DEVELOPING AN AROMATIC RICE INDUSTRY IN THE ARKANSAS RIVER VALLEY

FEDERAL-STATE MARKETING
IMPROVEMENT PROGRAM

Arkansas Department of Agriculture

14-FSMIP-AR-0001

Final Report

March 20, 2018

Submitted by: The Natural Soybean and Grain Alliance
700 Research Center Blvd
Fayetteville, Arkansas 72701
479-841-3699 479-575-7446 (FAX)

PROJECT ABSTRACT

This project will evaluate the overall potential of developing an aromatic rice industry in the Arkansas River valley through utilization of the emerging markets surrounding specialty rices. The goals and objectives of the project will allow the subcontracting organization (the Natural Soybean and Grain Alliance) to thoroughly vet the feasibility of industry establishment through: 1) Assessments of ARV production capabilities; 2) Evaluation of market potential of selected aromatic rices; 3) Organization and team building involving producers, University personnel and other experts to make the project successful; and 4) Evaluation of the infrastructure requirements to service a new industry as proposed. All tasks will be performed in relation to the ARV farm community capabilities and related using the model of the recently developed edamame industry in the ARV. Because of the isolation of the ARV and the migration of infrastructure capabilities outside of the area in recent years, new high value and potentially vertically integrated industries are primed for this production area. The timing appears to be right and the effort focused for industry construction and subsequent conversion of a significant number of acres in the ARV to aromatic rices. The transition to aromatic production under this model will improve the competitive position of the ARV to Eastern Arkansas, increase the economic outlook for these family farm units, and the surrounding communities, and elevate the standard of living in the River Valley areas.

OVERALL SUMMARY

Conventional rice is grown along the Arkansas River Valley (ARV) west of Little Rock in multiple counties, though acreage has decreased dramatically over the last twenty years. In fact, rice, at one time, was grown all the way to the Oklahoma border and beyond-but is now primarily located on the *Eastern* side of the valley with only very rare acres in the Western half of the ARV. The farmland is, however, very productive with perhaps 100,000 acres of potential rice land available. Unfortunately, the once established crop infrastructure (mills, processors, transportation, crop services, etc.) has slowly been dismantled and/or migrated to eastern Arkansas, where 99% of the rice is now placed. Except for small suppliers and related entities, farmers in the ARV routinely get service, inputs, transport and grain drops as far away as Stuttgart in Eastern Arkansas or Webbers Falls in Oklahoma (for example), among others. This has caused the often-smaller farms in the ARV to have more difficulty in sustaining operations and, as a result, rice production continues to decline.

Specialty rices, including aromatics, colored and organic rices, continue to gain market share in the U.S. However, substantial amounts of these are *not grown* domestically. The majority is imported from Thailand, India and Pakistan. U.S. markets continue to increase for these largely because of growing demands for the *aromatic* varieties, preferred by the expanding population of rice-consuming ethnic groups. The aromatic industry potential appears very similar to the edamame (vegetable soybean) industry dynamics of recent years.

For example, roughly 98% of the edamame has traditionally been imported (primarily from China) with very limited amounts of domestic production. But excellent edamame varieties have been developed in the U.S. and the soybean producing land is highly conducive for the agronomics. Using a model *like* the one proposed in this project, the Arkansas River Valley has now become the center-point for domestic edamame production with a strong and growing industry established. The aromatic (or other specialty rices) rices, as mentioned, do follow a similar trek. U.S. rice breeders have, for example, developed aromatic rice varieties (see below) with very similar characteristics to Asian types. Plus, the market is strong and growing,

agronomics are suitable, production land is available and yet the majority of specialty rices continue to be imported and marketed with only negligible (in comparison) domestic movement. There are small and viable production hot spots in Louisiana and the Eastern part of Arkansas, but the ARV offers a unique production area with several key advantages.

The success of the edamame industry coupled with the natural isolation of the ARV area geographically (yet with excellent production cropland) and other factors makes the farming communities perhaps more willing to embrace new industries that 1) offer higher economic returns through crop diversity; 2) spread the operational risks out, and 3) provide an outlet from the uncertainties of the commodity markets. In low infrastructure areas like this, these are critical factors and the ARV farmers are adept in pivoting and transitioning. In fact, they are, in general, very experienced and innovative with the flexibility to vary their operations to capture emerging markets and optimize finances. In many cases already, a number of these small to mid-size operations diversify by growing several different types of row crops (soybeans, edamame, corn, wheat, rice), hay crops (various) and livestock (poultry, cattle). One particular producer that models the above has production acres split between edamame, Non-GMO conventional soybeans, GMO commodity soybeans, rice, corn, wheat, seed soybeans and hay. And this producer operation also has poultry and cattle. It's a dynamic operation and producers like this involve themselves under these practices to compensate for the lack of infrastructure that is often present around the larger farming communities (as discussed). And this variance and flexibility helps them to remain economically sustainable for the present and builds for the future (generational). As well, the geographics and logistics embedded naturally in the ARV can actually bring benefits to these types of high value, often vertically integrated industries that may require an elevated level of identity preservation and variety protection. This has been an excellent advantage for the edamame industry which stresses Non-GMO and a premium on variety preservation.

During the last few years, exceptional market potential has developed for aromatic rices such as Basmati, Jasmine, Jazzman, Jazzman II and JES. In this project, we propose to evaluate the ARV as a production and marketing conduit for specialty rices in a comprehensive way. The plan will lay the foundation for industry development in much the same way as the edamame industry was developed in the ARV, providing high value to the area in general and the farming communities.

BACKGROUND AND JUSTIFICATION

In 2010-2011, a project was begun and carried out to bring a specialty soybean industry to the state of Arkansas, to the Arkansas River Valley. The developmental team that led that effort will be the core team for this project. Through those efforts, a complete and sustainable new industry was initiated beginning in 2012 with some $8 million dollars of investment monies secured to create an edamame industry complete with agri-community infrastructure, a state-of-the-art facility and some forty full time jobs created. In addition, substantial economic stimuli were recognized throughout the local and farming communities that have and/or continue to participate at various levels. In fact, employment figures have far exceeded the original estimates with near 100 employees during the harvest period and substantial expansions of the facilities already underway and near completion. The success of that industry opens the door for additional commercial developments within the Arkansas River Valley agriculture community that is now primed to receive new and innovative ideas, including development of a viable

aromatic rice industry that will lead to much higher returns at the farm level as well as a profitable industry sector involved in processing, marketing and sales.

As discussed, producers in the ARV are becoming increasingly isolated from resource and market drivers needed for sustained economic viability. The overall farm values, rice production values and net income from farming activities are significantly less than farms in the Delta region. The migration of infrastructure has greatly affected these farms (and surrounding communities) resulting in servicing shortages, increased transportation costs and an overall less competitive economical structure. Recently, during discussions with area farmers, the lack of infrastructure was emphasized by the necessity of having inputs and services brought in from more than 100 miles away in the near Eastern Delta area (or from the Oklahoma area as detailed above).

About 15% of rice consumed in the U.S. is imported. And the vast majority of these come from the countries involving the aromatic rices. The aromatics continue to fetch premiums at the consuming level while gaining market share. In fact, imports of these rice-types are forecast at 22.5 million cwt in 2014, an increase of five percent compared to the previous year and second all time in comparison. And while domestic rice production is in a slight decline, there is no evidence (at the moment) that the aromatics and related will follow a similar trend but only *increase* from a production (import) standpoint to meet consumer demand. Clearly, the drivers are placed for sustained markets development concerning specialty rices.

The aromatic rice varieties we propose as a focus to build this project upon have, to a small extent, been grown in isolated areas in the state (at least from time to time) to capture niche markets. The potential of these from an agronomic and even marketing position have been evaluated in other research and not to be duplicated in this project. However, development of a larger area (i.e. the Arkansas River Valley) with suitable production; farmers willing to heavily diversify their acres; connecting potential markets down to the producer level; and the evaluation of necessary infrastructure (including potential of a handling facility to service the industry) has not been thoroughly vetted. A regional effort in Louisiana featuring Jazzman rice to the New Orleans market has been growing in recent years with an estimated 10,000 acres currently grown for these premium markets. We believe a similar industry (and beyond) can be created in the ARV and that the time is *currently excellent* to establish similar or expansion markets in the upper Mid-South.

Within the USDA, there is a current initiative to '*know your farmer, know your food*'. This combined with the project as outlined is an exceptional opportunity for ARV farmers to transition to productive aromatic varieties in fulfilling this initiative. In doing so, an entire industry can be placed in the targeted area (similar to the edamame industry) and bring a branding effect to this region as a highly productive, high focus geographic center for these rices. This transition would improve the competitive position with eastern Arkansas, increase the economic outlook for these family farm units and the surrounding communities, and elevate the standard of living in the River Valley areas.

PURPOSE AND TARGETING OF FUNDS

Grant funds will be used to provide technical, feasibility and marketing assessment assistance to interested producers located strategically throughout the ARV. Guidance at various levels will be provided in directing operations to lay the groundwork for establishment of an aromatic rice industry among the Arkansas River Valley farm operations. The funds will also be used for

desktop and field research in support of every objective listed. These foundations will be used to guide and direct the project to a level so that the acceptance, viability and economic potential of a new industry as proposed can be reasonably evaluated. The following are the general areas and objectives identified for extraction of specific tasks to complete the project. *These were modified based on changes recommended by FSMIP reviewers.*

1. **Marketing and Economic Models**
    a. Identification and connection from producers to consumers
    b. Current markets
    c. Potential markets
    d. Developing the marketing models
2. **Processing, Storage and Logistics**
    a. Necessary Infrastructure Support
        i. Processing, Storage, Logistics and Inputs
        ii. Cost and Return Analysis on Infrastructure

Task 1. Marketing and Economic Models. For this task, a general overview of the current markets as related to a new, proposed industry *in the ARV* will be evaluated by completing the following components.

Drivers for Market Analysis

As it relates to the ARV geographically, logistically and agronomically-each candidate aromatic rice will be assessed in terms of market factors. Identification of the necessary drivers to make this industry successful in the ARV will be evaluated and disseminated back to interested producers through a variety of methods and channels as outlined. The specific market drivers to guide industry development will be key to incentivizing producers as the project moves forward. And the recent success of the edamame industry makes this area, as discussed, conducive to establishment of these necessary and foundational aspects for transitioning acres to aromatics.

Market Analysis Considerations

The various applicable markets will be evaluated based on how they relate to the overall production and farm operation infrastructure of the Arkansas River Valley. The changing dynamics of producer-driven markets make establishment of strong domestic industries very viable and opens a variety of channels including local, regional, domestic and international pipelines. The following are market analysis areas that will be evaluated based on relation to the ARV, the candidate rice varieties targeted, and the producer operations present.

- Current markets.
- Potential markets.
- Market conditions.
- Market growth
- Profitability

- Trends

Questions to be Answered

A number of critical questions will be answered by completion of Task One including:

1. What are the key market drivers to bring incentive to ARV producers?
2. What are the overall market conditions for aromatics as it relates to the ARV?
3. What is the *potential market* for these rices concerning ARV producers?
4. Are certain varieties more profitable (potential) for ARV producers?
5. How do these markets compare to current crops for ARV producers?

As part of this task, an investor-based business plan will be developed and used as part of a guideline process to move the industry forward. Each aromatic type will be evaluated and woven into the business plan with the following elements outlined and described.

- Executive Summary
- The Potential Company Model and Related Business Structure
- The Products
- The Market
- Production
- Marketing, Sales and Distribution
- Financials
- Potential Risks and Problems
- Anticipated Management Structures

The goal of the business plan is to strengthen the case for industry initiation by providing key fundamentals of foundational importance to development. The plan will also be a valuable tool to construct important items (publications, white papers, presentations) used to provide feedback to interested producers and industry players.

Task 2. Processing, Storage and Logistics. The ARV has key advantages for initiation and development of an industry. However, evaluating the infrastructure challenges previously discussed is paramount to sustainability of a fledgling industry. Currently, for example, there are only 1-2 drop points for grains in the ARV and none of these, to our knowledge, specialize in identity preserved grains and certainly not rice, either conventional or specialties. Therefore, capable segregation and protection of these can be difficult and attached premiums jeopardized for the aromatics under these conditions (at least potentially, depending on market types). Based on this, the following areas should be addressed:

- Identification of suitable drop sites and service entities for an emerging ARV industry
- Proximity of the most capable sites
- Evaluation of storage and processing facilities in Arkansas that can serve the ARV
- Identification of general farm operation areas within the ARV in relation to sites
- Identification and evaluation of middle industry players (e.g. seed handlers/processors) that can access and service the ARV

- Cost analysis of the processing, storage and logistical needs of ARV farm operations

Summaries of this task will be invaluable as the necessary framework for an industry is put in place. This information and data will be provided as a feasibility analysis to not only answer critical questions as stated but to assess the *possibility* of placing a dedicated facility into the ARV to act as a focal point for industry service and growth. At least in comparison to reasonably located facilities outside of the ARV. This information will be provided to strategic producers as part of the team building, education and promotional aspect of the project.

It should be noted that an extension was requested and approved for this project in the latter part of 2017.

In the following project components completed, there may be results, findings and data that are cited or noted throughout that seem redundant within the report. However, these are placed for clarity within each section, if application, and are intended to bring more fullness to the specific tasks (and related) as outlined.

As in previous reports, the project began in early winter (December), 2014 with various phone calls, internal discussions and strategy development within the organization. Work also included administrative and organizational structuring for the project. Because of the nature of the farming circles (and related), the bullet point tasks outlined in the original proposal were slightly modified to reflect updated dates and timing as needed. The most important parts of the project were the following as they related to the two, overall Tasks outlined above. And while these may appear minimally different from the original Tasks cited, we believe they contain the overall vision and original mission to complete the project as proposed.

Subtasks outlined to guide and complete the overall project.

- *Identification and Connection from Producers to Consumers*
- *Current Markets*
- *Potential Markets*
- *Developing Market Models*
- *Processing, Storage, Logistics and Inputs*
- *Cost and Return Analysis on Infrastructure*
- *Compilation, Organization and Presentation of Final Report*

For the above subtasks, internal discussions, phone calls with key people and meetings were conducted to outline strategy with the following key areas developed to complete the project including: 1) identification of pertinent producers to target as a nucleus for initiation of the industry; 2) development of the critical infrastructural issues such as suitable delivery points and compatible storage facilities; 3) evaluation of applicable varieties in terms of agronomics, yield, quality, marketability and grower acceptance; and 4) the most effective model to market specialty products from producers to consumers.

Marketing and Economic Models.

Identification and Connection from Producers to Consumers. About 10-15 producers, overall, were identified in the Eastern, Central and Western sides of the Arkansas River Valley. These consisted of both small and moderately sized producers that typically had a wide ranging and diverse system on their farms.

The ARV producers, from our experience and work, are willing to invest and launch out on new industry if the markets are there for economic returns. During this project, there was exploration internally and with interested producers the possibility of using their production for a potential new industry launching point that could act as a centerpoint for a facility (for example) to utilize the producers in and around the ARV. Based on discussions, information and meetings, there are probably up to four potential producer operations in the ARV that could act as a starting point for an industry as described. These farmers represent the Eastern, Central and Western side of the ARV as well as roughly 7,000 acres of crop production (potential). Of these, producers in the central ARV are more networked in to this work.

There is a nucleus of farmers and acreage that can be utilized for this project, certainly from an initial, starting amount if returns and economic viability can be defined and demonstrated. Producers do have a keen interest in specialty crop production. But, the cost and returns must be demonstrated. And the specialty crop production must, at least to some degree, fit into their current systems without significant modifications. If these criteria can be met and a premium program developed, the acres are certainly there to begin an industry as outlined. And ARV producers would be receptive to diversifying their crops accordingly.

This project subtask was completed with confidence that a solid, representative and targeted group of producers were identified to focus on if a business model were to be developed over time.

***Current and Potential Markets for Specialty Rices*.** This subtask was a combination of the three subtasks consisting of Current Markets, Potential Markets and Developing Market Models. As such, these areas are summarized in the following report section.

Rice (*Oryza sativa*) remains the staple grain/food crop for more than 50% of the world's population. The United States, due to excellent agronomic and management practices, produces about *two percent* of the world's rice, yet accounts for some *10%* of the international rice trade. More than 8,000 rice farms are in the U.S., producing some 10 million metric tons of rice each year. About one half of this domestically produced rice is used in the United States with the same amount *exported* to various countries. The continuing rise of exports is due to various factors, including demand, immigration, and international trade agreements such as the North American Free Trade Agreement (NAFTA) put in place in the 1990's.

Interestingly, Mexico has emerged as the dominant importer of U.S. rice with other important markets such as Central America, Northeast Asia, the Caribbean, and the Middle East being significant as well. Sub-Saharan Africa is the largest overall importer of rice but gets the most substantial portion from Asia, which tends to sell a cheaper rice than U.S. exports.

Finally, and in addition to the above, China and other Asian countries have (or can be) become prominent, if not somewhat unpredictable, import partners for U.S. rice. Unfortunately, and unlike some other commodities, rice imports to many countries is heavily politicized and can be inconsistent. Protection of in-country producers, pricing, tariffs and other politically-related issues can make the successful exportation of rice somewhat difficult and inconsistent. Especially for conventional rices, which tend to be more volatile compared to the specialty rices (see below).

In terms of export amounts, the Asian countries (Thailand, India, Vietnam, Pakistan and China) still dominate (more than 80%) the world rice trade market. However, the U.S. continues to play a significant role due to the high quality and consistency of rice products.

The primary rice production states (or areas) in the U.S. are Arkansas, Mississippi, Missouri, Louisiana, Texas (the 'five' state Mid South area) and California with over 3 million acres of annual production at a farm gate value of around 2.5 billion dollars. Specialty rices, consisting of fragrant (aromatics) and organic rices, in the U.S. make up ~3% of overall production. These rices, the organic rices, are the fastest growing segments in rice production.

Over the last five years, conventional rice production (long, medium and short grains) production has increased perhaps up to 7%, depending on the source researched. Correspondingly, domestic consumption has increased an estimated 1% during this time.

Nontraditional rices, or specialty rices, the focus of this project, consist primarily of the aromatic (or fragrant) rices and the organic rices. While there are many (many) types and variations of nontraditional rices, according to the U.S. Rice Federation, the 'base' specialty rices (other than organic rices-see below) grown in the U.S. and import dominated include: Jasmine rice, Basmati type rice, Della, Delrose, and Delmont rice, Aromatic red rice, Black japonica rice, Arborio rice and Sweet rice. In addition to these, organic rices, which are also niche in terms of market, have become highly sought at many levels of consumption. Most of the aromatic rices are imported while the organic rices are produced domestically. In terms of pricing, all typically fetch premiums with prices ranging from two to three times that of conventional rices.

The U.S. market for these specialty rices (produced both domestically and imported) now stands at near $300,000,000 dollars in the U.S. with growth far outpacing (64% to 7%) conventional production and demand. Around 600,000 tons of various types of specialty rices (mostly aromatics) are imported annually into the U.S. Most come from Asian countries and predominantly from Thailand (Jasmine), India (Basmati) and Pakistan (Basmati), though Vietnam is becoming a significant player as well. Jasmine rice is, by far, the largest import of these rices followed by Basmati and organic rice (all types). However, most organic rice production, as detailed above, occurs domestically. Domestic consumption of rices (mostly specialty/aromatics) has ***quadrupled*** in the last 25 years due to the changing dietary habits of Americans and the establishment of ethnically diverse communities whose diets use rice as a focal point.

There are many small and specialized rice companies in the Mid South and California that either mill and market rice or concentrate on the singular of these services. And while the conventional

rices dominate these efforts, a number of smaller entities are beginning to seize the market opportunities for the specialty rices.

Domestically, Riceland Foods is the world's largest producer and miller of conventional rices. Other major players are Riviana Foods and American Rice Company. However, the increasing demand for specialty rices has spurred an influx of smaller and focused companies in recent years. These are concentrated mostly in the Mid South and California (Table 1).

Table 1. Companies involved in the production, sale and/or marketing of specialty rices in the U.S.

Company	State
1) ADM Rice	New York
2) American Commodity Company	California
3) Associated Rice Marketing Coop	California
4) Bunge Milling	California
5) California Family Foods	California
6) Cormier Rice Milling	Arkansas
7) Doguet's Rice Milling	Texas
8) Falcon Rice Mill	Louisiana
9) Far West Rice	California
10) Farmers Rice Milling	California
11) G and H Seed	Louisiana
12) Koda Farms	California
13) Louisiana Rice Mill	Louisiana
14) Lundberg Family Farms	California
15) National Rice Company	California
16) PGP International	California
17) Producers Rice Mill	Arkansas
18) Rice Select	Texas
19) Riviana Foods	Texas
20) Sem-Chi Rice Products	Florida
21) Specialty Rice	Arkansas
22) Sub Commence	New York
23) Sun Foods	California
24) SunWest Foods	California
25) Tamaki Rice	California
26) The Sun Valley Rice Company	California
27) TRC Trading Corp	California

The majority of these companies either deal in what is considered 'generic' aromatic rices, organic rices or very specific specialties such as Basmati, Jasmine, Arborio or Sweet Rice. And the majority are in California which currently dominates the specialty rice markets. However, this has been changing in recent years with company development in the Mid South where long has the conventional (long grain, medium grain) rices been the predominant lines. For example, Ebro (which owns Riviana Foods and is the world's largest rice trading company) recently purchased RiceTec AG and RiceTec Inc. to enter the specialty rice market concentrating on aromatics and organic rices (the RiceSelect Brand).

The current markets for these rices are increasing at a steady and strong rate. The 'world' economy with shifting of ethnic groups and establishment of applicable communities internationally make the preference for these types of rices substantial and bodes well for continued opportunities in these markets.

While rice trading (exporting) remains low due to the consumption of rice where it is grown, the overall trend is increasing dramatically. Worldwide, between 7-10% of rice is exported/traded. Of this amount, up to 18% is considered aromatics. These rices are also being heavily imported into China (for example) and the U.S. where prices may reach around $1100/ton, which is roughly 2X the price of standard long grain rice (for example).

As an example, Basmatic rice trading (primarily from India) has grown to more than 2.5 million tons (on a milled basis). Clearly, the demand is growing for these rice throughout the world but especially in the more developed nations where diet requirements and taste preferences are driving markets.

In summary and further to the above, we estimate that there are seven *small* operations in the Mid-South area where producers, for example, are milling their own rice and building out business models. Of those, only one (to our knowledge) is dealing (or will be) in specialty rice. This does not include the significant specialty rice companies such as Specialty Rice in Brinkley, AR, RiceTec (TX) and Lundberg (CA) which are, by account, the three largest specialty rice companies in the United States. But, viable economical businesses centered on producer operations, for example, are becoming doable and we see this as a nucleus for a new industry in the ARV per the stated goals of this work.

As part of this project, an investment based business plan was developed to more fully vet this specific task in terms of economic and market models and related. The following, in general, are the important and critical subjects of the business plan.

1. Identification of the problems to solve.
2. Identification of the solutions to these problems.
3. What are the target markets?
4. Who are the competition?
5. What is a reasonable investment amount for launching an industry player?
6. What are the sales channels?
7. What are the marketing strategies?
8. Identification of financial projections.
9. Identification of milestones.
10. Determining management structure and team members.
11. Who will be strategic partners and application resources (e.g. infrastructure)?

This business plan, presented in the format as follows, completes this overall task for the project. As above, there is most likely some redundancy to bring clarity to each component of the plant. But it does give a more complete picture of what an economic model would look like based on all information and data gather for this project. Contained within the business plan are numerous data-containing statements that have been generated based on a theoretical model of production for a set amount of aromatic rice acres.

The following is a truncated plan to outline the business opportunity for production and sales of aromatic rice in the Arkansas River Valley as part of the overall FSMIP project.

Opportunity

Problem

Because of the somewhat geographical isolation of the Arkansas River Valley (ARV), the crop production infrastructure goods and services have continued migrating outside of the area in recent years. Despite very productive land and a long history of excellent crop productivity, producers in the ARV face a continual disadvantage for products, services, grain drop locations, marketing services and related. This environment, though difficult for traditional crops, is highly conducive for higher value specialty crops such as edible grains where less acreage is required to yield similar economic returns to conventional crops.

Solution

High value specialty crops that can be plugged into current production systems in the ARV, yet require less acreage, can help to fill these production and infrastructure gaps. Crops such as edible soybean and aromatic rices are ideal because these are compatible and identical to already-grown conventional soybeans and rice. However, the variety differentiation to make these edible grains also makes these marketable for public consumption which gives producers not only additional market capture options but much higher value markets. This, in fact, was the case within the last five years when a complete, vertically integrated edible soybean (edamame) industry was established in the Western side of the ARV bringing heightened economic viability to this specific area and to the ARV in general. These models demonstrate a path to establishment of durable agriculture industries that can build economic opportunities throughout every level of these rural communities.

Market

Specialty rices, including aromatics (Basmati, Jasmine), colored (Brown) and organic rices (all types including aromatics), continue to gain market share in the U.S. In fact, depending on the type and culture (organic versus conventional), annual market growth ranges from about 7% to 65%. However, substantial amounts of these rices are *not grown* domestically. The majority of the aromatics are imported from Thailand, India and Pakistan. But, U.S. markets continue to increase for these, largely because of increased demands for the *aromatic* varieties and those grown organically, preferred by the expanding population of rice-consuming ethnic groups in particular. There is also a sense of safety and quality surrounding domestically grown rices compared to imports.

Competition

There is moderate competition for this business model. The most obvious is the rice engine that is the state of Arkansas, especially in the Delta region. The state remains the rice capital of the United States, of course, for conventional rices (long and short grains) in particular. But, specialty or aromatic rices (though small in comparison to conventional), have emerged in the Eastern (Delta) part of the state to establish a presence for domestic production. One company, specifically, is a vertically integrated specialty rice company that reportedly grows up to 3,000 (or more) acres of both conventional and organic rices, including some aromatics. A few other

companies within the state have at least a small component of their business model dedicated to specialty rices (brown rice, Jasmine rice, etc.), though these are substantially minor in comparison to their major market conventional emphasis. Very recently (2017-2018) a rice company was placed in the Eastern side of the Arkansas River Valley. It is unclear the exact focus, in the long term, of this company but it is apparently in production at this point. And from looking at their web presence, specialty rices are at least a component of their business model.

In addition to actual business models, there is also competition strictly from a production standpoint. Typically, but not always, the rice culture in Eastern Arkansas has superior yields (not necessarily quality) though this has primarily been borne out in conventional rices. This same trend for aromatics, for example, remains questionable due to the limited varieties and production experience overall. And rice quality can be highly subject to environmental factors (e.g. location) where the areas in and around the ARV may prove superior over time. So while there are competitive factors, the unique isolation of the ARV, growing conditions for quality, branding potential and increasing market demands offer viable and suitable advantages to help offset competitive challenges.

What type of company would be optimal for development of an industry?

While there are many factors for a company or group to establish a business/industry model under this type of business plan, one that already has connections throughout Arkansas in the producing, middle industry and finishing sectors of the grain industry would have an advantage. And a company that already has access (or is willing to gain access) to the producing community, potential site communities and related infrastructure of the ARV would be able to remove a number of formidable early barriers. A working knowledge of the area for capability, needs and potential allows a company more effective navigation through the difficult stages in developing a small business industry such as described herein.

Expectations

Forecast

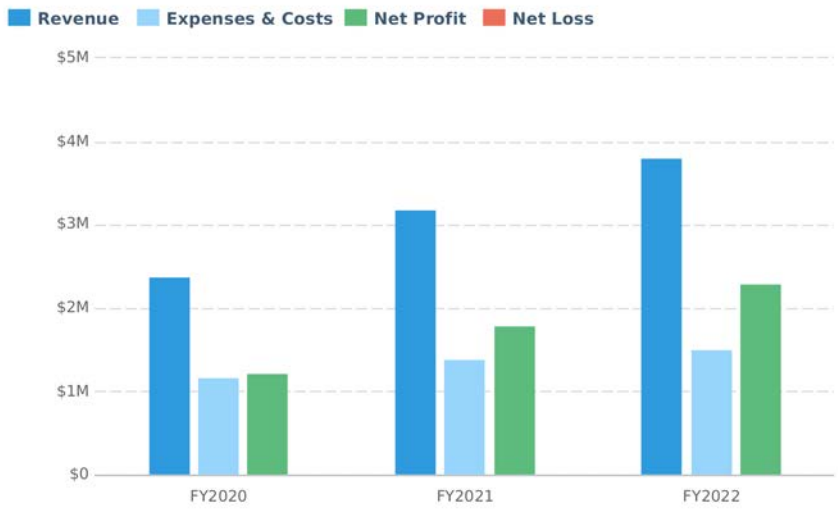
This truncated business and marketing plan will evaluate the overall potential of developing an aromatic rice industry (or company) in the Arkansas River valley through utilization of the emerging markets surrounding specialty rices. The focus will be on aromatic rices such as the Basmati or Jasmine types. The company *potential* will be vetted as a vertically integrated model similar to the edamame vegetable soybean industry developed within the Arkansas River Valley in recent years. As noted, the overall specialty rice markets continue to grow significantly with some types exceeding a 65% increase on an annual basis. However, most of these rices continue to be imported from either India or Pakistan, depending on the aromatic type and characteristics.

This will be an opportunity to bring a unique and branded industry to the ARV. The competitive disadvantage for ARV producers in relation to conventional rice grown in Eastern Arkansas makes a new industry, as described, highly amenable to the farming community in the *ARV if a* premium production model can be established to anchor a developing business.

Based on work, to date, we anticipate that 1-3 producers in the central and Eastern part of the ARV can be contracted to produce Jasmine type aromatic rice on up to 500 acres. These 500

acres would yield an estimated 3.3 million lbs of rough aromatic rice per year with a final product yield of just at 3,000,000 lbs of saleable rice. Based on the ability to market all product, including waste and rejected rice, the total gross revenue, based on price point estimates, could reach more than $3,000,000. This range could form a reasonable economic basis for a company willing to establish in the area to encourage production, processing and a marketing base from which to brand product. The following are financial highlights over a three year period for start-up. More details are included in latter parts of this plan.

Estimated Financial Highlights by Year



Financing Needed

A successful business model with the above financial highlights needs, in estimation, a financial package of $750,000 for start-up and operational monies during the initial year of establishment. This would cover costs associated with at least three full time people at $225,000 (total). In addition, this includes costs for facility leasing (or construction), equipment purchases and set-up for a moderate (but small) rice mill, maintenance, supplies, taxes and other targeted and anticipated expenses. This would also cover purchase of the initial field product (rice from farmers) and capture miscellaneous expenses.

Problem & Solution

It is a Problem Worth Solving

Because of the somewhat geographical isolation of the Arkansas River Valley (ARV), the crop production infrastructure goods and services have continued migrating outside of the area in recent years. Conventional rice, for example, is still grown along the ARV west of Little Rock in multiple counties, however, this acreage has *decreased dramatically* over recent years, with most production located on the *Eastern* side of the valley. And that acreage has steadily declined in comparison to past numbers. As discussed, and unfortunately, the once established crop infrastructure (mills, processors, transportation, crop services, etc.) has slowly been dismantled and/or migrated to eastern Arkansas, where 99% of the rice is now placed. With the exception of small suppliers and related entities, farmers in the ARV routinely get/use services, inputs, transport and grain drops as far away as Stuttgart in Eastern Arkansas or Webbers Falls in Oklahoma (for example), among others. This has caused the often-smaller farms in the ARV to

have more difficulty in sustaining operations and, as a result, rice production continues to decline. Specialty crops, such as edible soybean and aromatic rices can refill these gaps on these productive lands and bring industry and additional economics back to producers here. And the market opportunities for specialty crops, including rices lend viability to these propositions. In doing so, the building out and establishment of durable agriculture industries can provide realistic business opportunities and construct economic opportunities throughout every level of these rural communities.

As alluded to above, specialty rices, including aromatics (Basmati, Jasmine), colored (Brown) and organic rices (all types including aromatics), continue to gain market share in the U.S. In fact, depending on the type and culture (organic versus conventional), market growth ranges from about 7% to 65%. Unfortunately, substantial amounts of these rices are *not grown* domestically but are imported. Primarily from Thailand, India and Pakistan. The *aromatic* rice varieties and those grown organically are the most popular at the moment. And, more and more, these are preferred by the expanding population of rice-consuming ethnic groups (in particular). Augmenting these markets are a heightened health awareness and consumer driven choices for more diverse product lines. All these factors, combined, make the opportunity for establishing a specialty business model encouraging.

About 15% of all rice consumed in the U.S. is imported. And the vast majority of these come from the aforementioned countries involving the *aromatic rices*. So while most aromatics are not domestically produced, they continue to fetch premiums at the consuming level while gaining market share. In fact, imports of these rice-types were in the range of 22.5 million cwt (just over 1,000,000 tons) in the last three years, an increase of five percent compared to the previous year and second all time in comparison. And while domestic rice production is in a slight decline, there is no evidence (at the moment) that the aromatics and related will follow a similar trend but only *increase* from a production (and import) standpoint to meet consumer demand. Clearly, the drivers are placed for sustained markets development concerning these rices. The markets continue to grow, production in the U.S. is starting to increase (especially with new, domestically developed aromatic varieties), and more producers are considering premium driven markets such as those captured by aromatic rices and/or organics.

Our Solution

Suitable aromatic varieties have now been developed for Mid-South production. In particular the Jasmine type aromatic rices branded as Jazzman and Jazzman II being specifically advantageous. We believe these, and other specialty rices, can be successfully grown on the rice productive cropland in the ARV. In fact, early indications are these rices may have a higher quality and compatible yields in comparison to these types being grown in other areas. And an early transition to the rices by selected producers will lay the foundation for development of the ARV as a branding and marketing conduit for these rices. This will, in turn, provide the framework for development of a vertically integrated industry/business model providing high value to the area in general and the farming communities.

In low infrastructure areas like the ARV, farmers are adept in pivoting and transitioning in their operations. In fact, they are, in general, very experienced and innovative with the flexibility to

vary their operations to capture emerging markets and optimize finances. In many cases already, a number of these small to mid-size operations diversify by growing many different types of row crops (soybeans, edamame, corn, wheat, rice), hay crops (various) and livestock (poultry, cattle). One particular producer that models the above has production acres split between edamame, Non-GMO conventional soybeans, GMO commodity soybeans, rice, corn, wheat, seed soybeans and hay. And this producer operation also has poultry and cattle. It's a dynamic operation and producers like this involve themselves under these practices to compensate for the lack of infrastructure that is often present around the larger farming communities (as discussed). And this variance and flexibility helps them to remain economically sustainable for the present and builds for the future (generational).

In summary, there is a problem of competitiveness in the ARV compared to the heavier crop producing areas of the state (e.g. the Delta region). To help soften this discrepancy, specialty rices can be plugged in and grown at a premium here with an opportunity to become a branded and marketing powerhouse for these types of rices. The growers here, because of the high level of necessary diversity in crop production, are flexible and willing to engage in this premium based industry to capture market opportunities. A new industry can be built with a base of reliable growers for consistent and high-quality aromatic rice products.

Target Market

Conventional (non-aromatic) Rice (*Oryza sativa*) remains the staple grain/food crop for more than half of the world's population. While only producing 2% of the world's rice, the U.S. accounts for about 10% of the international rice trade, a testament to the advanced agronomics for rice here. Roughly one-half of the 10 million tonnes of domestic rice are utilized in the U.S. with the remaining exported to a number of countries, with Mexico being the most impactful. Though other countries in Central America, Northeast Asia, the Caribbean, and the Middle East are certainly significant as well.

The Asian countries including Thailand, India, Vietnam, Pakistan and China actually dominate (more than 80%) the world rice trade market. In the U.S., the primary rice production states (or areas) are Arkansas, Mississippi, Missouri, Louisiana, Texas (the 'five' state Mid South area) and California with over 3 million acres of annual production at a farm gate value of around 2.5 billion dollars. Of these, Arkansas remains the rice 'capital' of the U.S. with close to 1.5 million acres of conventional rice producing more than 250,000,000 bushels.

The aromatic and organic rices in the U.S. constitute about 3% of overall production but are considered the fastest growing market sectors. These rices include Jasmine rice, Basmati type rice, Della, Delrose, and Delmont rice, Aromatic red rice, Black japonica rice, Arborio rice and Sweet rice. In addition to these, organic rices, which are also niche in terms of market, have become highly sought at many levels of consumption. Organic rices are based strictly on production methods regardless of the varieties. For example, standard, white, long grain rice can be grown organically, under a program administered through the USDA Organic program to be designated as certified 'organic'. Based on organic production, either aromatics or conventional (non-aromatics) may be labeled and sold into the organic markets if grown under certified conditions.

In terms of production, most of the aromatic rice consumed in the U.S. is imported while almost all organic rice is produced domestically. Typically, the aromatics will fetch up to a 25% premium over conventionally grown and standard consumable rice varieties while organic rices will bring a higher premium depending on the variety that is grown organically (for example, organic aromatics will bring a higher premium than organic conventional varieties). This may be twice (or even three) the price for standard, non-organically grown rice.

The U.S. market for aromatics and organic rices is near $300,000,000 dollars in the U.S. with some estimates for growth far outpacing (64% to 7%) conventional rice production and demand. The organic rices (of all types) appear to be growing faster than conventionally grown aromatic rices whether those aromatics are grown domestically or imported. Around 600,000 tons of various types of specialty rices (mostly aromatics) are imported annually into the U.S, with most coming from Thailand (Jasmine rice, including organic Jasmine), India (Basmati rice) and Pakistan (Basmati rice), though Vietnam is becoming a significant player as well. Jasmine rice is, by far, the most significant aromatic import followed by Basmati types. As discussed, most organic rice production occurs domestically though imports are viable as noted.

Domestic consumption of rices, led by organic and aromatics, has *quadrupled* in the last 25 years due to the changing dietary habits of Americans and the establishment of ethnically diverse communities where specialty rices, in particular, are a centerpiece of the daily diet.

The current markets for these rices are increasing at a steady and strong rate. The 'world' economy with shifting of ethnic groups and establishment of applicable communities internationally make the preference for these types of rices substantial and bodes well for continued opportunities in these markets.

While rice trading (exporting) remains low due to the consumption of rice where it is grown, the overall trend is increasing dramatically. Worldwide, between 7-10% of rice is exported/traded. Of this amount, up to 18% is considered aromatics. These rices are also being heavily imported into China (for example) and the U.S. where prices may reach around $1100/ton, which is roughly 2X the price of standard long grain rice (for example). As discussed, certified organic rices will fetch a much higher premium in comparison to these prices. As an example, Basmatic rice trading (primarily from India) has grown to more than 2.5 million tons (on a milled basis). Clearly, the demand is growing for aromatics throughout the world but especially in the more developed nations where diet requirements and taste preferences are driving markets.

Competition

Current Alternatives

There are many small and specialized rice companies in the Mid South and California that produce, mill and market rices. And while the conventional rices dominate these efforts, a number of smaller entities are beginning to seize the market opportunities for the specialty rices such as those described in this project.

Domestically, Riceland Foods (Stuttgart, Arkansas) is the world's largest producer and miller of conventional rices. Other major players are Riviana Foods and American Rice Company. However, the increasing demand for specialty rices has spurred a moderate number of smaller in recent years that focus on specialty products. These are concentrated mostly in the Mid South and California as outlined here.

Companies involved in the production, sale and/or marketing of specialty rices in the U.S.

Company/State

1. ADM Rice/New York
2. American Commodity Company/California
3. Associated Rice Marketing Coop/California
4. Bunge Milling/California
5. California Family Foods/California
6. Cormier Rice Milling/Arkansas
7. Doguet's Rice Milling/Texas
8. Falcon Rice Mill/Louisiana
9. Far West Rice/California
10. Farmers Rice Milling/California
11. G and H Seed/Louisiana
12. Koda Farms/California
13. Louisiana Rice Mill/Louisiana
14. **Lundberg Family Farms/California**
15. National Rice Company/California
16. PGP International/California
17. Producers Rice Mill/Arkansas
18. **Rice Select/Texas**
19. Riceland Foods/Arkansas
20. Riviana Foods/Texas
21. Sem-Chi Rice Products/Florida
22. **Specialty Rice/Arkansas**
23. Sub Commence/New York
24. Sun Foods/California
25. SunWest Foods/California
26. Tamaki Rice/California
27. The Sun Valley Rice Company/California
28. TRC Trading Corp/California

The highlighted companies including Lundberg, Specialty Rices and Rice Select are considered, from our understanding, the largest players in the aromatic markets in the U.S. One of these companies, for example, is a vertically integrated and completely specialized aromatic/specialty rice business model producing both conventionally grown aromatics and organically grown aromatics on up to 3,000 acres resulting in some 300,000 bushels (or more) per year. Most other companies noted deal with 'generic' or imported varieties that make up only a small portion of the overall business portfolio (e.g. Riceland Foods in Arkansas). Or perhaps deal in seed production

only. Others, while viable, are very small and even more niche in scope. California is probably, overall, the largest and most diverse for domestic *aromatic* production though companies in the Mid-South (especially in Texas, Arkansas and Louisiana) are beginning to shake this up and becoming significant players in this market sector.

For example, Ebro (which owns Riviana Foods and is the world's largest rice trading company) recently purchased RiceTec AG and RiceTec Inc. to enter the specialty rice market concentrating on aromatics and organic rices (the RiceSelect Brand).

From all data, it appears that these current markets, while still considered niche, are increasing at a steady and strong rate. This would be especially true for organic aromatics which continue in short supply. And while imports of aromatics will remain the predominant supply, the recent advancement of aromatic rice breeding in the U.S. have yielded stronger and more competitive varieties such as Jazzman and Jazzman II. And, in 2018, there appears to be an impending release for a 'Clearfield' aromatic variety which could be highly impactful from a production standpoint. This variety, along with the weed control packages, is apparently very competitive from a yield standpoint, with only a reported 0-5% yield drag. This will make it very desirable from a production standpoint as an alternative to even conventional varieties.

The markets are established, growing and the continual shifting of ethnic groups coupled with changing tastes and a heightened awareness of healthy diet choices make the preference for these types of rices substantial and bodes well for continued opportunities in these markets.

Advantages for a targeted company

A company (or group/organization) that works in specialized production and marketing would have an advantage using this model to develop a business. And, as previously discussed, one that is familiar with the characteristics of the farming and business communities of the ARV, while not mandatory, would prove invaluable in developing a production model in the field and extracting useable and viable metrics for development of a facility and overall marketing models. In this project, 1-4 producers within the ARV have already been identified as a 'starter' group of growers that we believe will be willing to step-out and engage in a business model with modest risks and built-in safety nets.

Overall, the opportunity for company development is excellent and the foundation strong, if financing and marketing is successful, to have a very impactful business model development that can be sustained and grown.

Execution

Marketing & Sales

Marketing Plan

A comprehensive and efficient marketing plan, we believe, should be developed through a capable and focused marketing leader for all aspects. This could be fluid but multi-faceted including the following:

1. Development of contracts with institutional entities such as hospitals, schools, nursing homes and related. This is often less overall money but stable. This would be a priority.

2. Development of relationships and contracts with state and regional restaurants and similar entities. There is a significant emphasis on 'knowing' where your food comes from and the 'field to fork' movement is strong and growing, including through our local institutions such as public schools. But the restaurant industry is engaging in an impactful way as well. In cursory research on potential markets in these areas, we found the following:

A. In the Little Rock metropolitan area, for example, there are some 7,500 restaurants. We believe that more than 200 (at least) would have high and applicable interest in locally grown specialty rices. Some of these restaurant types include Asian, Mexican, Cajun, Middle Eastern, Mediterranean, Thai, Indian, Vegetarian, and related.

B. In the Northwest Arkansas area, while the number of restaurants is less, the diversity is on a higher level. Of the roughly 1,000 restaurants in the area, about 20% (over 200) would have some level of applicability for this type of fresh product.

If those 400 restaurants mentioned above, on average, served just 2.5 lbs per day of fresh and locally grown aromatic rice, that would amount to more than 350,000 lbs per year just in these establishments. Or about 20-25% of the marketing component/plan as outlined. And this doesn't account for other metropolitan areas such as Fort Smith, Memphis or the Dallas/Fort Worth metroplexes which are in very close proximity. This will be an important part of the sales and marketing plan.

3. In Northwest Arkansas, there is a new, state of the art culinary school. We have already met and discussed potential projects. This project would fit nicely. And, this is what is considered a consumable school where the public is invited to attend open houses, demonstrations and special events. In fact, there is even retail space surrounding the school where businesses can open up stores, shops and the like with their food innovations. Northwest Arkansas is one of the fastest growing areas in the nation, in both population and diversity. There is an ever-widening scope of tastes in the area and this culinary school is tapping into that trend. Likewise, the school is trying to integrate into the business climate from farm to table and is amenable to innovative strategies woven into this idea. Finally, the school was founded (or directed) by a leading food consultant in the New York City metropolitan area. This person is well connected to the some 28,000 restaurant industry in the NYC area and could be a valuable resource to assist in marketing efforts for the industry overall.

4. Develop relationships and contractual arrangements with specialty food stores throughout Arkansas and the region. In some areas (e.g. Fayetteville), cooperative food stores that deal primarily with specialty products are growing rapidly. These are sometimes smaller, but with a much higher built-in product value. We believe this could be a small, but important market sector that can not only provide consistent sales but high level of exposures to applicable clientele to grow the product in scope.

5. Develop relationships and contractual arrangements with local or regional food stores such as Harp's Foods in Springdale, Arkansas. Grocery chains, such as these, have fully embraced these

locally grown and fresh product lines and can provide another income stream, especially in early business development. Plus, the logistical parameters are relatively simple and easy compared to larger grocers (e.g. Wal-Mart) with significant distribution centers. This can also be promoted through kiosk based marketing within the stores.

6. Development of an ecommerce model to engage the on-line community. This will be primarily through a web-based site (or sites) with applicable capability of payment and related. In recent years, on-line retailers (for example) have become the model for sales and marketing for many food products, especially in the specialty areas. Clearly, the American public has embraced the ease, convenience and pricing related to shopping online. This is also cost effective absent the brick and mortar expenses associated with on-site facilities. Overall, this will be a primary market channel to sell the rice products, both domestically and eventually, globally.

7. Work towards development of contractual arrangements with main-stream and consumer driven entities such as Wal-Mart, Sam's, Costco, Kroger, Whole Foods and other nationally relevant store chains. This will be an ongoing process as success is realized in the initial marketing plan and depend, to a large degree, on scale-up capability and the ability to provide consistently larger amounts of product. This will be, at least initially, a minor market channel as foundational sales models will focus on a non-compete market model. However, as the company grows, these outlets will become more of a possibility.

Sales Plan

Operations

Locations & Facilities

The location, we propose, could be flexible and, depending on the business model selected, would be based on infrastructure and economic advantages offered by applicable and suitable communities throughout the area. There are many factors involved but some of the most important are logistics, economic incentives, work force capabilities, and financing.

Technology

This section is minimal with the exception of the following. There should be an on-line marketing and sales component via ecommerce/website development. This would be primarily built around bulk packaging sales of 10-50 lb product units. In addition to web-based sales, an advertising component would certainly be integrated into the website. Applicable accounting software, of course, would be standard (such as QuickBooks) for tracking, invoicing, estimates and related. Other standard amenities would be credit and debit card capabilities through both web and phone-based systems, including mobile phone payment systems. Finally, hiring of a marketing firm, especially to measure on-line metrics, for marketing and advertising should be considered. There are numerous levels that could be suitable to a variety of needs and budgets.

Equipment & Tools

The equipment listed below is for a primary set-up and doesn't include miscellaneous and ongoing expenses such as bags, tags, office supplies, labels and related. This would be for the

processing set-up, turnkey equipment required to mill and package the product. Optional equipment is designated as such. This facility (and equipment) size would service between 250-500 acres of aromatic rice in what could be considered a 'seeding' amount for industry development. If successful, additional mills and lines can be added to cover increased acreage as necessitated. Also, to note, this system could be amenable to a single farm operation or engaged in a small business/company development. Either of these models would provide the necessary framework and centerpiece for industry development in what might be termed a 'creeping' model designed to slowly build out to ensure economic safety nets while proving concept and moving the business model in the proper direction.

A turn-key processing operation, as described, would require:

1. A minimum of 2,000 square foot steel building with applicable flooring, walls, electrical and plumbing for a rice/food grade facility.
2. A minimum of a 2,000 bushel day bin to service the processing. This would be incumbent on participating farmers holding/storing rice and delivering upon the buyer's call.
3. A paddy feed elevator to feed the cleaner.
4. An elevator to feed the mill.
5. A ZX-6 compact rice milling system with accessories. https://zaccariausa.com/wp-content/uploads/2015/01/ZX-6-Compact-Mill-SystemSFWBatch.pdf
6. An elevator to feed the indented cylinder.
7. An indented cylinder to separate whole kernels from 3/4 and less.
8. An elevator to feed bagging bin.
9. A bagging bin (probably a design from local fabrication).
10. A net weigher that will weigh out 1-5 lb bags (possibly up to 25 lbs).
11. A table top heat sealer with conveyor for closing bags.
12. A motor control center that starts and stops all machines.
13. A small dust filter.
14. Stainless steel hoppers (optional).
15. Small packaging line (optional).
16. A color sorter (optional).

Milestones & Metrics

The following are strictly estimates of what a start-up business model may pursue in anticipation of launching as described in this project. They are based on work, to date, experience and seasonal requirements for rice production. As well as timing for equipment purchase, set-up and initial operational endeavors. This could, logically, be moved to a year from the dates listed, two years, or beyond depending on progression of build out.

Milestones Table

Milestone	Due Date	Who's Responsible	Details
Secure 50% of desired funding	April 15, 2018	To be determined	The ability to secure at least 50% of the suggested funding will provide the foundation to move forward.
Develop at least three market outlets	June 15, 2018	To be determined	This is to secure at least three outlets, regardless of size to initiate sales and marketing.
Develop contractual arrangements with farmers in the ARV	April 15, 2018	To be determined	Develop an option contract for production of Jazzman I or II rice in the ARV with from 1-3 producers strategically located and who are already rice growers.
Purchase and installation of rice mill	August 15, 2018	To be determined	Secure location and mill with applicable facility will be necessary by Fall, 2018. Operations to begin by end of Winter, 2018 (~120 days).

Key Metrics

In development of this business model, the field and processing components can be achieved with a high level of confidence. The benchmark, metric components are establishment of consistent sales partners or clientele with a minimum margin and efficient Cost of Goods Sold (COGS) model. If, through this model, we can achieve a minimum of about 60% sales of goods produced (and inventoried) product consistently, then expenses can be met and, we believe, growth triggered.

Company

Overview

The proposed business structure would most likely be an S-corporation for tax purposes allowing profits to flow back to ownership. Overtime, this may be converted to an LLC or even a C-corporation based on growth and size of the company. The proposed name of the company would be dependent on who takes up the model for establishment. The anticipated ownership would be dependent current ownership structure and/or on level of funding and requirements necessary to achieve funding for an investment based company. Based on our experience and knowledge, ownership sharing by producers would also be a reasonable option for a number of reasons.

Prospective Team

Management Team

The management team for a company of this size would potentially consist of a day to day operations manager and potential Chief Operational Officer or Chief Executive Officer to oversee complete operations of the company and guide a young start-up through the critical initial year of existence. There could also be, most likely, a sales and marketing director and a

field manager, though initially, this might be optional depending on the number of production acres secured.

Advisors

It is recommended that a strategic board of advisors be maintained. In particular if a new company is not familiar with the area. And this could be very helpful for the initial stages of company development as well. For example, a reasonable board of advisors could have employee representation, producer representation and a select group from an investor pool. Or local business leaders. Recommendations, for efficiency and to be effective, are that no more than five people serve on a board such as this with, for example, a three year term and limited to 'two' consecutive terms. The majority owners may serve as an additional two members of the advisory board and new members will be by majority vote of the seven total members. The above is for recommendations only based on company size, scope and mission of the model placed here. Certainly, there are a wide variety of models related to ownership structure and board dynamics that can assist in making the business successful. These are for illustrative purposes only.

Financial Plan

Forecast

Key Assumptions

Based on experience in rice culture, market research, discussions with University personnel, industry people and the like, we believe there is a solid case for development of a successful business model as described. The aromatic varieties developed for the Mid-South are now, at the point where taste, texture and related are competitive with imported aromatic specialty rices.

These varieties can (and have been) be grown in Arkansas, as is well-proven, and in the Arkansas River Valley where, as discussed, conventional rices have been grown for many years. As discussed, an added advantage is the more isolated region of the Arkansas River Valley actually makes specialty crops more advantageous and desirable due to the premium base for the crop, the flexibility of producers and the safety and quality as compared to the heavy ag production in the Delta area. High quality aromatics, and related, can be grown, harvested and dried successfully. Our confidence is high in this regard.

We have had extensive discussions pertaining to cost, set-up, efficiency and related for the necessary equipment and facilities. While the initial cost would be substantial, even a 60% (or close) sales clip would off-set these costs during the first year.

The key to this business model is sales and marketing. We know the aromatic rice can be successfully grown in the ARV, yielding a quality product. We know that the rice can be milled efficiently and at a level that is cost effective. The question mark is sales and marketing.

Key assumptions are that specialty markets will continue to grow, our populations are getting more diverse, consumers are more actively engaged in food choices, and American consumers are trending more to an on-line experience for goods and services. Surveys of e-commerce companies, for example, verify this trend. And it is a strong trend. In addition to those key

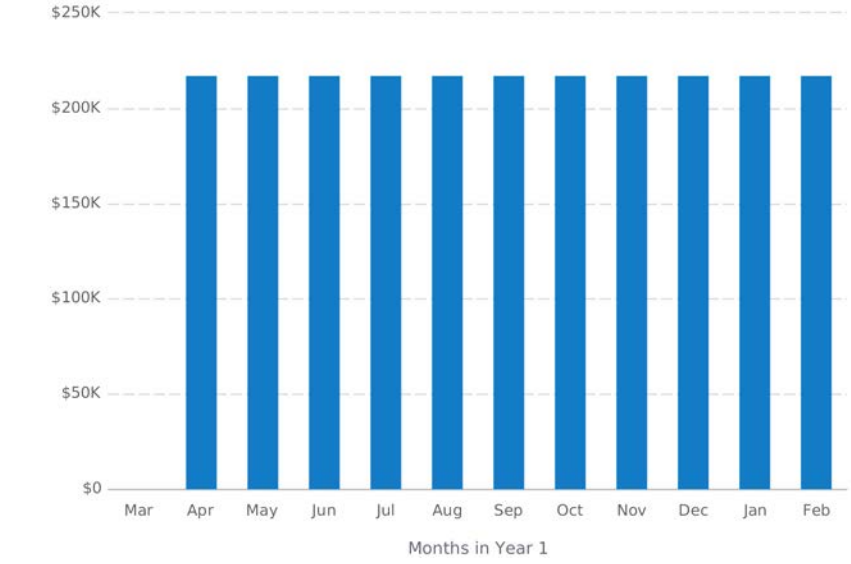
assumptions listed, consumers like the ease, convenience and cost associated with purchasing goods on-line.

A dry, shelf-life friendly product such as aromatic rice fits nicely into this category of sales and marketing. The ability to sell locally (restaurants, hospitals, specialty stores), regionally (chain grocers, retailers) and nationally via on-line efforts reduces the brick and mortar costs associated with more traditional models. We believe these provide a more reasonable launch point for sales and marketing. And that, following this type of model will help contain costs and favor a small, start-up operation.

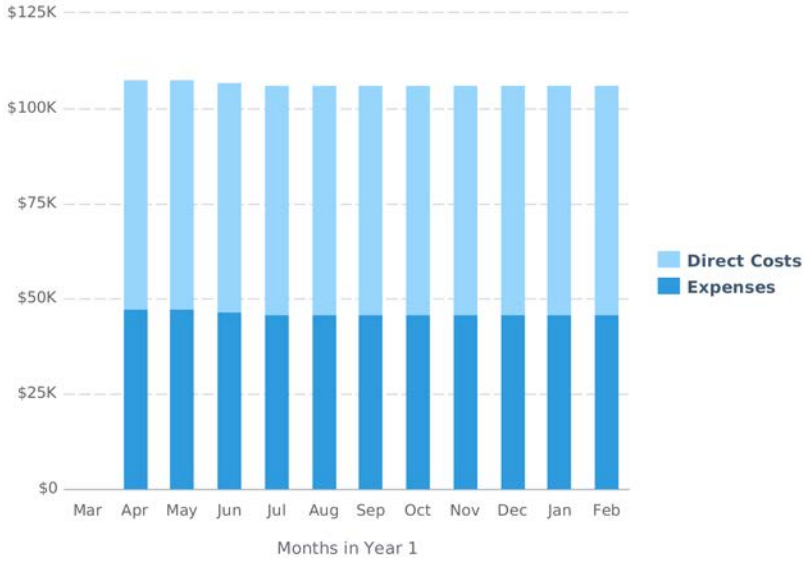
The initial marketing and sales plan should not seek to compete, in our opinion, with current specialty rice companies for space at larger stores. The amount of acreage and subsequent product will be manageable, not overwrought or burdened, and costs contained to efficiently move the company forward with minimal debt and adequate cash flow.

In summary, a marketing niche is sought through on-line sales and marketing, catering to institutions, specialty outlets and restaurants while avoiding head-to-head competition with existing specialty handlers and larger outlets for product. The bulk of sales anticipated will be direct, as well, bringing a higher margin to the company. The following is a pictorial analysis representing anticipated revenue and expenses, by month, once product is secured, finished and can be systematically contracted/sold on a ***consistent*** basis. It is based on the amount of acres and anticipated product as described earlier in the document. Of course, the front and back ends of these periods could vary widely as this is, again, simply based off of what would be considered consistent outlets on a monthly basis. An estimated profit (annually) is also predicted through the initial three years of existence.

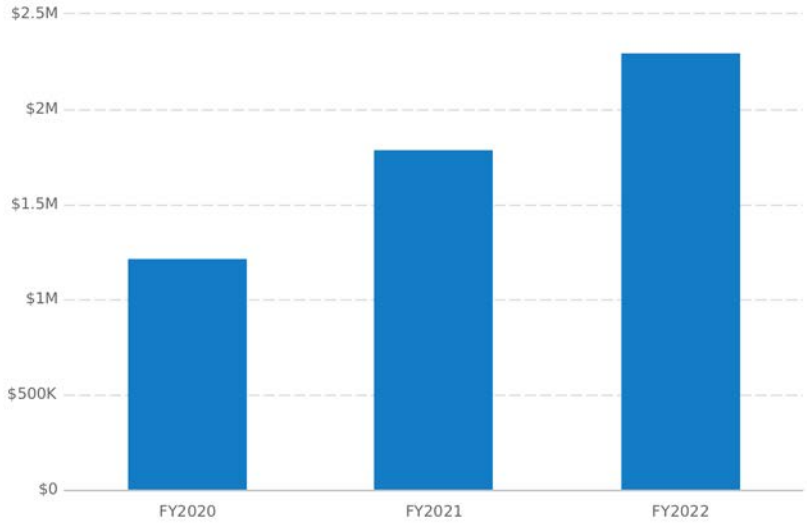
Revenue by Month



Expenses by Month



Net Profit (or Loss) by Year



Financing

Use of Funds

The plan, as outlined, would include an estimated $750,000 for start-up and operations throughout the first year. The monies would be used for personnel, capital costs per equipment and set-up, field product purchase, and expenses related to sales and marketing as follows:

1. Equipment Purchase and Related: $50,000
2. Building, Facilities and Related: $54,000
3. Purchase of Raw Rice Product: $340,500
4. Six Months of Personnel: $125,840
5. Six Months of Operational Expenses: $151,435
6. Miscellaneous and Set-up: $28,225

Total: $750,000

Sources of Funds

The sources could be multi-faceted as follows:

1) Local financing through lending institutions including business loans and credit lines
2) Equipment financing through lending institutions or equipment suppliers
3) Angel investors who wish to invest a minimum of $10,000 each (for example)
4) Single or minimal investors who wish to provide a bulk (or all) of the financing

As discussed above, a minimum of $750,000 is estimated for a viable start through equipment, set-up, raw product purchase, initial sales and business development before sustainable goals can be met. A six month period appears to be a reasonable grace period to establish sales on pace to get to a minimum requirement of 60% of product and/or inventory on-hand.

Statements

The following are estimated Profit and Loss, Balance Sheet and Cash Flow analyses for the (rough) amount of product produced and finished. There are also generated, detailed monthly analyses in what is considered ancillary information (appendices).

Projected Profit & Loss

	FY2020	FY2021	FY2022
Revenue	**$2,390,287**	**$3,180,509**	**$3,816,611**
Direct Costs	**$664,623**	**$725,044**	**$725,044**
Gross Margin	$1,725,664	$2,455,465	$3,091,567
Gross Margin %	**72%**	**77%**	**81%**
Operating Expenses			
Salary	$133,463	$145,596	$145,596
Employee Related Expenses	$13,346	$14,560	$14,560
Storage and Insurance	$22,000	$24,000	$24,000
Utilities and Maintenance	$5,500	$6,000	$6,000
Office Supplies and Related	$2,750	$3,000	$3,000
Marketing and Advertising	$11,000	$12,000	$12,000
Attorney and Accounting	$6,600	$1,200	$1,200
Total Operating Expenses	**$194,659**	**$206,356**	**$206,356**
Operating Income	**$1,531,005**	**$2,249,109**	**$2,885,212**
Interest Incurred	$0	$581	$1,309
Depreciation and Amortization	$9,023	$9,842	$9,843
Income Taxes	$304,396	$447,738	$574,812
Total Expenses	**$1,172,701**	**$1,389,561**	**$1,517,363**
Net Profit	**$1,217,586**	**$1,790,948**	**$2,299,248**
Net Profit / Sales	**51%**	**56%**	**60%**

Projected Balance Sheet

	FY2020	FY2021	FY2022
Cash	$996,237	$2,679,131	$4,846,805
Accounts Receivable	$110,279	$134,509	$161,411
Total Current Assets	**$1,106,516**	**$2,813,640**	**$5,008,216**
Long-Term Assets	$104,000	$104,000	$104,000
Accumulated Depreciation	($9,023)	($18,865)	($28,708)
Total Long-Term Assets	**$94,977**	**$85,135**	**$75,292**
Total Assets	**$1,201,493**	**$2,898,775**	**$5,083,507**
Accounts Payable	$28,372	$28,322	$28,322
Income Taxes Payable	$83,257	$111,911	$143,702
Sales Taxes Payable	$9,778	$11,927	$14,312
Short-Term Debt	$0	$25,581	$26,890
Total Current Liabilities	**$121,407**	**$177,741**	**$213,226**
Total Liabilities	**$121,407**	**$177,741**	**$213,226**
Retained Earnings	($137,500)	$930,086	$2,571,034
Earnings	$1,217,586	$1,790,948	$2,299,248
Total Owner's Equity	**$1,080,086**	**$2,721,034**	**$4,870,282**
Total Liabilities & Equity	**$1,201,493**	**$2,898,775**	**$5,083,507**

Projected Cash Flow Statement

	FY2020	FY2021	FY2022
Net Cash Flow from Operations			
Net Profit	$1,217,586	$1,790,948	$2,299,248
Depreciation and Amortization	$9,023	$9,843	$9,843
Change in Accounts Receivable	($110,279)	($24,230)	($26,902)
Change in Accounts Payable	$28,372	($50)	$0
Change in Income Tax Payable	$83,257	$28,654	$31,791
Change in Sales Tax Payable	$9,778	$2,149	$2,385
Net Cash Flow from Operations	**$1,237,737**	**$1,807,313**	**$2,316,365**
Investing & Financing			
Assets Purchased or Sold	($104,000)		
Change in Short-Term Debt	$0	$25,581	$1,309
Dividends & Distributions	($137,500)	($150,000)	($150,000)
Net Cash Flow from Investing & Financing	**($241,500)**	**($124,419)**	**($148,691)**
Cash at Beginning of Period	$0	$996,237	$2,679,131
Net Change in Cash	$996,237	$1,682,894	$2,167,674
Cash at End of Period	**$996,237**	**$2,679,131**	**$4,846,805**

The above statements and related assume a starting operation of about 300 acres of aromatic rice in the ARV. All categories within the business plan are populated but not all are complete. These tasks (2,3,4) are essentially complete (100%) save for a few last minute revisions. It should be noted that an ARV operation, this year, will be growing a highly desirable (if weather allows) specialty aromatic rice. From this test/sample operation acreage, there will be approximately 1,000 (or more) bushels of marketable specialty rice available.

Processing, Storage, Logistics and Inputs.

The general summary for this second, overall task, as noted throughout, is that the opportunities outlined in the marketing research can be coupled with an infrastructure already present in Arkansas to facilitate this industry. However, there are *limited infrastructure capabilities available in the Arkansas River Valley* itself. For example, there are currently no facilities in the ARV that are accessible to rice delivery (to our knowledge). And, overall, there is significantly less storage capacity for grains (in general) in the ARV compared to the Delta region. For dropping and transport of grains, for example, such as corn and soybeans, there are only two (possibly three) locations in the ARV. Aromatic rices, in particular, would need attachment to

facilities outside of the ARV but within a reasonable distance to provide at least a beginning infrastructure for servicing of an industry. There are possibilities in the Delta and near Delta regions of the state with capabilities. The other option, of course, is the establishment of local infrastructure (storage, process, logistics and related) that is discussed here but also outlined in some detail within the attached business plan above.

The Arkansas River Valley farmers already diversify operations to facilitate economic optimization and provide a measure of competitiveness with Eastern Arkansas farmers. Many will have a wide range of row crops including soybeans, edamame, corn, wheat, and rice as well as poultry and cattle. Growers weave this diversity into their operations to compensate for the lack of infrastructure mentioned above and to generate business opportunities annually to foster economically sustainable operations that can (if not already) become generational.

In our experience, many of the ARV farmers (in regard to the disadvantages outlined) are opportunistic and willing to engage in additional farm components to bring more income and stability to their operations. As with the recently developed vegetable soybean (edamame) industry in the ARV, aromatic rice holds great promise for acceptance and growth in the valley. At one point in the not-to-distance past, for example, rice was grown throughout the ARV and even into Eastern Oklahoma. Due to this (at least in part), many of the established farmers are well versed in rice culture and a high quality rice crop remains a suitable (if not desired) alternate crop for these producers. Most of the ARV rice is currently grown in the Eastern half of the ARV though spot fields are also found West of Russellville (for example).

The migration of markets and infrastructure has undoubtedly limited production in recent years. The missing pieces are infrastructure (as described) and access to these emerging markets, both from an informational/educational standpoint and logistical standpoint. The markets for aromatics, it appears, are present and growing with an increasing segment of the population (and resulting markets) relying on importation. But this, as with the edamame and subsequent importation of that particular crop, also presents a substantial opportunity to develop a broader domestic market for aromatics. As discussed (and addressed in this report), the connection to these markets and the infrastructure issues (storage, drop sites, logistics) remain the primary obstacles for development of an aromatic industry in the ARV.

Key to any proposed business model or successful industry development is the availability of suitable access (deposit) sites, storage facilities and processing locations. Producers, because of time and transportation costs, view logistics as one of the most important considerations in growing out a crop. Especially a specialty crop such as aromatics. For example, a grower will likely take the time, effort and trouble to produce a crop (even for less premium) if that crop can be delivered locally in a simple and straightforward system. On the other hand, difficult schedules, long transportation times and complicated (overall) logistics are not conducive for farmers to join an effort to build an industry such as the one outlined here. So depending on the location and capability of servicing facilities, the producer acceptance of these aromatics may vary widely. In evidence, the relatively new edamame soybean industry (and subsequent processing facility) previously referenced is located conveniently to the ARV in Crawford County, Arkansas. The close proximity to the plant itself makes the production acres throughout

the ARV-but especially in the Western half of the valley-much more desirable as this lessens the pressure on harvest timing, hauling expenses and process scheduling.

Therefore the ***placement*** of, or the ***identification*** of storage and processing for a potential industry in this area is important in moving forward. The following analysis of suitable or potentially suitable facilities for a wide range of grains (including rices) includes those that are current or that have the capabilities of servicing a wide area up and down the 11 county Arkansas River Valley (and possibly beyond). Concerning the placement of a local facility and attached infrastructure, readers are referred back to the attached business plan where cost and analyses are presented. The following deals primarily with aspects related to current facilities that could serve an industry in the ARV even though these are located outside of the immediate area.

The handling, logistics and purchasing processes for grains, including rices, are large and complex. In fact, within each of these factors (handling, logistics, etc.), the complexities are most certainly wide ranging. For example, many large farm operations have on-farm storage capabilities for raw grains. Most producers, however, store their grain in either state or federally licensed elevators/warehouses (private) until sale or destinations are finalized, if storage is required. Where clean rice is necessary for sales, the raw product may be transported to seed handling/conditioning facilities where it is sorted, cleaned and transported to a buyer or shipping port *or* stored for later processing and shipping. Finally, processing plants may be a full service cleaning, sorting and milling facility where the value added products (various levels of rice grain products) are produced for differing levels of branding and/or distribution. Obviously, most producers will use this model and simply take their rice to the most strategic processing plant where it is sold across the scales as compared to storing and holding.

Further to the previous discussion about infrastructure migration to Eastern Arkansas, the current facilities present in the state (as well as the overall capacity) are primarily found East and Northeast of Little Rock in the Delta area. The ARV is sorely lacking these types of facilities. In the following sections, statistics, primary companies and locations of storage and processing facilities in Arkansas will be discussed as they apply to a potential industry development in the Arkansas River Valley. And that are applicable to handling of aromatic rices.

Storage Facilities. While producers across the state tend to have a fairly wide range of potential options in selling their grain (including rice), there is a more limited number of rice buyers and processors compared to other industries overall. It appears to be a more specialized industry, especially in regard to valued added rice produces such as those associated with the specialty/aromatic rices. The rice industry, in total, is dominated by Riceland Foods, a rice cooperative with significant storage and processing facilities scattered throughout Eastern Arkansas. Others (Producers Rice Mill; Poinsett Rice and Grain), however, are significantly engaged in purchasing rice (mid level buyers) and, in some cases, processing rice into consumable products or seed rice.

Few of the rice purchasing, storage and/or processing companies specialize in aromatic rices on any significant level. But instead concentrate on rough rice, seed rice and the more processed long and medium grain rices used widely for most consumable products.

In fact, there is only one, to our knowledge, with a high level of menu driven, very specific aromatic rice portfolio (Specialty Rices in Brinkley, AR). So the initial challenges to development of a reasonable industry model for the ARV are to identify current and suitable facilities where rice can be transported, stored and sold. Buying entities (as well as producers), whether fully integrated or not, need drop points, storage and shipping options, of course. But storage, in particular, is especially important as producers often wait for price increases to provide the most incentivized opportunities. And aromatics, similar to Non GMO or specialty soybeans, can often be leveraged over time to capture the most economic returns. Thus storage becomes *highly critical* as a centerpiece for industry development. The ability to store on-farm, in open (public storage) warehouses or strategic private facilities creates a flexible and often opportunistic way to maximize returns based on timing and market conditions.

In Arkansas there are substantial on-farm and off-farm storage capabilities for grains in general (soybeans, corn, rice, wheat, grain sorghum, etc.). An interesting trend is that during the last 10 years the amount of on-farm storage has *increased* dramatically, up more than 50% (Table 1) while the off-farm capacity has increased only 23% (Table 1). Though the number of off-farm facilities has actually *decreased* by some 20% during that same period. The significant increase in on-farm capacity has allowed much flexibility, as discussed, for producers as the dynamics of sales and marketing has changed in complexity through the years. While there is certainly on-farm storage in the Arkansas River Valley, the majority of the increases has occurred in the Eastern half of the state reflecting the majority presence of all storage facilities and capacities (see below sections for discussion).

Table 1. On-Farm and Off-Farm Grain Storage Capacity in Arkansas by Year

Year	Off Farm Capacity # Facilities	Off Farm Capacity (bu)	On Farm Capacity (bu)
2003	185	228,000,000	135,000,000
2004	180	228,000,000	140,000,000
2005	175	228,000,000	150,000,000
2006	170	233,000,000	170,000,000
2007	170	249,000,000	180,000,000
2008	160	255,000,000	185,000,000
2009	155	261,000,000	190,000,000
2010	155	266,000,000	190,000,000
2011	150	269,000,000	195,000,000
2012	150	276,000,000	200,000,000
2013	150	281,000,000	205,000,000

All open/public warehouses for storing grain in Arkansas must be licensed by either the state of Arkansas (regulated by the Arkansas State Plant Board) or the federal government. Often, facilities will be licensed by both. Private storage (e.g. on-farm storage) is part of the overall

capacity as well but is not necessarily licensed if not considered a public storage facility available to producers (for example).

In Arkansas, there are some 110 federally licensed grain warehouses and roughly 40 state licensed storage facilities. These are earmarked for all types of grains including soybeans, ***rice***, sorghum, wheat, corn and so forth. Depending on the section of the state, the predominant grains may be rice or soybeans. And, in fact, rice can dominant much of the available (premium and desirable) storage due to earlier harvest and often excellent yields. For specialty rices, more variety purity (protection) is needed so premium and protected storage space is highly desirous for a developing industry, especially as the industry grows and expands.

In the Arkansas River Valley, there are no apparent suitable drop sites for rice, either commodity or specialty. Even though there are up to three delivery points for grains such as corn and soybeans. These facilities might be able to convert to rice storage and transportation extraction points if the demand was present. But, even if that were to be the case, it appears that the overall capacity for storing grains of ***any type*** in the ARV is roughly 500,000 bushels or about 15,000 acres worth of grain storage (all grains).

However, in the Eastern part of Arkansas, some ***145 storage facilities*** are licensed for 280,000,000 bushels with roughly 133,000,000 of capacity noted, translating to some 3,000,000 acres worth of major grain storage. These, of course, are segregated based on area (to some degree) due to dominance of rice, corn or soybeans (primarily).

Obviously, the distance of transportation has an enormous impact for industry initiation, growth and overall long term success. And growers in the ARV are already at a disadvantage logistically. But a start-up industry may be able (and capable) of supporting efforts if the premiums gained offset the distances of transport. Based on those assumptions, there are a number of suitable facilities outside of the ARV that could serve as infrastructure center points for a developing aromatic rice industry. In other work and projects, we have determined that specialty grain storage was applicable if separated into doable distances from the central ARV, for example. In the case of discussion here, the following parameters seem reasonable for determining useable facilities for an initial (and near term) aromatic rice industry.

To note, the most likely and useable facilities were separated into local (50 mile radius); mid-range (between 50 and 100 mile in radius) and long distance (between 100 and 150 miles in radius). Facilities beyond 150 miles were not considered as practical for transporting from the ARV unless special circumstances warrant the transport. As discussed, there are no facilities currently in the ARV for receiving rice. In contrast, there are at least six substantial facilities within a roughly 100 mile radius (for example to Little Rock) with capacities of 14,000,000 bushels or about 300,000 acres worth. And within 150 miles, there are some 36 facilities with close to 115,000,000 bushels of capacity or 2,300,000 acres worth of storage. Although not elaborated upon for the sake of this discussion, there are potential capabilities in near Eastern Oklahoma (Webber Falls), as well, that could potentially be used though, to our knowledge currently, this is for grains other than rice.

In summary, there are around 45 sites that are federally licensed and capable of at least storing aromatic rices. And this represents some 3,000,000 acres worth within 150 miles which is an acceptable (though not convenient) distance for a premium-based aromatic rice industry. Certainly, this is doable and very adequate with considerations for timing, value and segregation requirements.

In addition to the federally licensed facilities, there are 20,000 to 100,000 acres) worth of storage of Arkansas licensed facilities, which is a strategic amount based on the available acreage of high production cropland (100,000 acres or so) in the Arkansas River Valley. Some facilities listed *emphasize* rice (Riceland, Poinsett Rice and Grain, Producers Rice Mill) while others may concentrate on soybean, corn and/or other grains. Most, however, have a mix of various grains and are licensed as such. But there are enough facilities, both public and private, to service an industry such as that outlined in this project.

Figure 1. Approximate distances from the center of the ARV to various storage capacity facilities in Arkansas. 1: ~50 mile radius; 2: ~100 mile radius; 3:~150 mile radius.

In summarizing the capacity and specific facilities for this project, it is clear that substantial space is present in Arkansas. However, the capacity and facilities in the ARV are very limited as is reflected in other infrastructure pieces that have moved to Eastern Arkansas. For an aromatic industry, this may be at least partially overcome if the distances are reasonable (150 miles or less) (Figure 1) compared to the gain in price from premiums. But, obviously, the use and efficiency of these sites will depend on the economic and logistical constraints related to ARV producer operations.

If a strategic and serviceable facility to handle aromatics could be placed inside the ARV, this would present an enormous advantage for industry development. And be significant in forming an economic nucleus of growers in the ARV from which to launch an industry. This possibility would open up additional ways in which to build an industry and is merited for further development. But, currently, and as emphasized, there are accessible infrastructure to provide a starting point for an aromatic industry in the ARV.

Processing Facilities. The processing (cleaning and/or milling) facilities for rice, similar to soybeans, can be complex and capable of a range of services for producers. For example, a full service facility can store, clean and mill the rice into value added produces while other facilities may simply clean the rice into seed quality product or for middle industry and brokerage storage to move the rice into other industry levels for production of value added products. There are a number of operations in Arkansas that can do multiple tasks (Table 2) but only a few, to our knowledge, that do a wide range to finished and milled products (long grain, medium grain, specialty rices and so forth) (Table 2). The largest (e.g. Riceland, Producers), concentrate on the consumables of milled long grain and medium rice while others simply provide field (rough) rice for selling (and shipment) to offsite milling operations and/or other markets (e.g. Poinsett Rice and Grain).

There are at least 16 rice processing facilities in Arkansas, all in the Eastern half of the state. And, and discussed, varying in the level of processing (e.g. cleaning to milling) performed. Nine of these provide rough rice (seven exclusively) while six of the sites mill to either (or both) long grain or medium grain rice products. Five of the facilities have some measure of specialty rice products (e.g. organic or brown rice). But only one company (Specialty Rice, Inc.) concentrates specifically on aromatics and related. And this company has built a strong niche presence in that part of Arkansas (Table 2). The location of this facility is within a 150 mile radius (Figure 1) of the central part of the ARV and could possibly serve as a full service outlet for aromatic rice growers in the ARV.

Finally, there has been a very recent opening, we believe, of a small, rice processing facility in the Eastern part of the Arkansas River Valley. While it remains to be seen how fully this business model will succeed, it does appear that at least part of their model includes specialty rices.

In summary, if the product quality and consistency met standards and the premiums and transport were compatible for producers to grow the crop, there are compatible facilities, it appears, that could serve an industry.

Table 2. Rice storage, handling and processing facilities in Arkansas.

1.	**Bayou Grain & Chemical Corp.** P.O. Box 67 Parkdale, AR 71661	Long Grain Rough Rice Medium Grain Rough Rice
2.	**Cache River Valley Seed LLC** P.O. Box 10 Cash, AR 72421	Seed Rice
3.	**Cormier Rice Milling Co., Inc.** P.O. Box 152 DeWitt, AR 72042-0152	Medium Grain Rice Short Grain Rice Brown Rice Organic Rice

4. **Crop Marketing Services, Inc.** 102 Silent St. McGehee, AR 71654	Rough Rice
5. **Erwin-Keith, Inc.** 1529 Hwy. 193 Wynne, AR 72396	Rough Rice Seed Rice
6. **Farmer's Granary, Inc.** P.O. Box 750 McCrory, AR 72101	Rough Rice
7. **Griffin Grain, Inc.** P.O. Box 650 Helena, AR 72342-0650	Rough Rice
8. **KBX, Inc.** P.O. Box 2800 Benton, AR 72018-2800	Long Grain Rice
9. **Lehman Elevator, Inc.** P.O. Box 35 Gillett, AR 72055-0035	Rough Rice
10. **Minturn Grain** 1403 Hwy. 67 Hoxie, AR 72433	Rough Rice
11. **Poinsett Rice and Grain, Inc.** 2713 Paula Dr. Suite B Jonesboro, AR 72404	Rough Rice
12. **Producers Rice Mill, Inc.** P.O. Box 1248 Stuttgart, AR 72160	Long Grain Rice Medium Grain Rice Brown Rice Parboiled Rice Instant or Precooked Rice Aromatic U.S. Rice
13. **Riceland Foods, Inc.** P.O. Box 927 Stuttgart, AR 72160-0927	Long Grain Rice Medium Grain Rice Brown Rice Parboiled Rice Rough Rice
14. **Ritter Grain Services** 300 Adamson Rd. Marked Tree, AR 72365	Rough Rice

15. **Specialty Rice, Inc.** 1000 W. First St. Brinkley, AR 72021-9000	Basmati Brown U.S. Rice Basmati U.S. Rice Basmati White U.S. Rice Della Rice Jasmine Brown U.S. Rice Jasmine White U.S. Rice Long Grain Brown Rice Long Grain White Rice Organic Arborio U.S. Rice Organic Basmati Brown U.S. Rice Organic Basmati White U.S. Rice Organic Jasmine Brown U.S. Rice Organic Jasmine White U.S. Rice Organic Long Grain Brown Rice Organic Long Grain White Rice Parboiled Brown Rice Red Rice Wild Rice Wild Rice Blends Parboiled Rice Organic Rice Aromatic U.S. Rice Arborio U.S. Rice
16. **Windmill Rice Co. LLC** 6875 Hwy 1 South Jonesboro, AR 72404	Long Grain Rice Medium Grain Rice Brown Rice Rough Rice

Storage and Transport Cost Considerations. For producers, the storage (on-farm or commercial) can be highly burdensome from a cost standpoint. However, as discussed, the premiums attached to aromatic rices can not only offset these expenses but make these profitable, if the logistics can be managed. Storage costs vary between commodities but, in general, there are a number of common considerations including:

- Storage facility cost
- Interest on grain inventory
- Additional drying (common with rice)
- Shrinkage
- Additional handling cost
- Quality deterioration (e.g. insect infestations)

As noted in the attached business plan, premiums for aromatic rice can range from about 25% (over CBOT for long grain rice-for example) for conventionally grown rice to roughly 2X the CBOT for organically grown aromatics (or more). These can be substantial, especially if the

yield drag is minimal. And many of the aromatics have advanced to the point where yields are very comparable to conventional varieties.

In general, the cost for storage will be higher for short term and decrease as storage time extends (one month versus six months for example), but can average from roughly $.08 to $.15 per bushel per month. Excessive drying, insurance and load out/in costs can also vary widely. For example, some facilities may charge up to $.25 for loading the bushels into a facility and roughly $.05-$.10 per insurance (per month). It varies widely but a good rule of thumb is to count on about $0.50 per bushel storage for a suitable amount of time (three months). Likewise, transportation costs vary greatly depending on the distance. Locally, transport may be as little as $.05 per bushel (for example within 25 miles), but increase to as much as $.50 per bushel over long distances. Oftentimes, both of these variables can be negotiated and dependent on timing, quality of services and competitive environments. Regardless, storage and transport for a new industry will represent a significant cost and potential barrier to overcome, especially during the initial stages. However, if a producer makes an extra $1.25-$1.50 per bushel on a solid yielding aromatic variety, then the profit margins are still attractive even with the added costs of storage and transport. And, in our experience, some companies that specialize in these rices may be willing to provide transport at either a reduced or eliminated cost. Which, of course, would also eliminate storage making the premium and bottom-line economics much more attractive. And, as discussed, organic aromatics can be substantially more profitable though the higher level of management can be burdensome. But for farmers established in organic production, this is a highly attractive option.

In conclusion, the infrastructure for storage and processing are currently absent from the Arkansas River Valley. This represents a trend of services migrating to the Eastern part of the state. However, the ARV cropland is excellent with high potential for growing aromatic rices. The varieties available are high quality and amenable to the area and the farmers are willing to transition based on economics.

The storage and processing infrastructure problems could be solved two ways. The most effective would be construction of an ARV facility (see business plan attached) that could serve as an industry centerpiece for producers. There is strategic land along the Arkansas River and in close proximity to I40, one of the most accessible interstates in the region. Secondly, and as outlined in this report, there are already existing and accessible infrastructure with high quality facilities that could store, handle, mill and even market aromatic rices from the ARV. The question is whether the distance and inconvenience associated with these sites would offset the potential economic gains from aromatic rice premiums.

Overall, the goals of this project were met. The project gives good overview for markets, potential markets, models, and infrastructure challenges and solutions.

The current markets for these rices are increasing at a steady and strong rate. Especially in countries where development is high with information, food options and awareness are heightened. The ‘world’ economy continues to shift in ethnic groups and establishment of

applicable communities internationally. This bodes well for continued opportunities in these markets.

The ARV cropland is excellent with high potential for growing aromatic rices. There are even small areas along the ARV that are currently growing a little specialty rices. The aromatic (or others) varieties available are now high quality and amenable to the area. And the yield potential will be critical to woo farmers for transition to these crops.

The premiums for these varieties can be substantial for both conventionally grown and organically grown. This reflects the continued demand and growth in the domestic aromatic markets.

The storage and processing infrastructure are problematic but could be solved, as noted, in a number of ways. The most effective would be construction of an ARV facility that could serve as an industry centerpiece for producers. There is strategic land along the Arkansas River and in close proximity to I40, one of the most accessible interstates in the region. Secondly, and as outlined, there are already existing and accessible infrastructure with high quality facilities that could store, handle, mill and even market aromatic rices from the ARV. The question is whether the distance and inconvenience associated with these sites would offset the potential economic gains from aromatic rice premiums.

We believe this is an industry that can be built within the ARV. Many of the foundational and necessary conditions are present. Strategic financing coupled with relationship building could lead to a very impactful industry there for both the farming and industrial communities throughout the ARV.

In a separate document, appendices are included that have detailed financials regarding profit and loss statements; balance sheets and cash flow analyses, all through a three year period by month.