

# Benefits of Pyrethroids to Sorghum

## PYRETHROIDS BENEFITS PROJECT

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The Pyrethroid Working Group contracted an extensive analysis of the benefits of pyrethroids to agriculture. A multitude of data was analyzed with different methodologies to determine the value of pyrethroids, and the costs to farmers if they were no longer available. These analyses determined: (1) costs to the farmer of key insect pest management practices with and without pyrethroids, (2) yield benefits of pyrethroids, (3) monetary and non-monetary value of pyrethroids based on a farmer survey, and (4) a multi-market analysis to project the aggregate economic benefits of pyrethroids to the U.S. economy. Below are the primary benefits of pyrethroids from these analyses.

### BENEFITS TO SORGHUM

#### **1. Costs with and without pyrethroids**

- The total market value of sorghum was \$2 billion in 2015 according to USDA-NASS
- Pyrethroids comprise 63% of the total insecticide treated acres in sorghum.
- Sorghum has a strong reliance on pyrethroids for pest management, even though a small proportion of planted acres for these crops require pest management.
- Sorghum has only 4 classes of insecticide available for use in resistance management.
- The average cost advantage for pyrethroids relative to non-pyrethroids was \$1.50 per product acre, representing a 28% cost advantage over non-pyrethroids.
- The overall costs increase to the sorghum industry would be 1.1% with the loss of pyrethroids; significant due to the lower input costs compared to other specialty crops.

#### **2. Yield Benefits**

- Pyrethroids provided a 0.2% yield benefit over other insecticides in sorghum
- Based on limited observations, pyrethroids reduced overall pest abundance by 2.9%.
- There was a 2% per acre yield advantage for pyrethroids in sorghum. However, once these yield advantages were transformed to average losses per cropped acre, the yield advantage was 0.2%

#### **3. Monetary and Non-Monetary Value to Farmers (Case Study)**

- The data showed a relatively low demand for insecticides, with only 15% of planted acres treated once.
- Pyrethroids make up 63% of all insecticide treated acres, indicating their importance when insecticides are used.

#### **4. Direct and Indirect impacts**

- Net economic benefit per cropped acre and per pyrethroid treated acre was \$0.10.
- The heavy reliance on pyrethroids and the few non-pyrethroid alternatives used suggest there was some small yield advantage to pyrethroids, especially longer-term to help maintain access to alternative classes for resistance management.

