

# Soybean Checkoff Research Database

**Executive Summary:** Soybean growers are investing in soybean research projects targeted at both improving production technologies and expanding soybean use. This report provides a listing of the various production research projects; soybean composition studies; utilization projects; and technology transfer activities that are funded in part by the soybean checkoff. On October 1, 2008 soybean growers were funding 559 projects with a total investment of \$36.9 million.

**Project Objective:** To develop a listing of soybean research projects being funded by the state soybean checkoff boards, regional research programs and the United Soybean Board.

**Methods:** The contractor contacted state executives to obtain information on the research project being funded by the state checkoff board. The first of October was selected as a uniform date for comparing funding levels to past years. This report summarizes the information supplied by the state executives and the United Soybean Board's research managers.

**Report Findings:** Soybean growers, through their checkoff, are investing in a balanced program to improve soybean yields, composition and expand market opportunities. On October 1, 2008, soybean checkoff boards were funding 559 projects with a total investment of about \$36.9 million. Two tables showing the distribution of funding and funding by checkoff organization follows this executive summary report.

The values cited in the tables should be viewed with some caution; the values are a "snap-shot" of values that represent projects underway on October 1<sup>st</sup>. Some of these values could be slightly higher for the entire year since Boards could have funded a few projects after the October 1<sup>st</sup> common date and these values would not be included in these numbers.

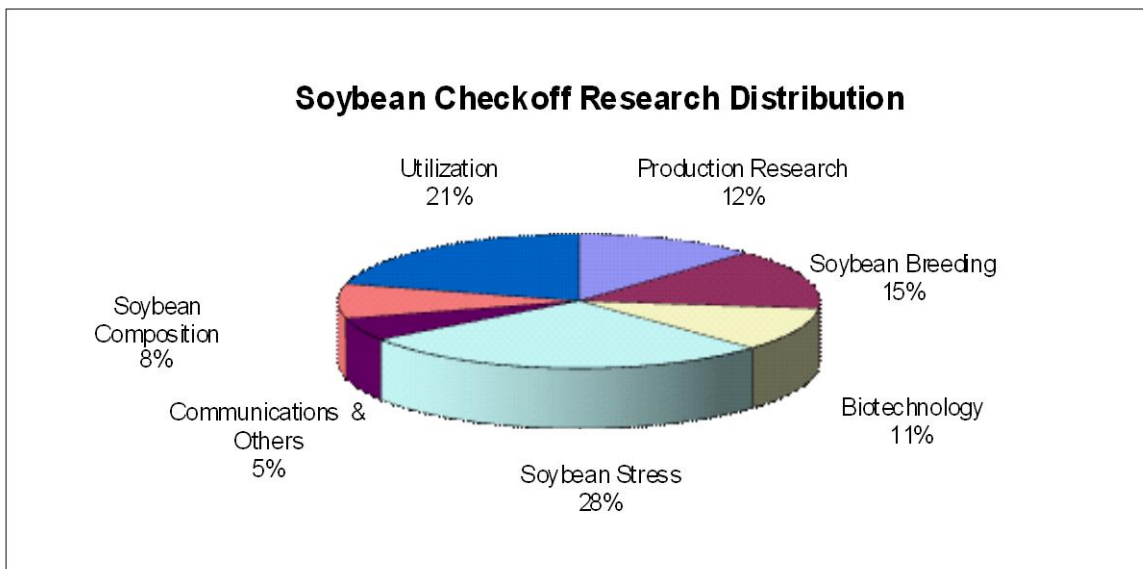
There are also problems with the distribution of the funding since many projects have multi-purpose objectives; meaning they could be easily allocated to more than one research area. Take for example a project to test a fungicide-insecticide-herbicide tank mix for controlling fungal diseases, insects and weeds. The contractor used their best judgment on allocating these projects.

Allocation of projects is improved by using the "searchable" database on the new checkoff-funded soybean research Website. The projects are searchable by

using about 200 key words. This allows for a single project to have several key words that describes the project's objectives.

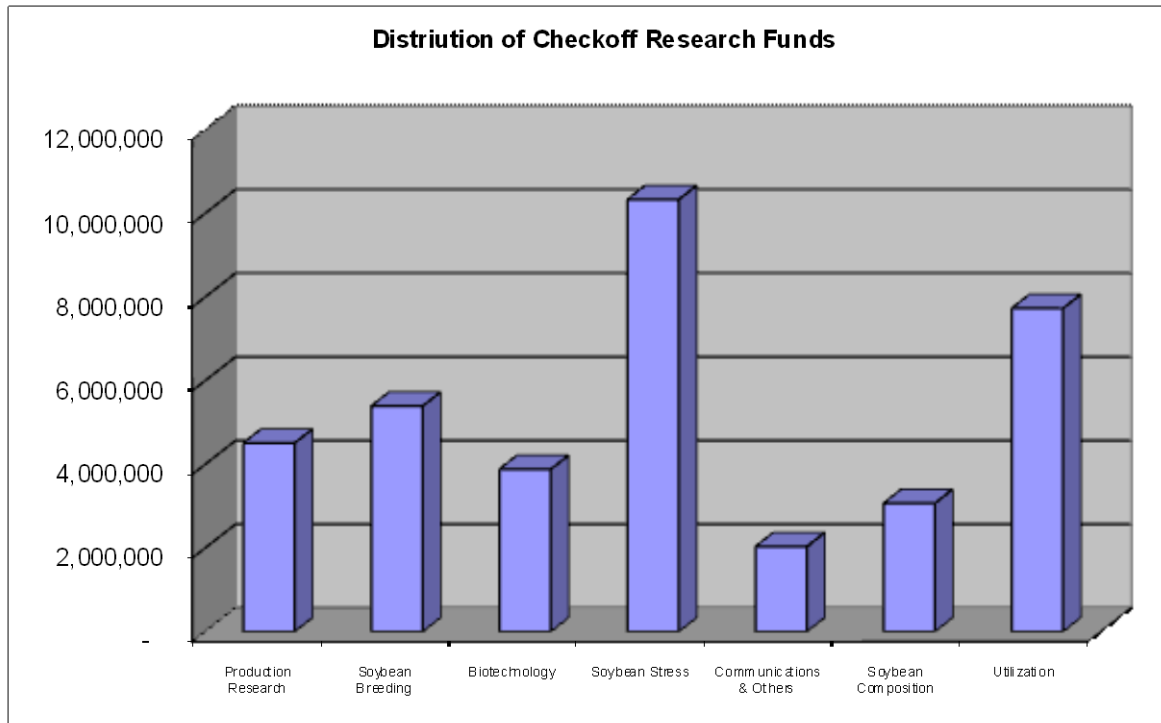
**Report Highlights:** The first two charts provide information on the distribution of soybean checkoff research funding. The checkoff program funds a balanced research program; balanced between soybean production projects and utilization projects; balanced between projects with objectives to increase soybean yields and protect yields; and balanced between traditional soybean breeding/variety evaluation programs and new advanced molecular research studies. The balance of research efforts provides the best opportunity to achieve the program's goals of improving soybean profitability.

About seventy cents of each checkoff dollar funds research to improve soybean yields and production efficiencies. The remaining thirty cents will be directed toward expanding soybean use and improving soybean composition. The funding balance between production and utilization projects, applied studies and basic research, and projects seeking new cutting-edge information and protecting past gains, are a positive feature of the soybean checkoff research program.

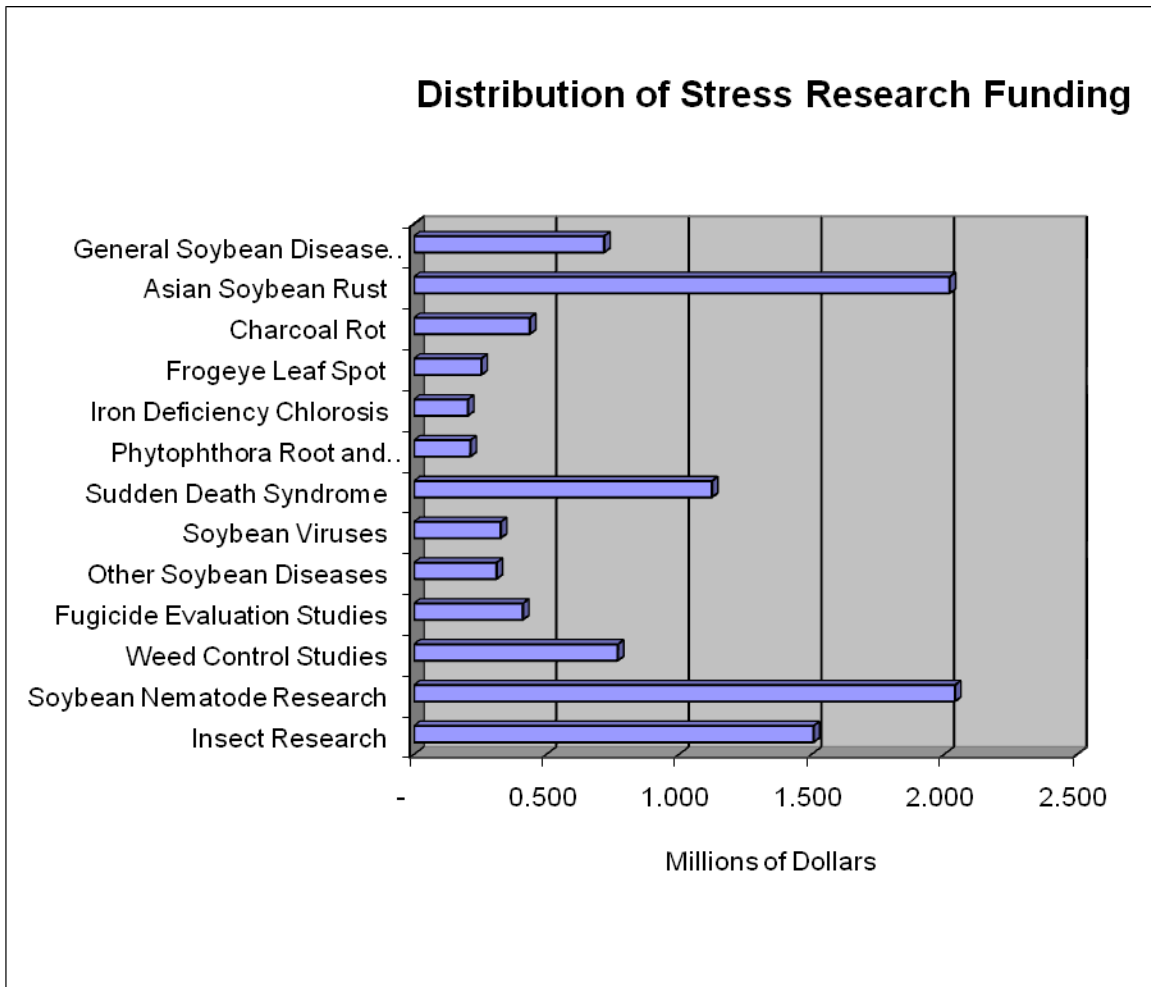


The checkoff is investing in soybean production that directly impacts soybean management decisions. These studies involve both field plot experiments and on-farm research demonstrations. The goal of these studies is to demonstrate good management practices that improve soybean yields and profits. State extension specialists and crop advisors to soybean growers use the results of the production research projects in their workshop presentations, bulletins, fact sheets, Websites and in their contacts with individual soybean growers.

The largest checkoff funding investment is for soybean stress projects. These projects are directed at reducing yield losses due to diseases, nematodes, insects, weeds and environmental stresses. Major efforts are underway to find genes responsible for resistance to various stresses that reduce soybean yields. Advances are being made to develop germplasm and varieties that better cope with both biotic and abiotic stresses.



Funding for Asian soybean rust and soybean nematode research totaled forty percent of the total investment in stress research. This was followed by insect studies (15%), sudden death syndrome (11%), weed control studies (7.5%), general disease research (7.5%) and the other stresses were less than five percent each. This balance represents current concerns of soybean growers.



The funding allocated to diseases, nematodes and insects would have been even greater if the investment in evaluating germplasm sources for resistance to soybean diseases and pests, screening germplasm lines and developing elite soybean germplasm lines and varieties would have been included. A significant percent of the total funding for soybean germplasm and variety development is used to screen commercial soybean varieties and germplasm lines for resistance to plant stresses.

Developing more pest resistance soybean varieties; improving management recommendations to minimize pest problems; supporting state extension’s on-farm research studies, field plot demonstrations and communication efforts; and creating a more complete understanding of the pest threat are providing soybean growers information to reduce soybean yield losses to diseases, nematodes, insects and weeds. The relatively large percentage of checkoff funds for plant stress research reflects the various Boards’ priorities and the importance of soybean diseases/pests to soybean profits.

About a fifth of the checkoff investment is being invested in studies to improve soybean utilization. These studies involve expanding industrial use applications, improving feed uses of soybean meal and increasing food use applications of soy protein and oil. Listed below are some of the specialized uses being investigated:

Adhesives	Inks
Biodiesel	Hydrogels
Coatings	Lubricants
Concrete Additives	Plastic/Polymers
Expanded Meal Uses	Polyols
Fibers	Soy Food Ingredients
Foams	Specialty Chemicals
Feed Uses of Glycerol	Surfactants
Industrial Uses of Glycerol	

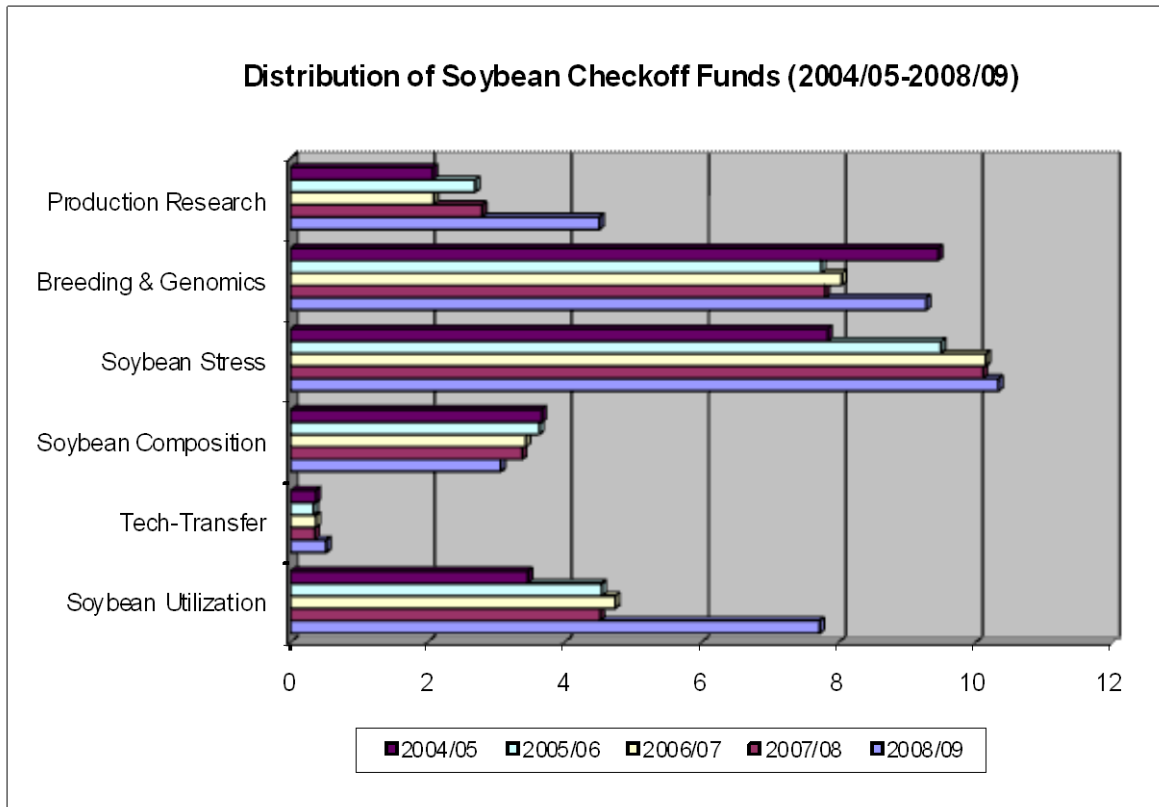
Past checkoff funding has created several new uses of soybeans that are now being marketed. Researchers are aggressively investigating additional uses of soybean oil in resins, lubricants, fuels, specialty chemicals and a wide number of other environmental friendly “green” use applications. Many of the checkoff-funded projects are co-funded by industry, thus leveraging the checkoff investment and providing new access to the market place.

Improving the composition of soybeans to be more competitive in domestic and foreign markets continues to be a United Soybean Board priority. About eight percent of the total checkoff investment is being used to improve soybean’s protein and oil content. These projects have a simple goal of modifying soybean’s composition to better meet the soybean user’s needs. Several state boards are also providing funds to analyze the soybean varieties produced in their state in efforts to better inform farmers of the choices they have in selecting varieties to plant.

In the next chart funding allocation for the current fiscal year is compared to the previous four years. Funding levels and allocations are fairly consistent between years. Looking closely at the funding levels, it would appear that research expenditures of soybean production research and utilization research were significantly increased over the previous year.

The following chart also provides additional insight into soybean board priorities. As can be seen, the relative funding priority has not changed much over the past five years, however there are exceptions, soybean production research projects, soybean breeding and genomics and soybean utilization research received significantly more funding during the 2008/09 fiscal year compared to previous years. This again reflects grower leader priorities and the higher level of checkoff funding (Table 1) seen in the current fiscal year. Most of these funding increases are due to an increase in the number of projects being funded.

Tech-transfer, or Extension research and communication activities, seem relatively low compared to other activities. This is somewhat a reflection of the project sort; these amounts would be much higher if communication efforts that are a part of the soybean diseases and pests, on-farm demonstration activities and funding for technical reporting of results would have been included. Many researchers actively inform soybean growers of their project's progress as part of the research effort and without requiring special funding.



Nearly \$37 million dollars of soybean checkoff funds are being invested in soybean research this year. This represents a significant share of the total public dollars spent on soybean research in this country. Soybean growers should be proud that checkoff funding is highly leveraged with federal and state funding for soybean research.

Often overlooked is the fact that many researchers use checkoff funds to develop the background data needed to write competitive proposals for large federal grants. These grants can result in some major research efforts, such as the genetic mapping of the soybean genome, which resulted from a checkoff-funded project. It is often the checkoff board that provides the seed monies to initiate the

studies that are later heavily funded with federal funds. This demonstrates the importance of checkoff boards in setting priorities and making things happen.

Another over looked benefit of the soybean checkoff is the over 400 researchers involved in soybean checkoff-funded research projects. The checkoff funding is critical in helping to advance professional careers with hopes that many of these researchers will continue to contribute to the future of soybeans. A listing of the researchers involved in checkoff research is at the end of this report.

**The Soybean Checkoff-funded Database:** It is hoped that this database will serve the soybean grower, research administrator and those interested in learning more about the soybean research programs that are being funded by the Soybean Checkoff. It is anticipated that future databases can be expanded to include results of checkoff research projects. This would allow soybean growers a readily available resource for learning quickly about the results of soybean research projects being funded by the Soybean Checkoff.

**In Summary:** Soybean growers are investing in a balanced research program that will have a major impact on the future of soybeans. The research projects are highly leveraged with funding from many other sources, which means the checkoff funds are helping to set the research agenda and assuring the projects underway are addressing soybean grower concerns. The soybean checkoff is an investment in the future of the soybean crop with over four hundred researchers involved in checkoff-funded projects. Soybean growers should be proud that the checkoff program is investing in projects that will improve soybean production efficiencies, expand uses and improve soybean composition, all designed to improve the profitability of the soybean crop.

**Acknowledgements:** A large part of the success of this report goes to the State Executives and the United Soybean Board's Management Team for supplying information on the various research projects that are funded by the various soybean checkoff boards. Without their help this report would not have been possible.