



Soybean Rejuvenates for Roofing Applications

A Market Assessment and Potential Utilization Growth in Minnesota

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Executive Summary

Nearly 75 percent of homes in Minnesota and nationwide have roofs made of asphalt shingles. According to interview respondents from three roof rejuvenate manufacturers, their applicators, and an independent insurance adjuster, asphalt shingle manufacturers have opted to make their shingles with less asphalt content and lower oils within the last two decades. The result is a shortened roof life expectancy. Because of this, some insurers have changed coverage levels in home policies, allowing only home roofs that are 15 years or less old to be eligible for total roof replacements due to weather. Homeowners with older roofs damaged by weather are subject to pro-rated insurance payouts based on the roof's age.

These changes have catalyzed a market for soy shingle rejuvenates and applicator-based businesses. This study focused on three major shingle rejuvenate suppliers in the U.S. – Roof Maxx Technologies (Roof Maxx), Colorbiotics (Peak 301), and RoofRestor. Two of the three (Colorbiotics and RoofRestor) have larger and more established road divisions, which supply similar formulations of rejuvenate products for asphalt roads.

All three shingle rejuvenate formulations studied originated at Iowa State University (Peak 301) or Ohio State University (Roof Maxx and RoofRestor). The formulations contain up to 90 percent soybean oil or soy methyl ester emulsion (SMEE)—a biobased, biodegradable, non-toxic solvent—and other propriety ingredients. The applicator teams then dilute the formulations with water (up to 70 percent) by volume prior to application. These formulations have been tested extensively by outside labs, and results are summarized in this report in Goal 1 Tactic 3.

All three rejuvenate companies operate as lead generation organizations for independent local applicators who cover geographically exclusive areas. Local applicators also independently self-generate leads. Local and national television advertising, search advertising, social media, public relations, and home events generate the leads. The applicators are most often located in and around metro areas.

Unlike the Sunbelt (Florida, California, Arizona, and Virginia), where rejuvenate applicators can apply roof rejuvenates nine to twelve months per year, rejuvenate applicators in Minnesota have only a five- to six-month application window. This has limited Minnesota rejuvenate companies' ability to attract applicators for their products.

Besides the short application season, other barriers to adoption by Minnesota applicators include concern about the possible impact on the shingles' manufacturer warranty, lack of homeowner knowledge about soy rejuvenates and the treatment process, unawareness of roof performance degradation until observable failure, lack of understanding about new solutions that increase roof preservation, and overall skepticism due to the lack of third-party endorsements. According to various sources, the roofing trade inside and outside Minnesota is incentivized by selling new roofs and more shingles – not by extending the life of installed asphalt roofs.

Market demand for soy rejuvenates has been increasing since they were introduced four to five years ago. For example, Roof Maxx has applicators in 47 states and 400 cities. The rejuvenate companies

attribute this market success to increased homeowner interest in saving money by extending their roof life. Rejuvenate companies commented that their business has doubled or tripled every year since inception because increased extreme weather events – heat, hurricanes, tornadoes, wind – create conditions that damage asphalt shingles due to decreased shingle quality. Insurance coverage changes are also causing concerns about the costs of new roofs.

All the above points indicate that the future is bright for soy shingle rejuvenates, and adoption can be accelerated through the following:

1. Increased collaboration between manufacturers and state soy producer associations can create third-party awareness and consideration of the performance, economic, and sustainability benefits associated with soybean oil.
2. Continued performance testing by Ohio State, Iowa State, and other independent laboratories funded by insurers will increase confidence in the soy rejuvenate technology.
3. Strategies to educate insurers about soy rejuvenates focused on the benefits to insurers. For example, increased knowledge of soy rejuvenate benefits could favorably affect building codes and insurance rates for roofs protected with soy rejuvenates.
4. As the rejuvenate industry matures, the creation of a shingle rejuvenate association that promotes roof rejuvenates and involves state soy producer associations and manufacturers.
5. AURI expanding its previous soy rejuvenate programs for asphalt and concrete to include state bio-based purchasing agents, such as the Minnesota Department of Transportation and the Metropolitan Council.

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Homeowners Robert and Lynda Scholin of Thief River Falls, Minnesota, and Rochelle and Brad Krusemark of Sherburn, Minnesota, for generously offering their homes as demonstration sites.

The soy rejuvenate companies—Roof Maxx Technologies, RoofRestor, and Colorbiotics—and the applicators who applied the product during the soy asphalt rejuvenate demonstrations—Mathew and Jaime Schad of Shingle Revival by Roof Maxx and Luke Meyer of Biobased Spray Systems, LLC.

Project Goals and Tactics

The following is a summary of the project goals and tactics, which summarizes the outline of the report:

GOAL 1: Identify and assess current roofing soy rejuvenate research available in the U.S. and Minnesota. Correlate soybean oil usage and document volumes and future forecasts of usage in Minnesota.

- **OBJECTIVES**

1. Characterize the roofing market in Minnesota.
2. Examine availability and applicators for soy rejuvenate product use in Minnesota. Map current dealerships and assess volumes and customer satisfaction.
3. Understand impediments to use and cost analysis and performance, including shingle manufacturer warranties and potential interest of shingle replacement parties, such as insurance providers, for rejuvenates versus replacement.

- **TACTICS**

1. Identify manufacturers of soy rejuvenates and assess current market penetration into roofing markets in Minnesota.
2. Identify impediments that caused the soy rejuvenate materials to go unused by consumers.
3. Develop/identify existing cost-benefit research to further vet products currently in this space.

GOAL 2: Provide outreach and identify demonstration opportunities in selected areas of Minnesota.

- **OBJECTIVES**

1. Identify a soy rejuvenate site through a dealer for application and public awareness.
2. Work with manufacturers and distributors on demonstration day documentation.

- **TACTICS**

1. Network with existing applicators/manufacturers for soy rejuvenates to establish an application event for the public and media outlets.

GOAL 3: Prepare a written report on “value chain identification and sales pathway” for increased utilization.

- **OBJECTIVES**

1. Assess overall market demand for soy rejuvenates and forecasts based on aging roofing materials.
2. Clarify cost-benefits with conducted research for consumers.
3. Examine and report on the bio-manufacturing opportunities for Minnesota with these products.

- **TACTICS**

1. Match benefits to known needs and consumer roofing concerns.
2. Review macro pricing and volumes for soy rejuvenates in Minnesota.
3. Examine and itemize soy rejuvenate bio-based manufacturing opportunities in Minnesota with existing infrastructure.
4. Complete a written report.
5. Conduct outreach on results.

Goal 1 Tactics – Research Findings Overview of Current Roofing Soy Rejuvenate U.S. and Minnesota

Tactic 1: Identify manufacturers of soy rejuvenates and assess market penetration into roofing markets in Minnesota.

There are three major national manufacturers of soy rejuvenates—Roof Maxx Technologies, Inc. (Roof Maxx), RoofRestor (dba Roof Renew USA), and Colorbiotics (Peak 301). Two of the three manufacturers have road divisions supplying state, county, and municipal road departments with products to increase the longevity of asphalt-covered highways and roads.

Minnesota is an embryonic market for all three manufacturers due to the short five- to six-month application season.

- Roof Maxx, the largest and most well-known company, has approximately four applicators in Minnesota.
- Despite its headquarters in Ames, Iowa, and its links to Iowa State University, Colorbiotics has only about three applicators in Minnesota.
- RoofRestor has no applicators in Minnesota.

Each manufacturer has its distinct attributes.

- Manufacturer 1 - [Roof Maxx's](#) Background:
 - Roof Maxx (<https://roofmaxx.com/>) was founded by former roofing contractors in 2013 who observed reductions in the asphalt content of shingles and the resulting impact on shingle longevity.
 - Key focus – residential roofs with an increasing focus on commercial roofs.
 - Key research partnerships – Ohio State University, Battelle Laboratories.
 - Key marketing tools – national and local lead generation advertising, public relations placements, video reviews, home and garden shows.
 - Five-year transferrable warranty that shingles treated with Roof Maxx products remain flexible for at least five years.
 - Their product is available in 47 states and 400 cities.
 - Sustainability claims – one typical-sized home (approximately 1800 square feet on average) treated with Roof Maxx eliminates 3.8 tons of waste from landfills, 80 kilograms of carbon dioxide (CO₂) emissions, and 1,420 kilograms of CO₂ emissions from shingle manufacturing.
- Manufacturer 2 - [Peak 301](#) Background:
 - The parent company and manufacturer is Colorbiotics, a conglomerate that also provides products for landscape markets (mulch) and recreation (sporting product colors and recreational surfaces).
 - Key focus – asphalt road sustainability (roofing secondary).
 - Key research partnerships – Iowa State University, PRI Asphalt Technologies.

- Key marketing tools – limited lead generation, search advertising, close relationships with Iowa and Nebraska soybean producer associations, and education about the science and process of roof rejuvenation.
 - The primary markets mentioned include Texas, California, and Florida.
 - The one application (guaranteed by warranty) lasts at least six years.
- Manufacturer 3 - [RoofRestor](#) Background: {formerly Greener Shingles}
 - Asphalt Systems of Ohio is the manufacturer; Biobased Spray Systems manages the RoofRestor product division.
 - Key focus – asphalt road sustainability.
 - Key research partnerships – Ohio State University, Battelle, and PRI Asphalt Technologies.
 - Key marketing tools – research studies about the efficacy of rejuvenation.
 - The primary markets mentioned include Ohio, Virginia, Georgia, and Florida.
 - U.S. reorganization completed.

When comparing the manufacturers, all three:

- Have similar soybean oil rejuvenate products.
- Are structured similarly to local applicator networks that buy 250-gallon totes of undiluted liquid soy rejuvenates.
- Have applicators responsible for local lead generation, homeowner education, in-person customer visits, application, and after-market service. Each applicant is typically granted territory within a two-hour radius of their base for customers.
- Regard the Sunbelt (Florida, California, Arizona, and Virginia) as the largest market area. *(Note: It is important to note that the Sunbelt is by no means a developed market. It is presently the region with the most applications. The Midwest is an embryonic and developing market.)*

The largest markets with the most applicators and finished roof renewals are states in the Sunbelt (Florida, California, Arizona, and Virginia). This is due to higher populations, more single-family homes, increased sunlight, temperatures, weather events, and the fact that applicators can work nine to twelve months a year. Heavy heat and sun damage cause volatile oils to exit and degrade asphalt shingles more quickly. Hurricane and wind damage cause granule loss on the shingle and further dry out the oil in the asphalt, making the shingles brittle. Another important bridge to acceptance is that many older homeowners living in Sunbelt states often cannot afford to replace their roofs without insurance payments (e.g., seniors, income-challenged, etc.) and risk losing insurance due to the age of their roofs. This leaves them with limited choices and makes shingle rejuvenates a good option to make their roofs last longer.

Compared to the Sunbelt, the number of Minnesota applicators is one of the largest single limitations on the growth of the shingle rejuvenation market. The product applicators face somewhat challenging financial burdens of purchasing a franchise, staffing the franchise, buying equipment, generating leads with advertising, closing the leads, etc. They also face the prospect of other applicators encroaching on their territories and leads as the industry grows.

Even though Minnesota has more than 180,000 asphalt roofs covering an estimated 328 million square feet, it has less than 20 estimated total applicators for the entire state among the three rejuvenate suppliers. Rejuvenate suppliers point to recruiting challenges for applicator franchises and the five- to six-month application window as reasons for the low applicator numbers.

Summary and Implications

1. Three primary manufacturers use similar chemistries developed by Ohio State University and Iowa State University and tested by PRI Asphalt Technologies in Tampa, Florida.
2. The market with the most applications is the Sunbelt states due to the ability to apply soy rejuvenates year-round and due to weather impacts, which cause asphalt shingles to degrade more quickly.
3. Minnesota currently has few shingle rejuvenate applicators. However, due to its long soybean production and development history, the state's low penetration should offer good opportunities for increased penetration.

Goal 1 Tactics – Research Findings Overview of Current Roofing Soy Rejuvenate in the U.S. and Minnesota Research Findings

Tactic 2: Identify impediments that have caused the soy rejuvenates to go unused by consumers.

The following are impediments identified by Axiom that have caused soy rejuvenates to go unused by consumers:

1. Concern about shingle warranties
 - Many homeowners think their asphalt shingles will “last a lifetime” because they bought products with a “lifetime warranty.”
 - They are highly concerned about voiding these warranties; however, they are often unaware that weather-related damage is not covered.
 - Most insurers have changed homeowner policies to cover a complete roof replacement in the first 15 years of the roof. After that, they cover the cost of the roof on a prorated basis.
2. Low roof problem awareness
 - Most homeowners do not pay attention to their roofs until they experience a leak or an extreme weather event.
 - Many do not know the age of their roof or how long their roof should last.
 - They do not know how much roof replacement costs or the replacement process.

- They do not realize their shingles lose volatile oils that make the shingles brittle. Many do not realize that protective granules come off the brittle shingles, further exposing the underlying asphalt and accelerating the loss of volatile oils.
3. Even lower roof solution awareness
- Many homeowners – even those experienced in-home repair and maintenance – do not know that their shingles can be rejuvenated. They do not know that the asphalt foundation of the shingle can reabsorb volatile oils that have been lost. They do not know the science or the testing done in research labs nationwide.
 - They think their only options are getting a new roof or applying a second layer of asphalt shingles to the existing one. Roofing contractors and building product retailers reinforce this option, focusing on new roofs rather than roofing maintenance procedures. Roofing contractors suggest second layers of asphalt shingles to make the roofing repair cheaper.
4. Overall skepticism
- Even when they learn more about the rejuvenation option, some homeowners remain skeptical because they have:
 - Never heard of other homeowners employing this solution due to low overall penetration of treatments.
 - Do not understand how a single treatment can extend the life of their asphalt shingles up to five years.
 - Question the relatively low cost of the solution (\$2,500 to \$3,000 for most homes on average) versus the new roof replacement.
5. Lack of overall third-party endorsement about the treatments
- The roofing industry is slow to adopt new innovations.
 - Contractors, retailers, and manufacturers are interested in selling new roofs and more new shingles—not maintaining/repairing existing roofs.
 - Building trade organizations have not widely embraced regular roof maintenance and soy rejuvenate treatments.
 - Insurers are not aware of the benefits of soy shingle rejuvenates.
 - News coverage by national print and broadcast mediums has been limited.
 - There are few building codes supporting roof renovations or soy shingle rejuvenates.
 - U.S. Green Building Council focuses on new construction, not renovation, with its LEED points. It does not include soy rejuvenates in its LEED program.

Summary and Implications

1. The roofing trade is most interested in selling new roofs, not renovating and extending the life of older roofs. This could change with regulatory changes (e.g., increased costs for sending shingles to landfills), insurer changes (e.g., insurers exiting California, Florida, et al.), or building code updates supporting roof renovation.
2. Homeowner education is critical to combat low awareness of problems and solutions. Presently, this education is accomplished through lead generation advertising, public relations, social media, and home show booths funded by manufacturers and their applicators.
3. Industry associations are often created in the building trade specific to particular challenges or product areas. These organizations are responsible for government code lobbying, specifier education, consumer awareness, etc.
4. There have been relatively few national third-party endorsements of soy rejuvenation technology by well-known sources with high credibility.

Goal 1 Tactics – Research Findings Overview of Current Roofing Soy Rejuvenate in the U.S. and Minnesota

Tactic 3: Develop/identify existing cost-benefit research to further vet products used in this space.

Axiom conducted cost-benefit research on products currently used in this space. The three major products identified in the market include Roof Maxx, Peak 301, and RoofRestor. A summary of the findings follows:

Roof Maxx Studies

Note: Links to all of the studies below can be found at this link: <https://roofmaxx.com/roof-maxx-studies/>

- The Ohio State University (OSU) Roof Maxx Technical Report
 - Completed by PRI Construction Materials Technologies.
 - Objective: Measure the impact of Roof Maxx treated shingles for factors including pliability, resistance to wind damage, granule adhesion, permeability, flammability, hail impact, etc.
 - Result: Increased flexibility and granule adhesion. Restored permeability close to new shingles. No increased risk of fire.
- OSU Environmental Impact Study
 - Completed by Ohio State University.
 - Objective: Estimate the economic and environmental impact of Roof Maxx shingle rejuvenates.
 - Result: Eliminates 3.8 tons of shingle waste sent to landfills, 80 kilograms of carbon dioxide due to waste, and 1,420 kilograms of carbon dioxide due to asphalt shingle manufacturing.
- Fire Test Report
 - Completed by Intertek for Airable Research Lab.
 - Objective: Measure Roof Maxx treated shingle resistance to flame.
 - Result: Shingles coated with Roof Maxx met the ASTM 3108 Class A rating criteria. Underdeck showed no signs of combustion. Uncoated shingles did not meet the criteria. The underdeck caught fire during the burn test.
- Water Vapor Resistance
 - Completed by Airable Research Lab.
 - Objective: Determine the permeability of Roof Maxx treated shingles to water vapor.
 - Result: Roof Maxx rejuvenation products increase shingle resistance to moisture and its impacts.
- Solar Mount Testing
 - Completed by Airable Research Lab.
 - Objective: Identify the impact of commonly used materials to mount solar panels (e.g., asphalt shingles, rubbery ethylene-propylene-diene monomer (EPDM) gaskets, etc.)

- Result: Roof Maxx rejuvenation products are safe to use on roofs that support solar panels.

Peak 301 Studies

Note: Peak 301 was not willing to share test research. The product comparison listed below was previously on the website but has since been removed. Further, none of the Iowa State University information was included on the website. Peak 301 is competing directly with Roof Maxx.

- Product Comparison
 - Likely completed by Asphalt Technologies.
 - Objective: Measure color grayscale, granule adhesion, tear strength reduction, fire resistance, and hail impact compared to control in product A (likely Roof Maxx).
 - Result: Eight percent increase in granule adhesion, 16 percent increase in tear resistance.
- Iowa State University Research
 - Completed by Iowa State University.
 - Objective: Explore soy emulsion application to rejuvenate aging asphalt shingles.
 - Result: Soy emulsions restored the flexibility of aging asphalt shingles and dramatically improved granule retention.

RoofRestor Studies

- Test & Evaluation Report
 - Completed by PRI Asphalt Technologies.
 - Objective: Complete a benchmark life-cycle study of the RoofRestor rejuvenator.
 - Result: Compared to untreated shingles, shingles treated with RoofRestor rejuvenator had 10.8 times better performance for mass loss, 5.8 times better for granule loss, and had improved low-temperature flexibility from -22 degrees Fahrenheit to -31 degrees Fahrenheit.

Summary and Implications

1. Performance studies completed by outside research test labs contain compelling factual data about the value of soy rejuvenates.
2. Roof Maxx has used this data to become the nation's leading applicator of soy-based rejuvenates. The new RoofRestor national distributor is beginning to use the data and repackage the original Ohio State University study. Peak 301 was unwilling to share performance testing data, nor does its website mention research done by Iowa State University.
3. This data should be shared with insurers to demonstrate efficacy and benefits.
4. Performance studies from labs funded by insurers should be considered.

Goal 2 Tactics – Overview of Demonstration and Related Outreach Findings

Tactic 1: Network with existing applicators/manufacturers for soy rejuvenates to establish an application event for public and media outlets.

AURI met with manufacturers and applicators to establish application events for the public and media outlets. In February 2024, a meeting was held with a Roof Maxx distributor in Grand Rapids, Minnesota. Then subsequently, in April 2024, AURI met virtually with Roof Maxx Co-founder and CEO Mike Feazel and the company's distributor in Grand Rapids, Minnesota. In collaboration with Roof Maxx, a demonstration was scheduled in Thief River Falls, Minnesota. Media content was developed, and the event was planned in cooperation with Roof Maxx. Meetings were also held with Colorbiotics (Peak 301) and RoofRestor. AURI scheduled an in-person meeting with Colorbiotics (Peak 301) in April 2024. Colorbiotics is a roof rejuvenating company based in Iowa with dealerships in Minnesota and Fargo, North Dakota. They were interested in collaborating on a demonstration event in the Twin Cities area, but, ultimately, the company did not find a suitable site for application this year in the metro area.

AURI worked with selected homeowners in Thief River Falls, Minnesota (Pennington County) and Sherburn, Minnesota (Martin County) to conduct soy asphalt rejuvenate demonstrations. After certified applicators inspected the homes, an application date was approved and scheduled. At both events, the products were applied by trained applicators following safety procedures to avoid accidents and ensure a successful application. To expand the breadth of outreach efforts, AURI collaborated with MSR&PC's communications department and the soy rejuvenate dealers involved. During each demonstration, interviews and photos were taken, videos created, and news releases written. Related blogs and social media posts developed by collaborators are included in Appendix A.

AURI collaborated with Roof Maxx dealers Mathew and Jaime Schad of Shingle Revival, based out of Grand Rapids, Minnesota, to demonstrate the Roof Maxx soy rejuvenate product and how soy methyl ester emulsion (SMEE) is applied. The event was held on July 26, 2024, at the home of Robert and Lynda Scholin, located within Thief River Falls's city limits. Invitations and supporting information on SMEEs were sent to several media outlets (Appendix B) and posted on Facebook (Appendix C). A reporter from the *Thief River Falls Times (The Times)* covered the event, as did representatives of MSR&PC's and AURI's communications departments. Product information was also provided on-site. A copy of the article published by *The Thief River Falls Times* is included in Appendix D. The newspaper has a circulation of 4,200 and an online presence via its website, which averages approximately 7,500 visitors per month. *The Times* also posts material on Facebook.

MSR&PC conducted an interview with Mathew and Jaime Schad about the process and the Roof Maxx product, which is available [here](#). A video of the demonstration is available [here](#).



*Roof Maxx Soy Roof Rejuvenate Demonstration, Thief River Falls, MN
Photo Credit: Jaime Schad, Shingle Revival by Roof Max*



*Roof Maxx Soy Roof Rejuvenate Demonstration, Thief River Falls, MN
Photo Credit: Becky Philipp, AURI*

On July 31st, AURI collaborated with RoofRestor on a demonstration event at the home of Rochelle and Brad Krusemark. An invitation/alert was sent to media outlets (Appendix E) and posted on Facebook (Appendix F). MSR&PC's communication staff captured footage and interviews. A reporter from *The Farmer* magazine was on site. A copy of the article published by *The Farmer* magazine is included in Appendix G. *The Farmer* magazine covers agricultural interests in Minnesota. It has 29,700 Alliance for Audited Media (AAM) audited subscribers and 4,800 daily opt-in subscribers. It also has a digital edition online and a Facebook presence.

In addition, demonstration host and soybean farmer Rochelle Krusemark and Brian Ahladas, president of Roof Renew and RoofRestor, were interviewed. The video can be viewed [here](#) (1.5 minutes). As of October 23, 2024, it has received 35 views on Roof Renew's YouTube channel.



*Luke Meyer of Biobased Spray Systems, LLC, Applying RoofRestor
Photo Credit: Harold Stanislawski, AURI*



*Brad and Rochelle Krusemark with Demonstration Attendees
Photo Credit: Bailey Grubish, MSR&PC*

The demonstrations were highly successful. In addition to the articles published by the *Thief River Falls Times* and *The Farmer* magazine, several media posts, and blogs (see Appendix F), an article published by the *Grand Rapids Herald* (See Appendix G) highlighted the Thief River Falls demonstration outcomes. The *Grand Rapids Herald* serves Itasca County and the surrounding area with a circulation of approximately 9,000.

A post-demonstration media pitch included in Appendix I was also distributed to Minnesota Public Radio, *The Minnesota Star Tribune*, *AgWeek*, Red River Farm Network, Linder Radio Network, and the *Pioneer Press*. The Red River Farm Network subsequently interviewed AURI's Harold Stanislawski.

Goal 3 Tactics: Overview of Utilization Findings for Value Chain Identification and Sales Pathways

Tactic 1: Match benefits to known needs and consumer roofing concerns.

Consumer Roofing Concerns Aligned with Benefits

Note: The concerns below are compiled from interviews and recent homeowner research completed by Farnsworth Group and the Roofing Contractor. The benefits below are compiled from interviews and Roof Maxx, Peak 301, and Greener Shingles websites. *Disclaimer: These are the opinions of interview respondents.*

1. **Consumer Concern/Need:** Economic uncertainty (and cost) limiting major home improvement projects. Overall, consumer purchases in 2022 decreased by 4.2 percent.

Benefit: The treatment cost for soy rejuvenates is minimal compared to that of a new roof—in most cases, less than 15 percent.

2. **Consumer Concern/Need:** Durability, appearance, and price of a new roof, which homeowners see as a major investment that needs to last as long as possible.

Benefit: Treatments enable the roof to last up to 15 years longer and make the roof look new because the shingles are no longer faded.

3. **Consumer Concern/Need:** Increasing natural disasters and declining insurance coverage, which typically only covers 26 percent of roofing projects. Further, most insurers will cover new roofs at 100 percent cost for roofs that are 15 years of age or less. Roofs older than 15 years are covered pro-rated, invalidating manufacturer "lifetime warranties" (which do not cover weather-related damage).

Benefit: Increased shingle flexibility minimizes wind damage. Decreased granule loss decreases damage to the asphalt foundation of the shingle. Shingle rejuvenates offer a path forward to address declining insurance coverage and meaningless manufacturer warranties.

4. **Consumer Concern/Need:** Energy efficiency, sustainability—homeowners are looking for eco-friendly materials and technology.

Benefit: Treatments are made from soybean oil, which is more sustainable than fossil fuel oil and safe for humans and pets. The treatments decrease the number of shingles sent to landfills and lower carbon dioxide emissions.

5. **Consumer Concern/Need:** Commitment to asphalt shingles – 63 percent of homeowners say they would not switch from asphalt shingles.

Benefit: Treatments enable asphalt shingles to last longer, especially new ones with less asphalt content than those manufactured 20 years ago.

6. **Consumer Concern/Need:** Annual roof maintenance – 28 percent of homeowners found roof maintenance agreements very important or extremely important. Eighty-nine percent said they would be willing to pay \$100-\$500 annually.

Benefit: Unlike roofing contractors focused on new roofs, most soy rejuvenate applicators now offer annual “roof tune-ups.”

Summary and Implications

1. Consumer concerns and benefits are closely aligned.
2. Manufacturer warranties do not cover weather-related claims.
3. Insurers are tightening policies when it comes to claims.
4. Shingle rejuvenates can help insurers increase profitability, potentially leading to lower claims.
5. Create strategies for educating insurers about the benefits of soy rejuvenates.

Goal 3 Tactics: Overview of Utilization Findings for Value Chain Identification and Sales Pathways

Tactic 2: Review macro pricing and volumes of soy rejuvenates in Minnesota.

Axiom reviewed the macro pricing and volumes of soy rejuvenates in Minnesota. A summary of the findings is as follows:

National Roofing Statistics and Pricing

Source: *Forbes Home 2024*

- The average cost to shingle a home is \$12,500.
- Asphalt shingles cost between \$4.25 and \$8.25 per square foot.
- Labor costs amount to 60 percent of the total cost or \$2 per square foot.
- Factors that impact the cost include:
 - Roof pitch

- Location
- Shingle brand
- Home insurance warranties

Source: *Ruby Home Roofing Statistics 2024*

- Asphalt shingles are the most common roofing material used in over 75 percent of roofing projects.
- An estimated five million roofs are replaced each year due to:
 - Leaks – 33 percent
 - Storm damage – 33 percent
 - Anticipated failure – 25 percent
 - Appearance – 3 percent
- The average cost to replace an asphalt roof is \$9,191.

Source: *Manufacturer and Applicator interviews*. Respondent’s comments are noted in italics.

Disclaimer: These are the opinions of interview respondents.

- *Pricing is always quoted on a square footage basis.*
- *Roofing square footage is calculated using satellite images.*
- *Price ranges from \$.98-\$1.35 per square foot or \$1,666-\$2,295 for a 1,700 square foot roof.*
- *Annual roof tune-ups cost between \$100-\$500.*

Minnesota Estimated Roofing Statistics, Estimated Rejuvenate Volumes

Source: U.S. Census Bureau, National Association of Home Builders, Property Shark, Manufacturer and Applicator Interviews

- There were 2,575,411 housing units in 2023 (U.S. Census Bureau 2023).
- The average age of Minnesota housing units is 40-50 years old (National Association of Home Builders 2023).
- 72.1 percent of the homes are owner-occupied or 1,856,781 housing units (Property Shark 2024).
- 1,931,558 million total housing units estimated to have asphalt roofs (assumes 75 percent asphalt roof penetration = 2,575,411*75 percent).
- There are 328,368,600 million estimated square feet of total asphalt shingles on 1.93 Minnesota housing units (assumes 1,700 average square feet per roof = 1,931,558*1,700).
- There are 180,278 asphalt roofs in Minnesota that could be potentially replaced each year (assuming a seven percent annual asphalt roof replacement rate = 2,575,411 housing units*7 percent).
- There are 26,269,188 potential gallons of soy rejuvenate demand for Minnesota asphalt roofs (assumes one gallon of rejuvenator per 125 feet, 75 percent asphalt shingle roof penetration, seven percent annual asphalt roof replacement rate = 328,368,600*seven percent).
- There are an estimated 131,346 gallons of undiluted roof rejuvenates applied in Minnesota on all asphalt roofs (assumes one-half percent penetration in MN = 328,368,600/125*one-half percent).

- There is an estimated 118,211 gallons of soybean oil used annually in Minnesota (assuming each gallon of undiluted soy rejuvenate contains 90 percent soybean oil = 131,346*90 percent).

Summary and Implications

1. There is a high asphalt shingle roof penetration nationally and in Minnesota.
2. There is a high value/cost ratio for shingle rejuvenation nationally and in Minnesota.
3. Each gallon of undiluted rejuvenate contains up to 90 percent soybean oil.

Goal 3 Tactics: Overview of Utilization Findings for Value Chain Identification and Sales Pathways

Tactic 3: Examine and itemize soy rejuvenate bio-based manufacturing opportunities in Minnesota with existing infrastructure.

Axiom conducted interviews with manufacturers and applicators. A summary of interview responses is noted below. Respondents' comments are indicated in italics. *Disclaimer: These are the opinions of interview respondents.*

- *At present, all of the product is made in Ohio and Iowa.*
- *The facilities are not yet producing at capacity.*
- *It's unlikely that increased production will be necessary in the next five years.*
- *Equipment costs for a new facility are over \$1 million.*
- *275-gallon totes are shipped from the factory to applicators.*
- *Larger applicators are buying four to five totes per month and buying on an as-needed basis.*
- *Most often, the totes are undiluted to reduce shipping costs.*

Summary and Implications

1. Although Ohio and Iowa manufacturing facilities are not at capacity—and will not be at capacity any time in the future—this product is in the early stages of adoption. The market potential is promising.
2. At present, Minnesota has few manufacturing opportunities. However, there are more opportunities for applicators in the state. Existing manufacturers are looking for more dealers. As the market develops, further exploration of opportunities for manufacturing these products in Minnesota will be needed.

Goal 3 Tactics: Overview of Utilization Findings for Value Chain Identification and Sales Pathways

Tactic 5: Conduct outreach on results. NOTE: Tactic 4 involves writing the final report.

In addition to the outreach activities related to the soy asphalt rejuvenate demonstrations, AURI showcased soy-based roof rejuvenates within AURI's tent at the 2024 Minnesota Farmfest in Redwood Falls, Minnesota, August 6-8, 2024. Over half of the Farmfest attendees who visited AURI's tent were interested in the soy roofing rejuvenates. A significant number of questions and interest were received. Many wanted to know more about the product and how to contact an applicator. Enthusiasm for this soy-based product was high. Farmfest attendance this year was estimated at 27,000, surpassing the 2023 attendance.

AURI Business and Industry Development Director Harold Stanislawski attended the Big Iron Farm Show in West Fargo, North Dakota, in 2024, and AURI displayed handouts in its booth. The most frequently asked questions during the Big Iron show were about the soy rejuvenates. The soy rejuvenate project resonated with homeowners who have asphalt shingles. AURI will also showcase the soy rejuvenates during the annual 2024 Prairie Grains Conference.

A one-page handout, included in Appendix J, two acrylic posters for tradeshow use, and related communications were also created.

An article will be published in the November 2024 issue of AURI's *Ag Innovations News* publication, and an AURI podcast is planned for January 2025.

In September 2024, Harold Stanislawski attended Bio Innovations Midwest in Omaha, Nebraska. This event highlighted bioinnovations and value-added supply chains. AURI explored opportunities to advance the soy complex within the bioinnovations area.

Conclusion and Recommendations

Minnesota is poised for increased use of soybeans in asphalt roof rejuvenation. Existing SMEE manufacturers are interested in expanding dealerships in Minnesota to increase the visibility and usage of soy rejuvenates in roofing applications. According to manufacturers of soy rejuvenate products, market forecasts indicate the need for soy rejuvenates is growing. While this product is currently in the early stages of adoption, as the market for SMEE-type products matures, more opportunities for manufacturing in Minnesota will arise.

Procurement policies will need to be monitored to promote SMEE-type products for biobased applications, such as roofing. These policies include the federal “Buy Clean” initiative, which promotes purchasing certain clean and sustainable construction materials and products, and Minnesota’s Buy Clean Buy Fair Act, which promotes using clean and sustainable products and materials on state-funded infrastructure projects.

If soy asphalt rejuvenates reach their potential, RoofRestor estimates that three million bushels of soybeans annually could be used in roof rejuvenates in the United States alone with current formulations. More public awareness of the environmental benefits and the value of keeping shingles on roofs longer and out of landfills is recommended to increase sales. The market for SMEE soy rejuvenates seems to resonate with consumers. Consumers understand the value of maintaining roof integrity.

The insurance industry has also expressed interest in further developing this practice to keep shingles on roofs longer and maintain insurance policy integrity. A meeting was held with AURI’s Harold Stanislawski, Axiom’s Mike Reiber, a Grinnell Mutual insurance provider, and a National Hail Adjuster representative to gain a better understanding of the industry’s perspective on soy roof rejuvenate technologies and how it might relate to insurance companies. Recommendations were made on how to best work with the insurance industry. The insurance industry is interested in further discussions on research and potential trials needed for better claim decision-making. They have an [Institute for Business and Home Safety](#) (IBHS) Research Center in Chester County, South Carolina, where trials could be done.



IBHS Research Center

Photo Credit: Insurance Institute for Business and Home Safety



*Roof Aging Farm, IBHS Research Center
Photo Credit: Insurance Institute for Business and Home Safety*

Future meetings are planned to investigate potential protocols with other insurance agents and discuss the benefits of soy rejuvenates to homeowners. Both the insurance industry and the MSR&PC are interested in moving forward with further research. MSR&PC director Rochelle Krusemark spoke with Grinnell Mutual, part of the National Insurance Association (NIA). Grinnell Mutual indicated interest in discussions to move this forward. A subsequent meeting was held with the president of the NIA, and recommendations were given to the collaborators involved.

A potential Phase 2 discussion with the insurance industry on further research is planned to develop possible benefits for homeowners. Insurance industry representatives suggested presentations at some of their technical meetings and other insurance industry meetings in Minnesota and other states. MSR&PC, along with AURI, is looking into those possibilities.

Resources

Roof Maxx, <https://roofmaxx.com/>

Peak 301, <https://peak301.com/>

RoofRestor, <https://www.roofrestor.com/>

Roof Maxx Studies, <https://roofmaxx.com/does-roof-maxx-work/>

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Roofing Contractor, *2024 State of the Industry Homeowner Survey*, by Art Aisner, February 27, 20204, <https://www.roofingcontractor.com/articles/99160-homeowner-survey>

Greener Shingles, <https://www.greenershingles.ca/>

Forbes Home 2024, <https://www.forbes.com/home-improvement/roofing/shingle-roof-cost/#:~:text=You'll%20pay%20an%20average,the%20price%20of%20professional%20labor.>

Ruby Home Roof Statistics, <https://www.rubyhome.com/blog/roofing-stats/#:~:text=An%20estimated%205%20million%20roofs,131%2C980%20roofers%20in%20the%20U.S>

U.S. Census 2023, <https://www.census.gov/data/tables/time-series/demo/popest/2020s-total-housing-units.html>

National Association of Home Builders 2023, <https://eyeonhousing.org/2023/02/age-of-housing-stock-by-state-4/>

Property Shark 2024, https://www.propertyshark.com/info/us-homeownership-rates-by-state-and-city/#_Map_of_Homeownership_by_State

Appendices

NOTE: Please see the PDF Attachment Section to view each Appendix included herein.

Appendix A: Soy Roof Rejuvenate Demo Blogs, E-Newsletters, Social Media Posts

Appendix B: Soy Roof Rejuvenate Demo Media Alert – Roof Maxx (Thief River Falls, MN)

Appendix C: Soy Roof Rejuvenate Demo Invitation-Facebook Posts (Thief River Falls, MN)

Appendix D: *The Times* Article – Soy Roof Rejuvenate Demo (Thief River Falls, MN)

Appendix E: Soy Roof Rejuvenate Demo Media Alert – RoofRestor (Sherburn, MN)

Appendix F: Soy Roof Rejuvenate Demo Invitation – AURI Facebook Posts (Sherburn, MN)

Appendix G: *The Farmer* Magazine Article, Soy Roof Rejuvenate Demo (Sherburn, MN)

Appendix H: *Grand Rapids Herald* Article, Soy Roof Rejuvenate Demo (Thief River Falls, MN)

Appendix I: Post-Demo Media Pitch, Soy Roof Rejuvenate Demos

Appendix J: AURI Soy-Based Asphalt Roof Rejuvenate Handout