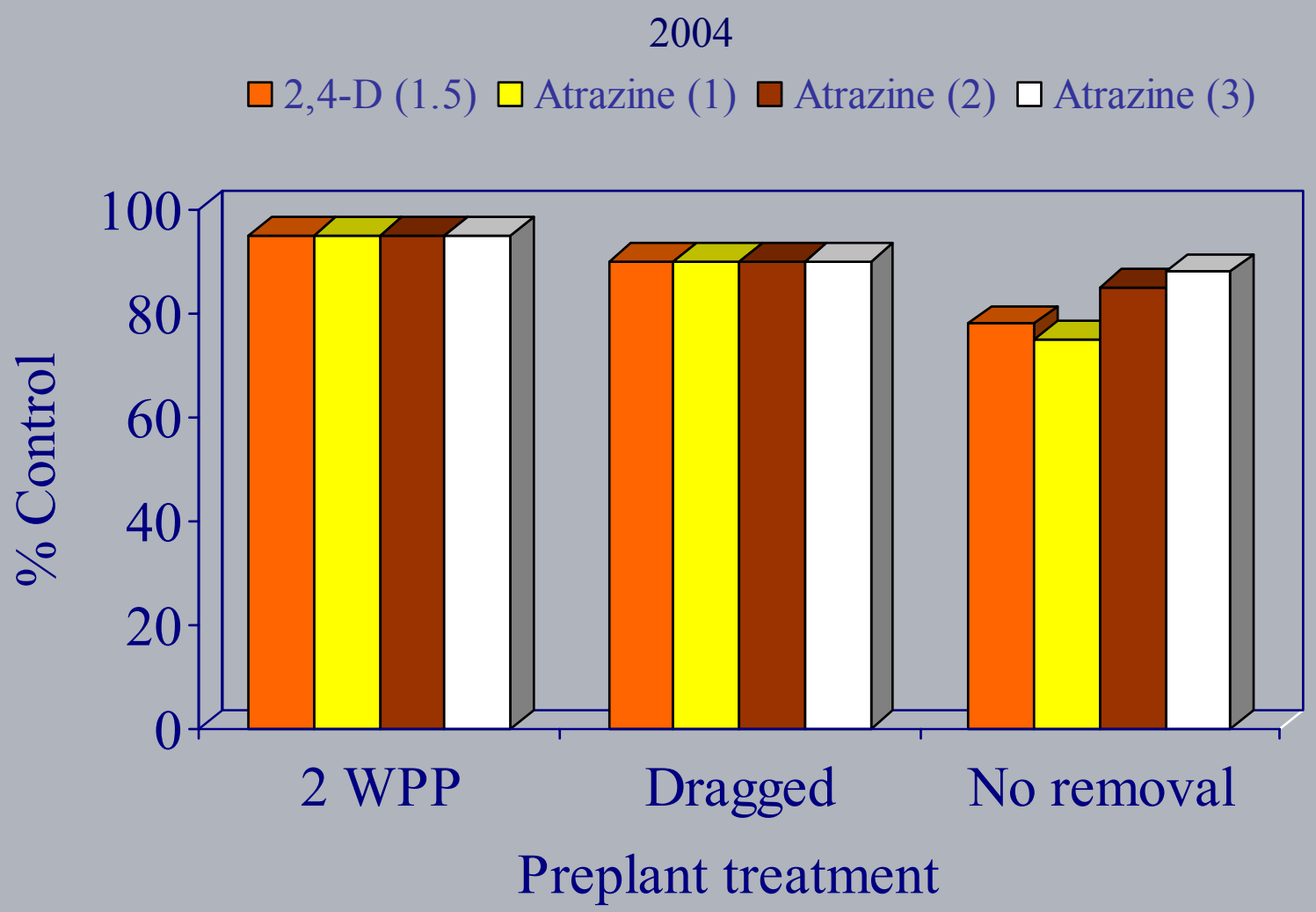

Figure 1. Cutleaf eveningprimrose (*Oenothera laciniata* Hill.) control 4 WAP. Weeds were removed 2 WPP with 1 qt/A glyphosate plus 1.5 pt/A 2,4-D, with a drag just before planting or removed after corn emerged. After corn emerged all weeds were removed with 1 qt/A glyphosate plus 1.5 pt/A 2,4-D, 1, 2, or 3 pt/A atrazine applied at V2 and followed by 1 qt/A glyphosate plus 2 pt/A atrazine applied at V6. The V6 application removed all remaining weeds and control was 100% at harvest.

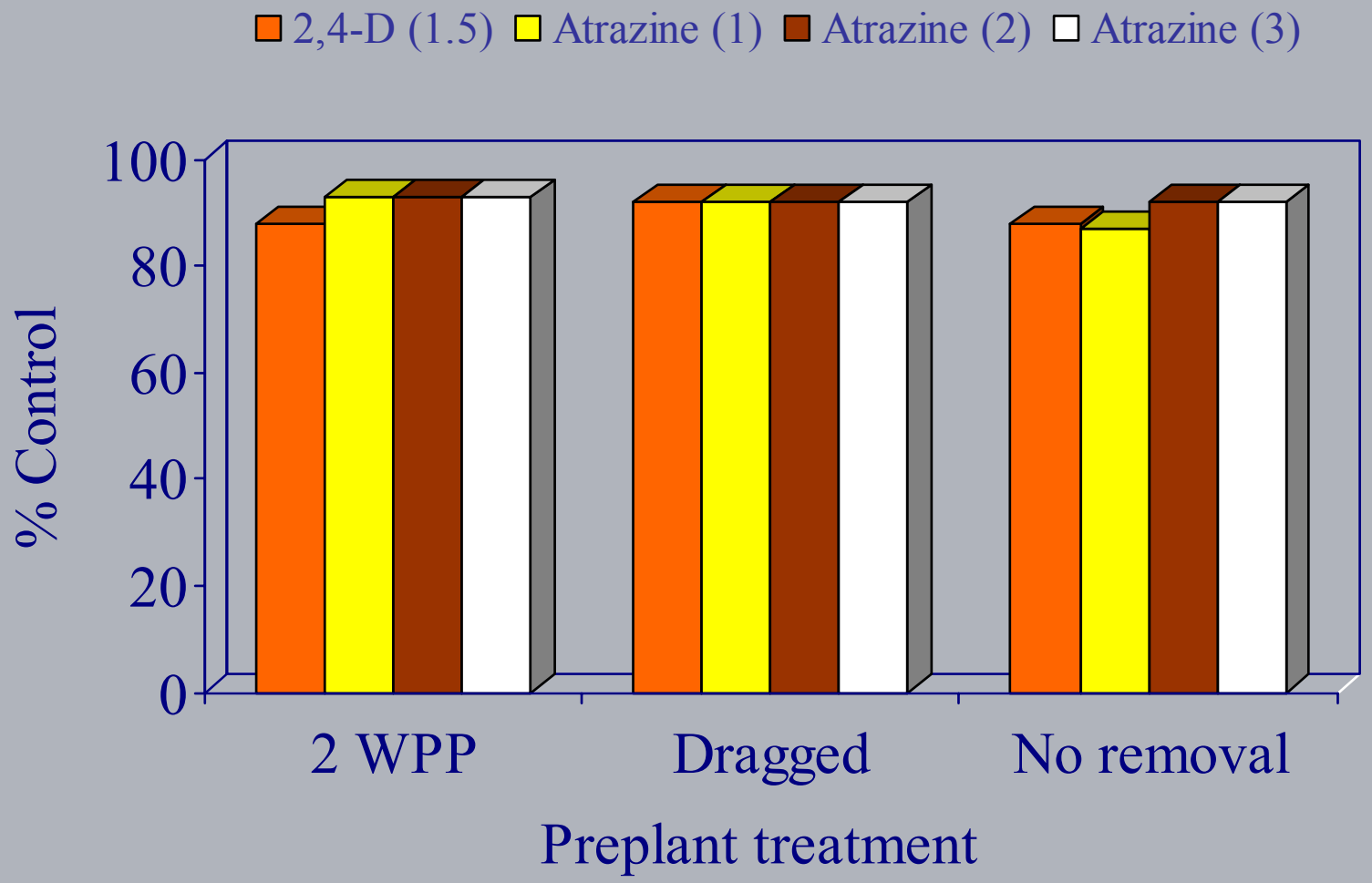

Figure 2. Swinecress (*Coronopus didymus* (L.) Sm.) control 4 WAP. Weeds were removed 2 WPP with 1 qt/A glyphosate plus 1.5 pt/A 2,4-D, with a drag just before planting or removed after corn emerged. After corn emerged all weeds were removed with 1 qt/A glyphosate plus 1.5 pt/A 2,4-D, 1, 2, or 3 pt/A atrazine applied at V2 and followed by 1 qt/A glyphosate plus 2 pt/A atrazine applied at V6. The V6 application removed all remaining weeds and control was 100% at harvest.

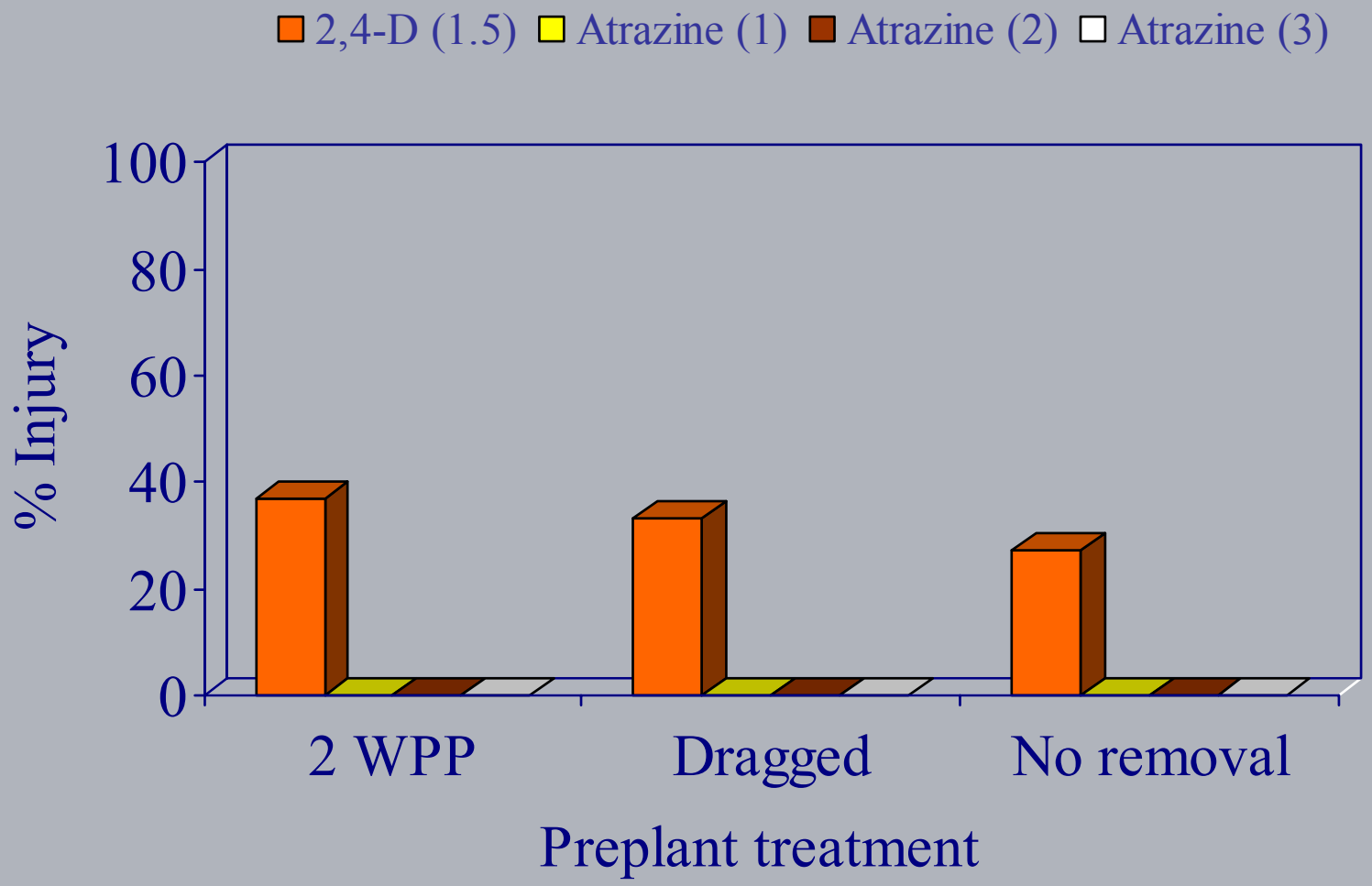

Figure 3. Corn injury 4 WAP. Weeds were removed 2 WPP with 1 qt/A glyphosate plus 1.5 pt/A 2,4-D, with a drag just before planting or removed after corn emerged. After corn emerged all weeds were removed with 1 qt/A glyphosate plus 1.5 pt/A 2,4-D, 1, 2, or 3 pt/A atrazine applied at V2 and followed by 1 qt/A glyphosate plus 2 pt/A atrazine applied at V6. The V6 application removed all remaining weeds and control was 100% at harvest.

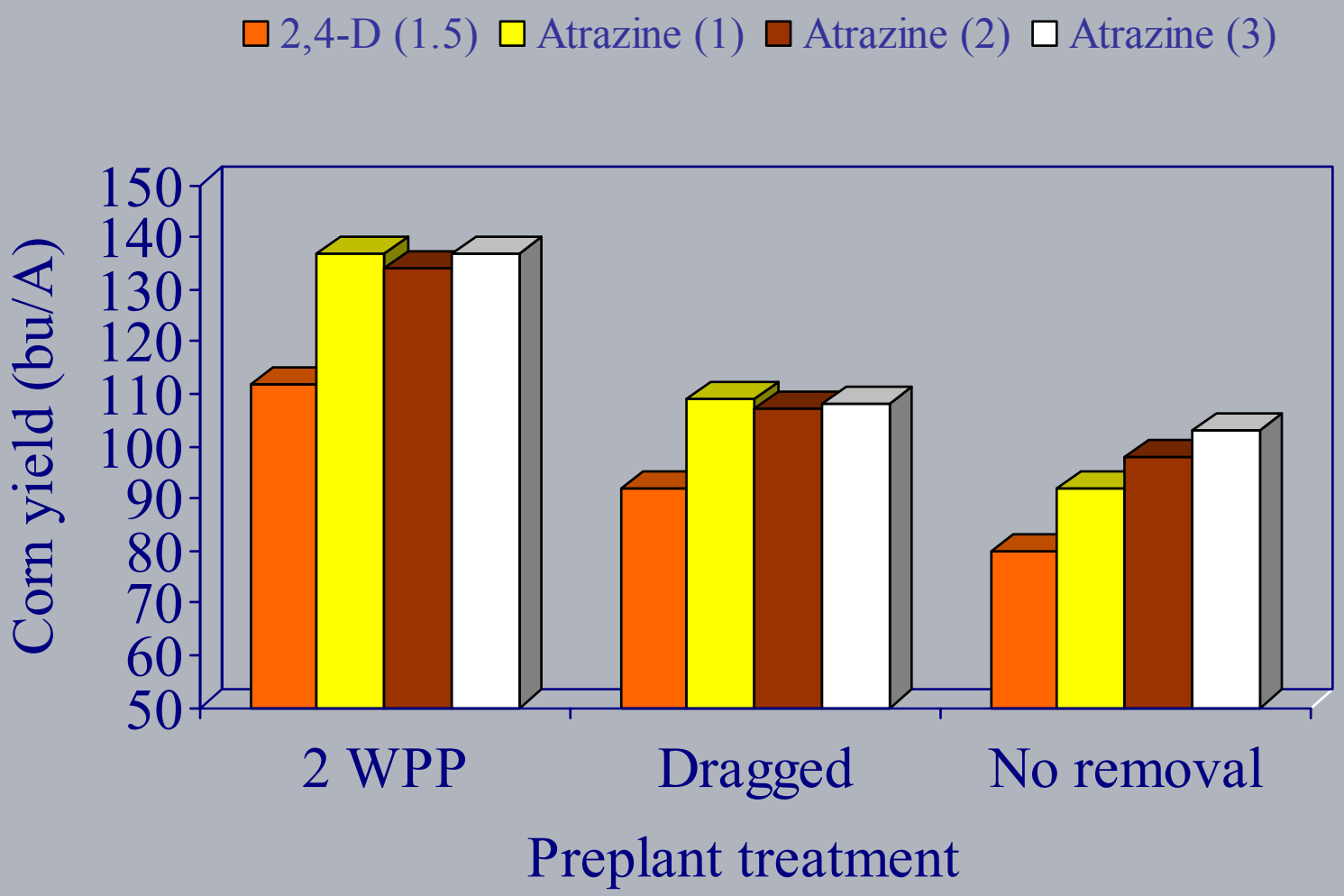

Figure 4. Corn yield as affected by winter weed removal timing. Weeds were removed 2 WPP with 1 qt/A glyphosate plus 1.5 pt/A 2,4-D, with a drag just before planting or removed after corn emerged. After corn emerged all weeds were removed with 1 qt/A glyphosate plus 1.5 pt/A 2,4-D, 1, 2, or 3 pt/A atrazine applied at V2 and followed by 1 qt/A glyphosate plus 2 pt/A atrazine applied at V6. The V6 application removed all remaining weeds and control was 100% at harvest.

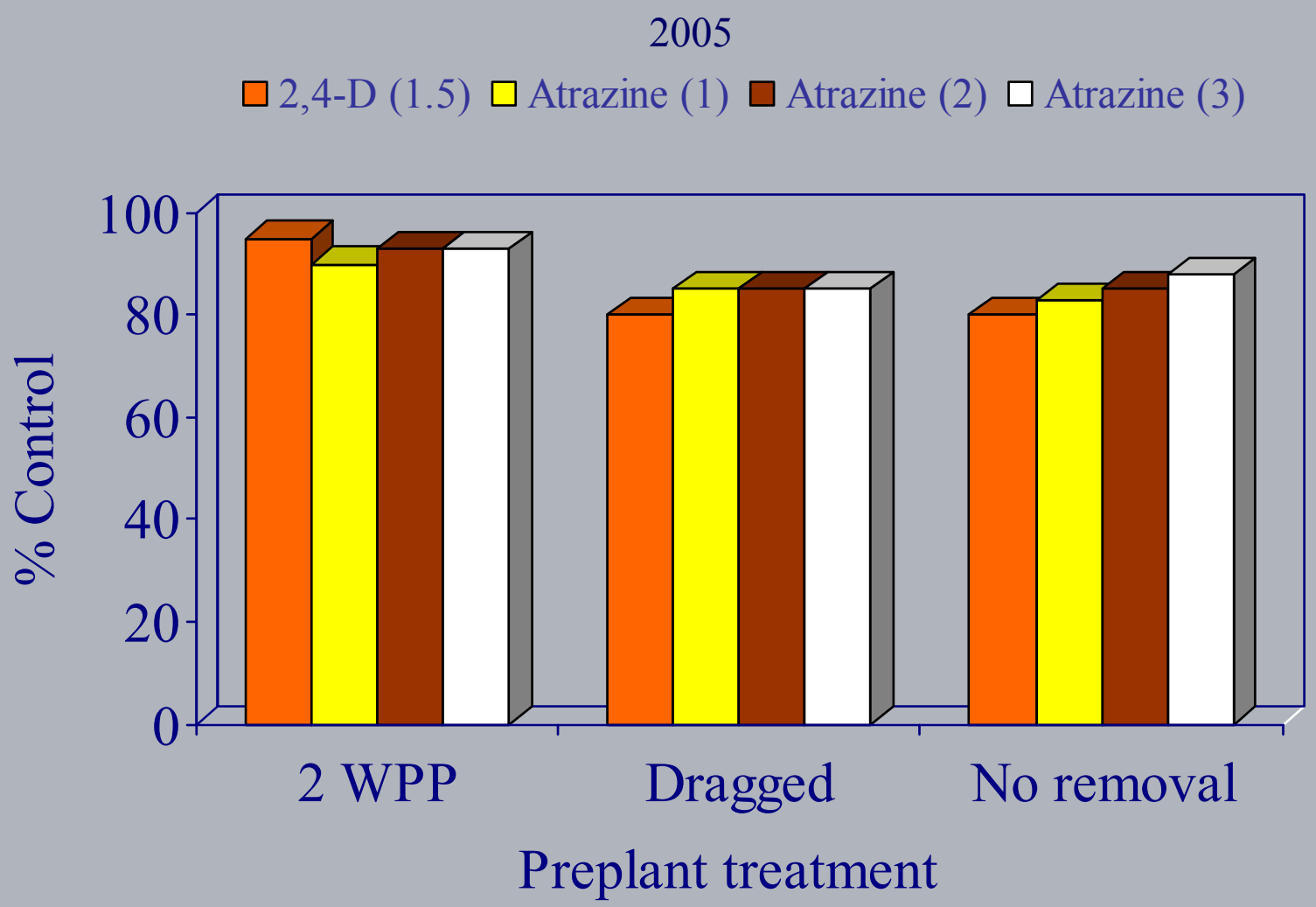

Figure 5. Cutleaf eveningprimrose (*Oenothera laciniata* Hill.) control 4 WAP. Weeds were removed 2 WPP with 1 qt/A glyphosate plus 1.5 pt/A 2,4-D, with a drag just before planting or removed after corn emerged. After corn emerged all weeds were removed with 1 qt/A glyphosate plus 1.5 pt/A 2,4-D, 1, 2, or 3 pt/A atrazine applied at V2 and followed by 1 qt/A glyphosate plus 2 pt/A atrazine applied at V6. The V6 application removed all remaining weeds and control was 100% at harvest.

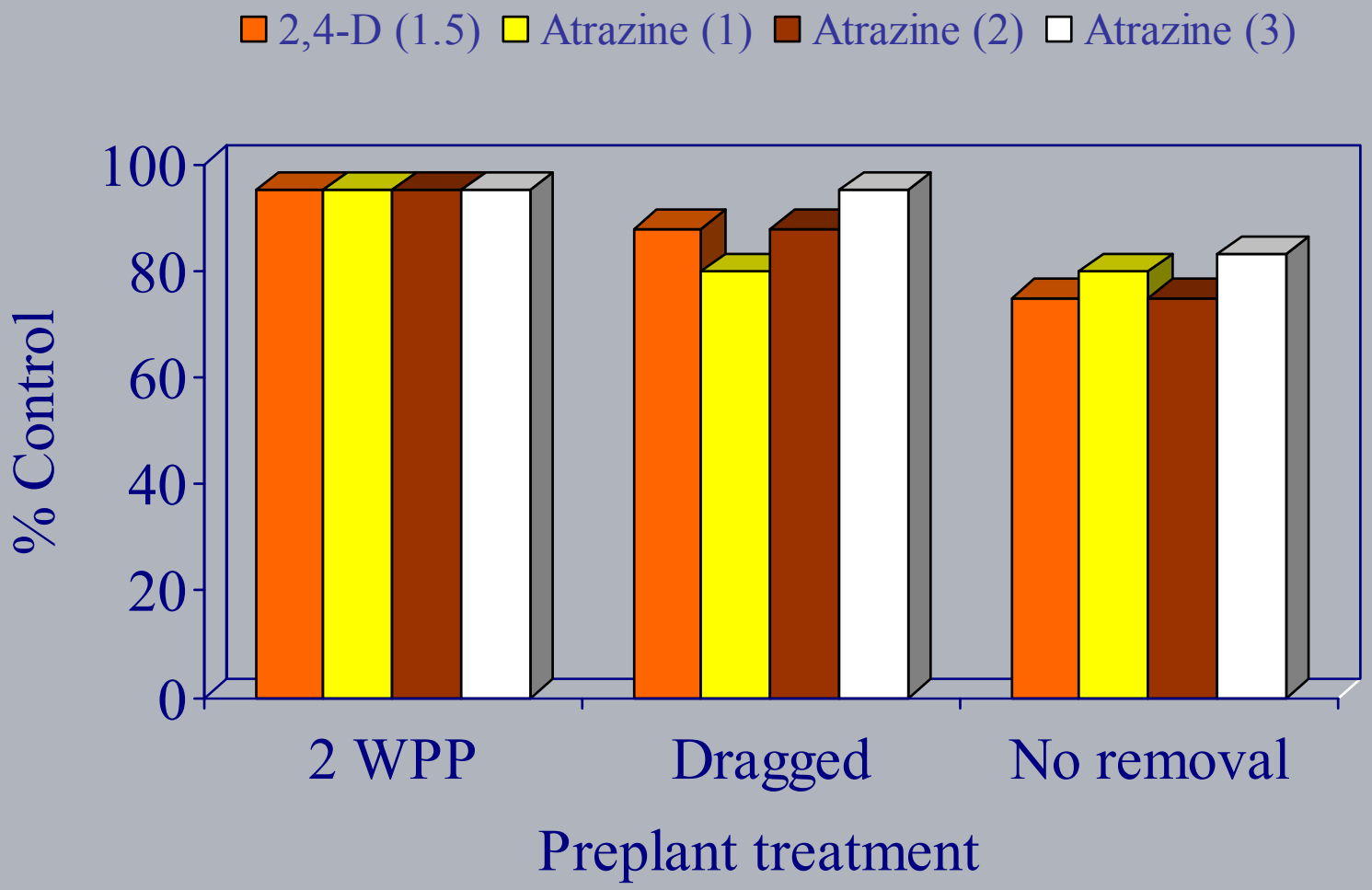

Figure 6. Swinecress (*Coronopus didymus* (L.) Sm.) control 4 WAP. Weeds were removed 2 WPP with 1 qt/A glyphosate plus 1.5 pt/A 2,4-D, with a drag just before planting or removed after corn emerged. After corn emerged all weeds were removed with 1 qt/A glyphosate plus 1.5 pt/A 2,4-D, 1, 2, or 3 pt/A atrazine applied at V2 and followed by 1 qt/A glyphosate plus 2 pt/A atrazine applied at V6. The V6 application removed all remaining weeds and control was 100% at harvest.

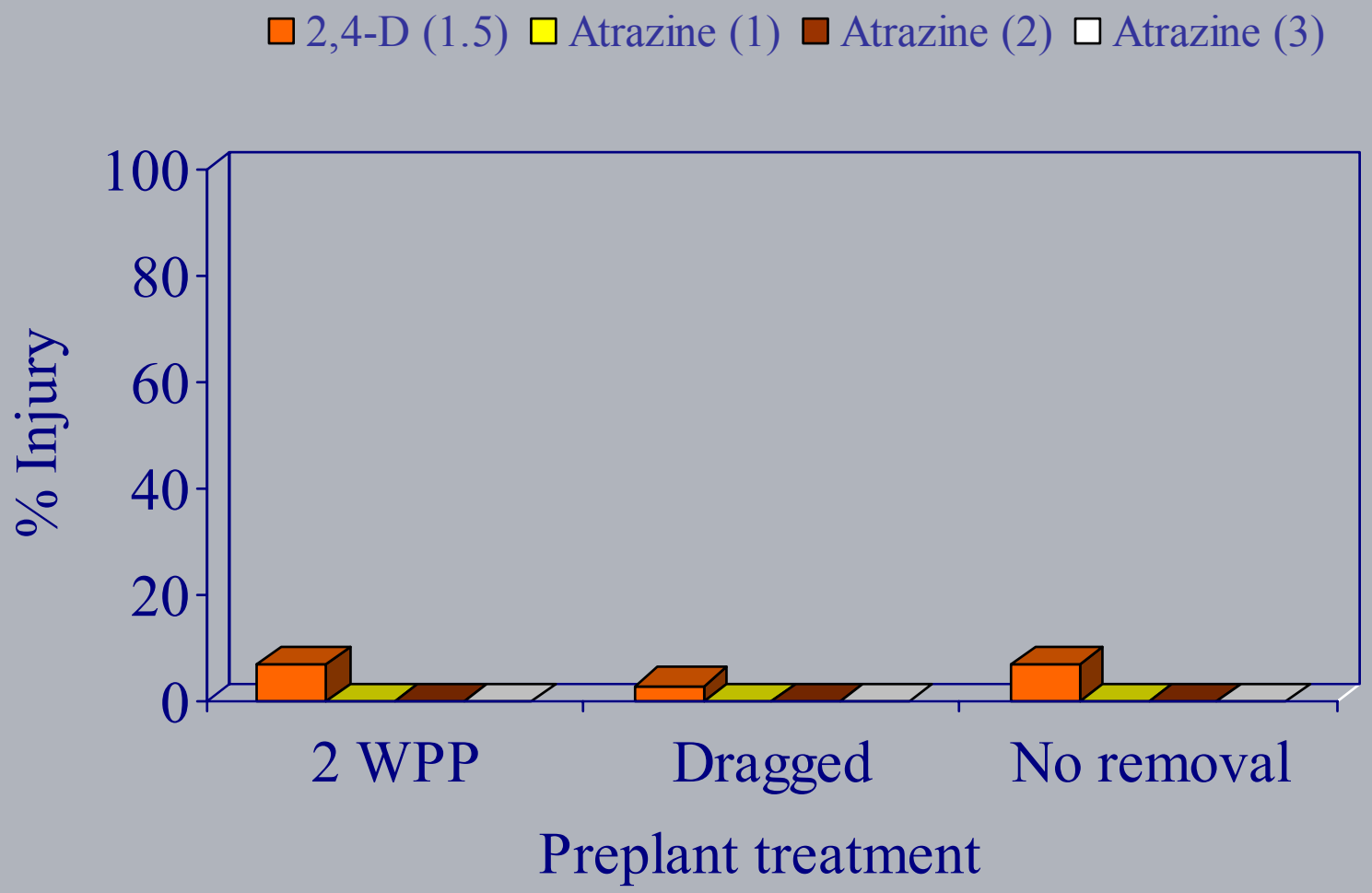

Figure 7. Corn injury 4 WAP. Weeds were removed 2 WPP with 1 qt/A glyphosate plus 1.5 pt/A 2,4-D, with a drag just before planting or removed after corn emerged. After corn emerged all weeds were removed with 1 qt/A glyphosate plus 1.5 pt/A 2,4-D, 1, 2, or 3 pt/A atrazine applied at V2 and followed by 1 qt/A glyphosate plus 2 pt/A atrazine applied at V6. The V6 application removed all remaining weeds and control was 100% at harvest.

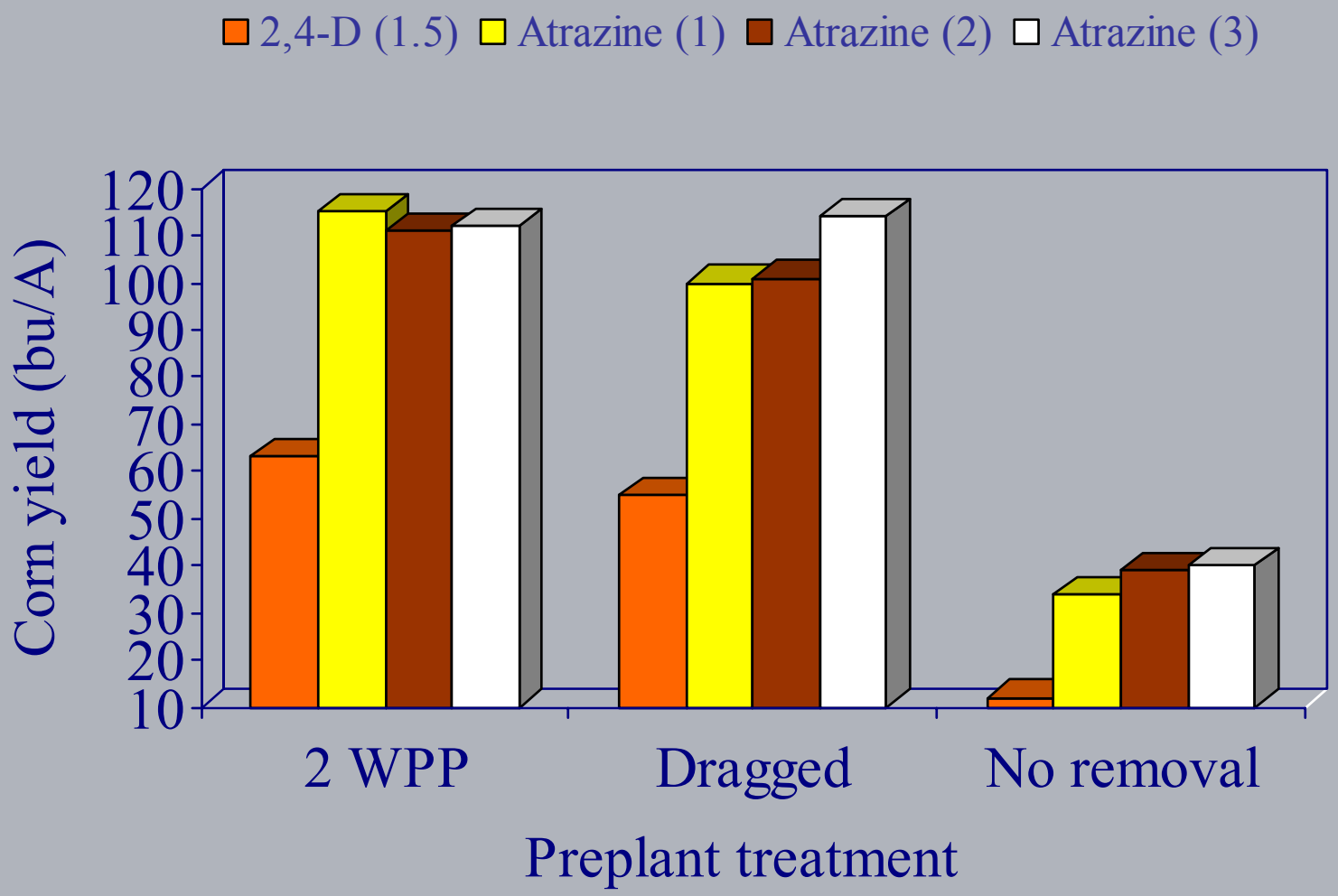

Figure 8. Corn yield as affected by winter weed removal timing. Weeds were removed 2 WPP with 1 qt/A glyphosate plus 1.5 pt/A 2,4-D, with a drag just before planting or removed after corn emerged. After corn emerged all weeds were removed with 1 qt/A glyphosate plus 1.5 pt/A 2,4-D, 1, 2, or 3 pt/A atrazine applied at V2 and followed by 1 qt/A glyphosate plus 2 pt/A atrazine applied at V6. The V6 application removed all remaining weeds and control was 100% at harvest.

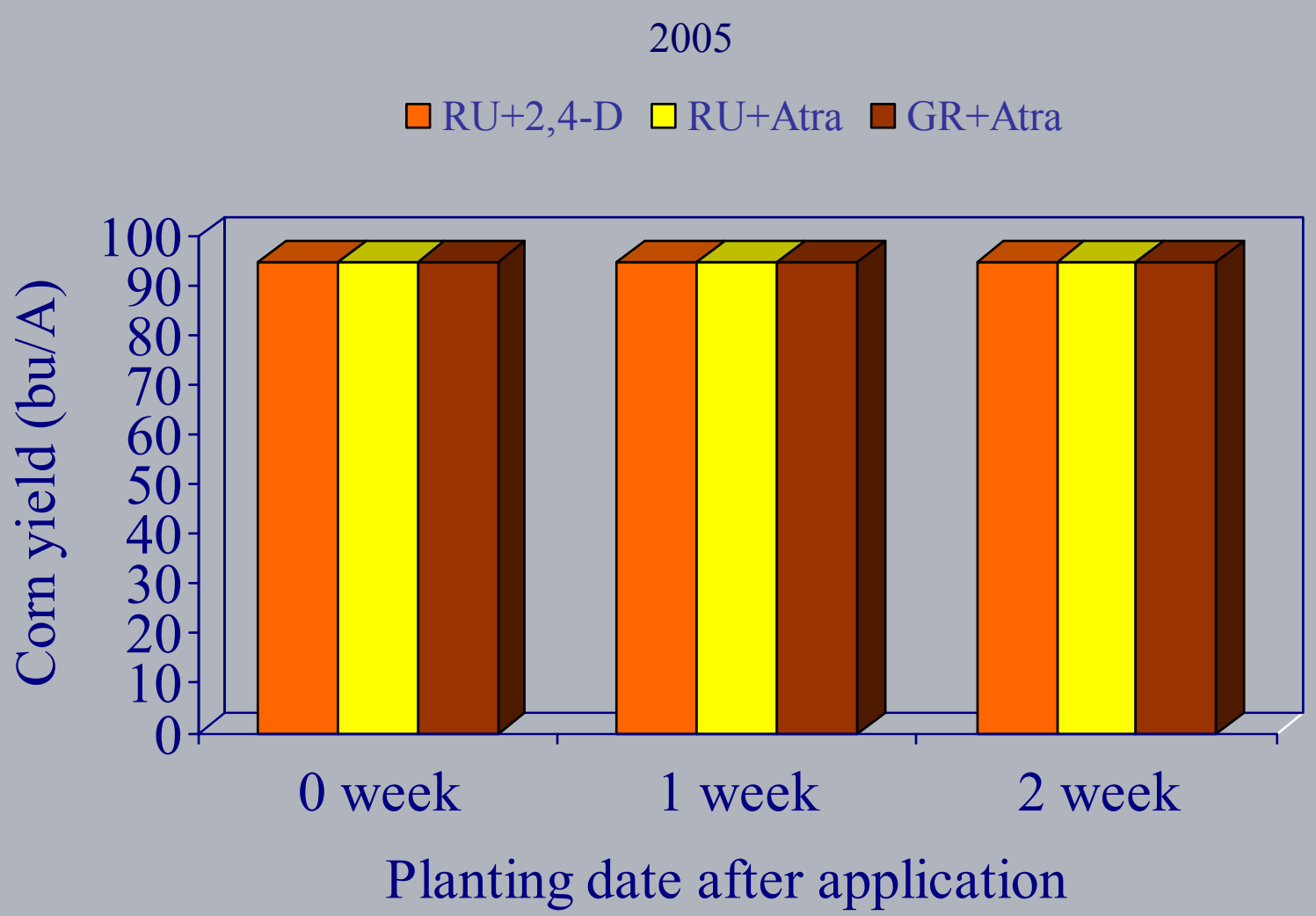

Figure 9. Effects of delaying planting and preplant herbicides on primrose control on 4/29/2005. Glyphosate at 1qt/A plus 1.5 pt/A 2,4-D, 1 qt/A glyphosate plus1 pt/A atrazine or 40 oz/A paraquat plus 1 pt/A atrazine was applied on 4/02/2005. Corn was planted the day of application, 1 week after application or 2 weeks after application. All weeds were removed after corn emergence with 1qt/A glyphosate plus 1.5 qt/atrazine applied at V2 followed by 1 qt/A glyphosate plus 1 qt/A atrazine at V6.

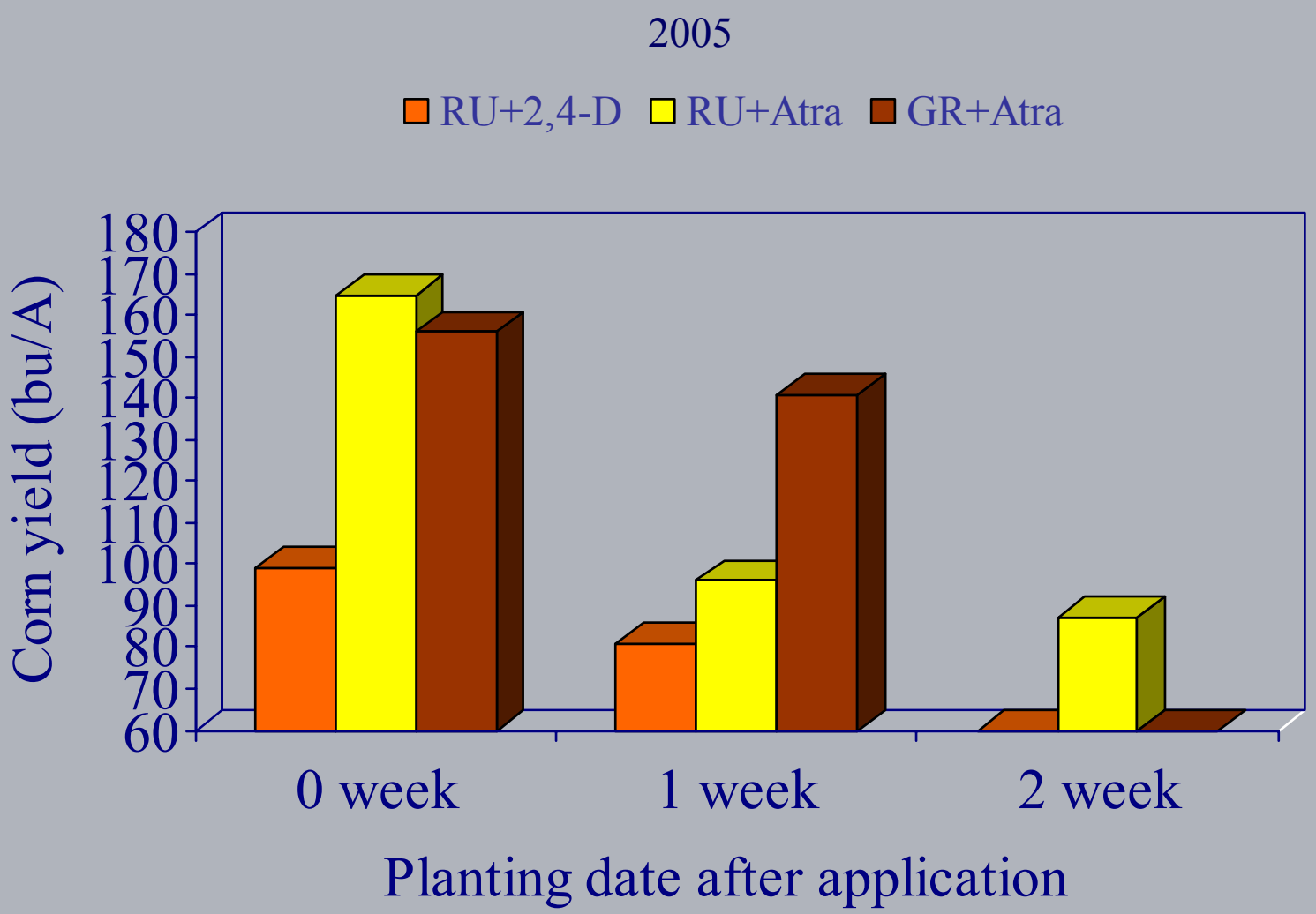

Figure 10. Effects of delaying planting and preplant herbicides on corn yield. Glyphosate at 1qt/A plus 1.5 pt/A 2,4-D, 1 qt/A glyphosate plus1 pt/A atrazine or 40 oz/A paraquat plus 1 pt/A atrazine was applied on 4/02/2005. Corn was planted the day of application, 1 week after application or 2 weeks after application. All weeds were removed after corn emergence with 1qt/A glyphosate plus 1.5 qt/atrazine applied at V2 followed by 1 qt/A glyphosate plus 1 qt/A atrazine at V6.

SUMMARY/CONCLUSIONS

- Despite excellent weed control from all treatments, corn yields were dramatically affected by stale seedbed management programs (Figure 1, 2, 5 and 6).
- In 1994, the best corn yields were observed in plots where weeds were removed before planting (Figure 4).
- Dragging beds prior to planting was better than doing nothing, but still resulted in an average yield reduction of 20%.
- On average, planting as is and removing weeds at V2 resulted in a 30% yield reduction.
- In 1995, corn yields were similar for removing weeds before planting and the dragging (Figure 8).

- Planting as is and removing weeds at V2 resulted in an average yield reduction of 65% in 1995.

- In 1994 and 1995, 2,4-D applications at V2 injured corn (Figure 3 and 7) and reduced corn yields from 15 to 55% compared to atrazine treatments.

- These results indicate that removing weeds at or before planting is necessary to achieve maximum corn yields, even when weeds can be effectively removed after corn emergence.

- In 2005, glyphosate plus 2,4-D or atrazine and paraquat plus atrazine resulted in excellent cutleaf eveningprimrose control (Figure 9).

- Delaying planting in 2005 resulted in severe reductions in corn yield (Figure 10). These data suggest that burndown programs need modification when fields are not burndowned before optimum planting dates. Glyphosate plus atrazine or paraquat plus atrazine resulted in higher corn yields than glyphosate plus 2,4-D.

ACKNOWLEDGEMENTS

- This research was partially supported by the Louisiana Soybean and Grain Research and Promotion Board.