TABLE 5. Impact of cover crops on costs, returns and net profit for soybeans following one, three, and five years of cover crop use and with various management scenarios

BUDGET ITEM	YEARS OF COVER CROPPING		
All figures are per acre	**One**	**Three**	**Five**
Estimated input savings when using cover crops			
Fertilizer[1]	$0	$6.30	$8.40
Weed control[2]	$0–$15	$10–$25	$10–$25
Erosion repair[3]	$2–$4	$2–$4	$2–$4
Subtotal	**$2-$19**	**$18.30-$35.30**	**$20.40-$37.40**
a. Savings on inputs (the low end of the range from above)	$2	$18.30	$20.40
b. Income from extra yield in normal weather year (survey data)[4]	$11.45	$19.12	$26.78
c. Cost of seed and seeding (survey data)[5]	$37	$37	$37
Net return in a normal weather year (a + b - c)	**-$23.55**	**$0.42**	**$10.18**
Special situations where cover crops can pay off faster			
I. When facing severe herbicide-resistant weeds[6]	$27	$27	$27
Adjusted net return	**$3.45**	**$27.42**	**$37.18**
II. Potential grazing income[7]	$49.23	$49.23	$49.23
Adjusted net return	**$25.68**	**$49.65**	**$59.41**
III. Compaction addressed by cover crops[8]	$15.30	$15.30	$15.30
Adjusted net return	**-$8.25**	**$15.72**	**$25.48**
IV. Assisting the conversion to no-till from conventional[9]	$23.96	$23.96	$23.96
Adjusted net return	**$0.41**	**$24.38**	**$34.14**
V. Income from extra yield in a drought year (survey data)[10]	$65.24	$69.80	$74.36
Adjusted net return	**$41.69**	**$70.22**	**$84.54**
VI. Extra fertilizer savings from improved fertility[11]	$7	$7	$7
Adjusted net return	**-$16.55**	**$7.42**	**$17.18**
VII. Federal or state incentive payments received[12]	$50	$50	$50
Adjusted net return	**$26.45**	**$50.42**	**$60.18**

1 Assumes no fertilizer savings in year one, then a savings of 15 pounds of phosphorus per acre in year three and 20 pounds per acre in year five, at $0.42 per pound.

2 The first year assumes either no herbicide savings or a possible saving of $15 per acre by avoiding a fall herbicide pass ($7.50 per acre for the chemical and $7.50 per acre for application). The third and fifth years assume using a less expensive residual chemistry that costs $10 per acre, with the possibility of saving $15 per acre in the fall.

3 Based on the cost of machinery operations and labor to repair gullies and clean ditches (assumes average cost, but fields will vary).

4 Assumes a soybean price of $9 per bushel and a 60-bushel yield times the percent yield increases shown in Table 2.

5 Costs for seed, seeding and termination can vary from a low of about $10 to over $50 per acre; most farms estimated to be $25–$40 per acre.

6 In a field with a severe herbicide-resistant weed infestation, this figure assumes that a thick-biomass cover crop will reduce herbicide and labor costs and will reduce dockage for weed seed at harvest.

7 Assumes that grazing a cover crop (cereal rye in this example) results in a reduction of 1,093 pounds of hay fed per acre of cover crops. This is based on 1,500 pounds per acre of dry matter generated by rye, then reduced effective use of the rye by 50% due to hoof action and selective grazing. Assumes average feedlot waste of 22% for hay fed (88% dry matter). The hay is valued at $80 per ton. Additional savings of approximately $5.50 per acre generated due to lower labor, fuel and machinery depreciation from reduced hay fed. Assumes grazer already has water access for their grazing area and an electric fencing system.

8 This is based on a University of Minnesota machinery cost estimate for subsoiling at $15.30 per acre (2017 data used for machinery costs).

9 No-till savings versus conventional: No fall chisel plow ($11.22 per acre) and savings on two field cultivator passes in the spring (2 x $6.37 per acre).

10 Assumes a soybean price in drought of $14.40 per bushel and reduced yield of 39.6 bushels per acre x percent yield increase for drought. Numbers are based on actual national average soybean yield for 2012 and national average price in the 2012-13 marketing year (USDA-NASS).

11 Assumes that overall improved soil health allows an additional reduction in phosphorus of 10 pounds per acre ($0.42 per pound) and 10 pounds per acre of potassium ($0.28 per pound) over basic fertilizer savings.

12 The basic NRCS EQIP rate in the majority of Corn Belt states starts at $50 per acre or higher; some states have lower rates.