

# Rice Cost and Return Summary: Implications for 2022 Price Loss Coverage

John D. Anderson, Alvaro Durand-Morat, and Scott Stiles

Agricultural Economics & Agribusiness Department  
and the  
Fryar Price Risk Management Center of Excellence,  
Dale Bumpers College of Agriculture, Food & Life Sciences  
and  
University of Arkansas System Division of Agriculture

FC-2022-003

May 2022

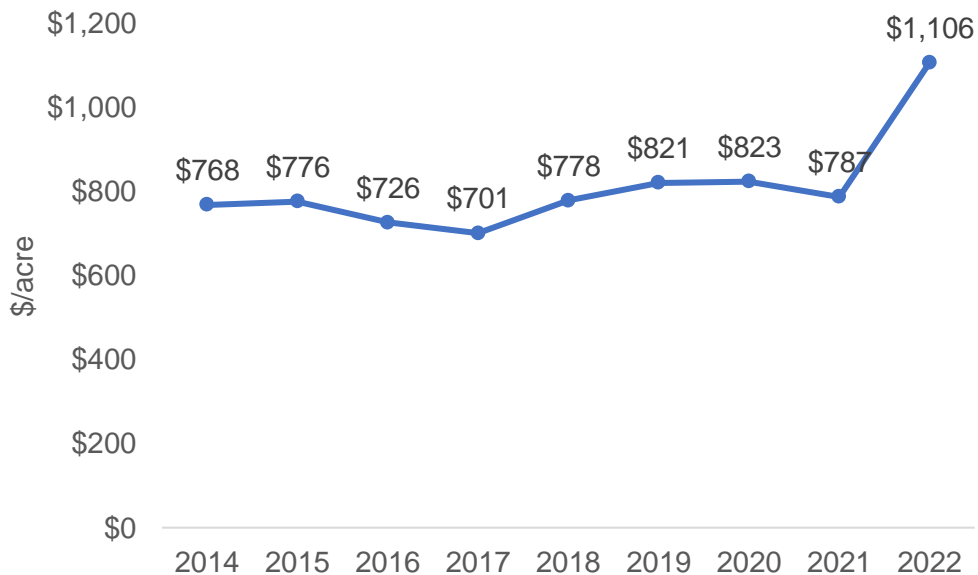


## Rice Cost and Return Summary: Implications for 2022 Price Loss Coverage

*This report was prepared in response to a request from USA Rice for information and analysis on how current market conditions are affecting the performance of farm programs with respect to rice. The report was shared with Senate Agriculture Committee staff.*

Costs of production for all crops are at historic highs in 2022 due to higher input prices overall, with especially sharp increases in prices for fertilizer and fuel. These higher costs are a particular challenge for rice producers due to the typical fertilizer and energy requirements of rice production systems as well as the current underperformance of rice prices relative to other crops that compete with rice for land and other inputs.

Prior to this year, costs of production for rice had been relatively stable since 2014. Figure 1 shows total costs of production (not including a land charge) as calculated in annual University of Arkansas enterprise budgets for long-grain hybrid rice production.

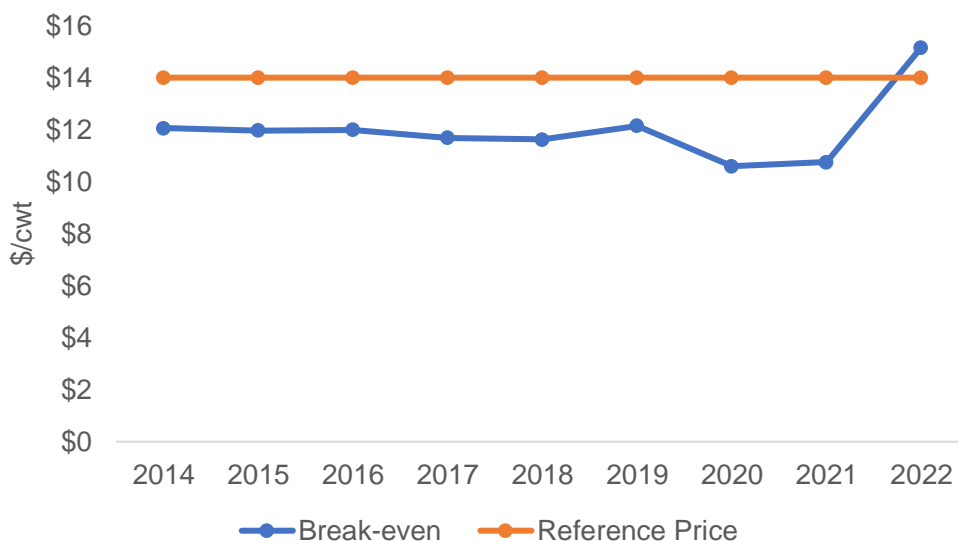


Notes: Operating and capital recovery costs for long-grain hybrid rice production in Arkansas  
Source: University of Arkansas Cooperative Extension Service

**Figure 1.** Long-Grain Rice Estimated Annual Cost of Production: 2014-2022

With stable production costs, the price loss coverage (PLC) program from USDA, with its \$14 per hundredweight (cwt) reference price, afforded reasonably effective protection for rice producers against adverse market developments. This is reflected in USDA cost and return estimates for rice production. Figure 2 shows the break-even rice price implied by USDA rice cost and return estimates from 2014 to 2022 (estimated). Clearly, the sharp increase in production costs for the current production cycle has significantly reduced the effectiveness of

PLC protection. In the past, the \$14 reference price offered essentially a break-even level of protection.<sup>1</sup> That is not the case under the present cost structure. Assuming yields equal to 2021 (a strong assumption given that year’s excellent yields and this year’s delayed planting), the break-even price for rice in 2022 will be a bit over \$15 per cwt. A 5% reduction in yield results in a break-even price of just under \$16 per cwt at current costs of production.



Notes: Data for 2014 through 2021 are from USDA’s annual estimates of rice production costs and returns per planted acre for the Mississippi Delta. Since 2022 data are not yet available, USDA’s 2021 estimate of costs were adjusted by the percentage increase indicated in University of Arkansas crop enterprise budgets for long-grain hybrid rice.

**Figure 2.** Estimated Break-even Price for Rice versus Price Loss Coverage Price Protection

The diminished effectiveness of the PLC program as a safety net for rice potentially makes rice a less attractive alternative for producers than lower-risk, lower-cost crops. Soybeans is the likely alternative crop to rice on most Arkansas farms. Soybeans look particularly attractive under current market conditions. According to the most recent *World Agricultural Supply and Demand Estimates (WASDE)* report from USDA, the 2022/23 marketing year average (MYA) price for long-grain rice is projected to be \$15.50 per cwt. That is an increase of 21% over the prior three-year average – clearly a substantial improvement in prices. By comparison, though, the 2022/23 MYA for soybeans is forecast at \$14.40 per bushel – an increase of over 30% compared to the prior

<sup>1</sup> The \$14 reference price represents the trigger for a PLC payment; that is, if the marketing year average price is below the \$14 reference price, the farmer receives a payment based on that difference. However, PLC payments are not based on actual production; they are paid on 85% of base production: PLC Payment Rate x (0.85 x Base Acres X Base Yield). A farmer whose actual production exactly equaled base production would effectively have price protection on that production at 85% of the reference price, or \$11.90 per hundredweight.

three-year average. At the same time, soybeans have been considerably less affected by cost of production increases than rice, being a less input-intensive crop, particularly with respect to fuel and nitrogenous fertilizers, for which prices have increased dramatically over the past year. Estimated diesel fuel usage for rice is approximately 41 gallons per acre, compared to 21 gallons for soybeans. Rice requires about 150 pounds of nitrogen per acre, whereas soybeans generally require no additional nitrogen. While production costs have risen on soybeans, they have risen substantially less than rice costs in percentage terms. According to University of Arkansas enterprise budgets, operating and fixed costs for soybean production have risen by about 33% for 2022 compared to the prior year. For rice, the increase has been about 40%. Perhaps more significantly given the real threat of higher interest rates on future production notes, production costs for soybeans amount to not much over half of the production costs for rice.<sup>2</sup>

Current high costs of production appear to be generating producer interest in raising PLC reference prices. While the benefit to individual producers from a higher reference price is clear, it is important to recognize that such a course of action would necessarily entail additional costs. One simple way to compare costs is to evaluate how much the PLC program would have cost in 2019 and 2020 (the two years for which we have complete annual data under the 2018 farm bill) under different reference price assumptions. Table 1 compares the actual cost of the PLC program for rice for Arkansas as well as for the entire U.S. with what the program would have cost with a higher reference price (\$15 and \$16 per cwt).

**Table 1.** Cost of the PLC Program for Rice under Alternative Reference Price Assumptions (\$ millions)

Reference Price	2019	2020	Average	% change
<b>Arkansas</b>				
\$14/cwt	220.7	151.1	185.9	
\$15/cwt	329.6	261.2	295.4	59%
\$16/cwt	438.4	371.4	404.9	118%
<b>US Total</b>				
\$14/cwt	427.2	295.5	361.35	
\$15/cwt	639.1	509.1	574.1	59%
\$16/cwt	851	722.6	786.8	118%

<sup>2</sup> University of Arkansas 2022 crop enterprise budgets estimate operating and fixed costs of \$573 per bushel for furrow-irrigated Roundup-ready soybeans compared with operating and fixed costs of \$1,106 per bushel for long-grain hybrid rice. Neither of these figures include a land charge.

Basically, each dollar per cwt of increase in the reference price would raise the cost of the PLC program by about 59%.

Another approach to improving PLC coverage in the face of rising costs of production would be to index the reference price, which is currently fixed by farm bill legislation, to some measure of cost of production. A wide variety of indexing schemes are feasible. For example, the reference price could be indexed to cost of production using farm enterprise budgets, setting the reference price as a percentage of the budgeted break-even price. Implementation of this approach would be complicated by the difficulty of defining a single representative budget for the entire country. The use of some kind of cost of production index likely presents a more feasible option for adjusting reference price to cost of production. A wide variety of potential indices is available. These include the Producer Price Index (PPI) from the Bureau of Labor Statistics along with an extensive offering of prices paid indices specific to agricultural production reported monthly by USDA National Agricultural Statistics Service. Further research is needed to identify which specific index or weighted combination of indices would provide the most accurate and effective adjustment to reference prices in response to changing input costs.