ECONOMIC RETURNS

to Herbicide Resistance Management (HRM) of Horseweed (Marestail)

Take ACTION HERBICIDE-RESISTANCE MANAGEMENT

WSSA WEED SCIENCE SOCIETY OF AMERICA

14–17%

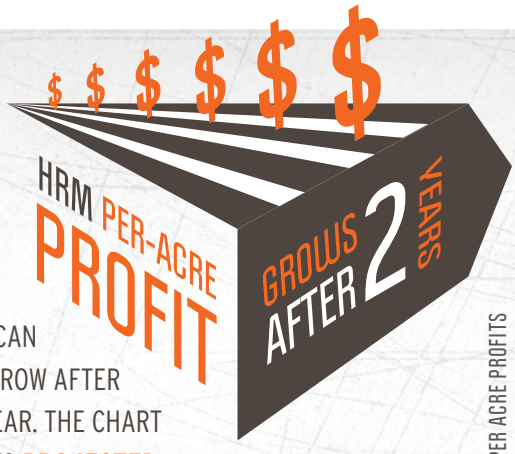
increased farmer profits over 20 years

The results of an economic model exercise conducted through the Weed Science Society of America (WSSA), demonstrates that the benefits of proactive resistance management, specifically with horseweed, can be long-lived, and can substantially increase farm profits long-term. Depending on cropping system, proactive resistance management increased farmer profits 14–17 percent over a 20-year planning horizon. The following contains the results of this study as summarized by a committee of the WSSA.

According to George Frisvold, Ph.D., University of Arizona professor, proactive resistance management can pay for itself in as little as two years. Managing resistance can involve higher weed-control costs, but provides better weed control, higher yields and more sales revenues. **Farmers can get their initial investment – and more – back in as little as two years.**

PROACTIVE WEED MANAGEMENT COSTS

A recent study found that, in its first year, proactive management can reduce soybean profits by $12 per acre and corn profits by $6 per acre. But by year two, profits were $14 per acre higher for soybeans and $40 per acre higher for corn. The extra profits in the second year more than make up for the lower profits in the first year.

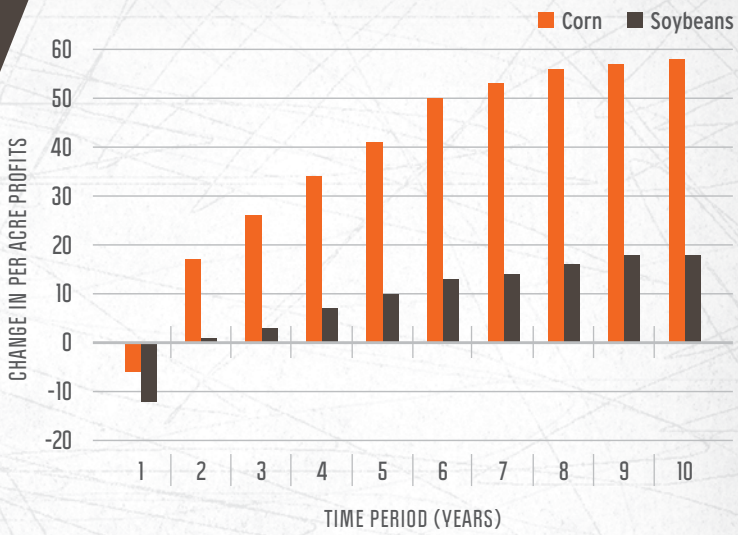


THE PROFIT ADVANTAGE OF PROACTIVE MANAGEMENT CAN CONTINUE TO GROW AFTER THE SECOND YEAR. THE CHART AT RIGHT SHOWS **PROJECTED ANNUAL PER-ACRE PROFIT ADVANTAGES.**

CORN: Profit advantage over a three-year time period averages $26 per acre per year, with a profit advantage of nearly $60 per acre per year over a 10-year time period.

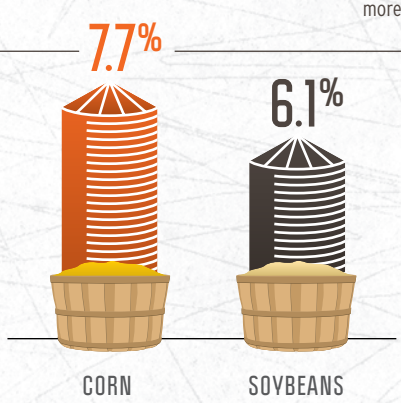
SOYBEANS: Profit advantage over a five-year time period averages $10 per acre per year, with a profit advantage of almost $20 per acre per year over a 10-year time period.

ANNUAL AVERAGE PROFIT ADVANTAGE of Proactive Resistance Management



*These values are in constant (current) dollars, accounting for the fact that people place more weight on costs and benefits today than identical costs and benefits in the future.

HRM GROWS YIELDS

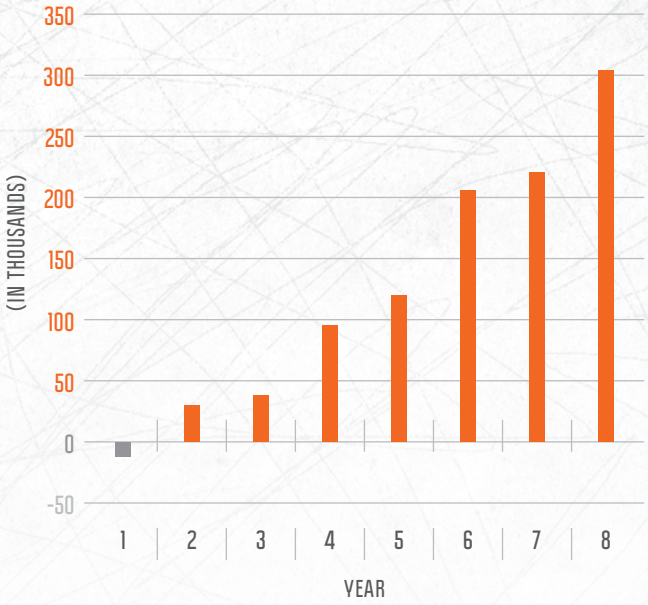


BETTER WEED CONTROL IS LEADING TO HIGHER LONG-RUN YIELDS. LONG-RUN AVERAGE YIELDS WHEN USING PROACTIVE WEED-MANAGEMENT PRACTICES WERE MORE THAN **6 PERCENT HIGHER** FOR SOYBEANS AND NEARLY **8 PERCENT HIGHER** FOR CORN.

HRM CUMULATIVE PROFIT GROWS AND GROWS

All farms are different and results will vary by farm. The chart at right shows the cumulative change in profits over eight years.* **After just 4 years** on a 1,000-acre farm, **profits would be more than $95,000 greater!** This gain would **surpass $300,000 by the eighth year.**

CUMULATIVE PROFIT GAINS from Proactive Management



*The study assumed baseline yields (without weed damage) stayed the same and that corn, soybean, and chemical prices all rise with the rate of inflation. Applying the study results to a representative 1,000-acre farm in a corn-soybean rotation over 10 years would show impressive results. Assumptions about corn and soybean prices, herbicide costs, and other farm costs are listed in Appendix table 1-3 of the Livingston and others (2015) study. For more information, visit the USDA-ERS website.

For more information, see:

Livingston, M., J. Fernandez-Cornejo, J. Unger, C. Osteen, D. Schimmelpfennig, T. Park, and D. Lambert. The Economics of Glyphosate Resistance Management in Corn and Soybean Production, ERR-184, U.S. Department of Agriculture, Economic Research Service, April 2015.

Livingston, M., J. Fernandez-Cornejo, G. Frisvold. Economic Returns to Herbicide Resistance Management in the Short and Long Run: the Role of Neighbor Effects, Weed Science (in press).

Technical editing for this infographic was led by a committee of the Weed Science Society of America (WSSA), and developed with funding from the soy checkoff.

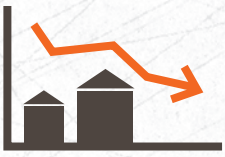
www.TakeActionOnWeeds.com

HORSEWEED (MARESTAIL) FACTS

1 horseweed plant can produce up to **200,000 SEEDS** which are readily dispersed by wind.

Horseweed can germinate in the fall
AND CAN WITHSTAND WINTER COLD TO CONTINUE GROWING IN THE SPRING.
It can also germinate in the spring before planting.

For corn, soybeans or cotton, HORSEWEED IS PROBLEMATIC
in no-till or minimum-tillage situations
where herbicides are solely relied upon for weed management prior to planting.



If not controlled prior to planting,
HORSEWEED CAN CAUSE SIGNIFICANT YIELD LOSS.

Horseweed is **one of the 10 worst herbicide-resistant weed species.**
To date, scientists have confirmed the plant's resistance to five different herbicide chemistries, including glyphosate, chlorimuron, paraquat, diuron and atrazine.

WSSA
WEED SCIENCE SOCIETY OF AMERICA

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