Acara Challenge

myRain

Business Plan


4/30/2010
# Table of Contents

**Executive Summary** ........................................................................................................... 3  
**Introduction** ......................................................................................................................... 3  
**Business Description** ......................................................................................................... 4  
  - Product Description ................................................................................................................ 4  
  - Partners .................................................................................................................................. 4  
  - Launch and Future Expansion ............................................................................................... 5  
  - Maintenance and Service ...................................................................................................... 5  
**Business Environment Analysis** ....................................................................................... 5  
  - Government Owned Tube Wells ........................................................................................... 5  
  - Problems with Current Irrigation Methods ......................................................................... 6  
**Industry Background** .......................................................................................................... 6  
**Competitive Analysis** .......................................................................................................... 7  
  - Potential Competitors .......................................................................................................... 7  
  - Barriers to Competition ........................................................................................................ 7  
**Market Analysis** .................................................................................................................... 8  
**Marketing Plan** ..................................................................................................................... 9  
  - Target Customer Segment .................................................................................................... 9  
  - Why Farmers Will Purchase From myRain .......................................................................... 9  
  - Pricing Strategy .................................................................................................................... 9  
  - Promotion ............................................................................................................................... 9  
**Operations Plan** ................................................................................................................... 10  
  - Transportation ...................................................................................................................... 10  
  - Storage and Sales .................................................................................................................. 10  
  - Employees .............................................................................................................................. 10  
  - Filling the Drip Irrigation Reservoir .................................................................................... 10  
**Description of Venture Team** ............................................................................................ 10  
**Financial Plan** ...................................................................................................................... 11  
  - Startup Costs ......................................................................................................................... 11  
  - Operating Costs and Cost of Goods .................................................................................... 11  
  - Income ................................................................................................................................... 11  
  - Financing Expansion to Other Villages ................................................................................ 11  
**Risks** ..................................................................................................................................... 11  
**Next Steps** ........................................................................................................................... 12  
**Appendix A – Venture Team Qualifications** ...................................................................... 13  
**Appendix B – Projected Financial Statements** ................................................................. 16  
**Appendix C – Detailed Description of Drip Irrigation** ....................................................... 18  
**Appendix D – Letter of Agreement from IDE India** .......................................................... 29  
**Appendix E – Field Notes from Interviews with Chharba Residents** ............................... 31
Executive Summary

myRain is a social venture dedicated to improving the irrigation of farms in India by selling drip irrigation kits to subsistence farmers with an affordable lease to own program. In addition, myRain will provide locally available service and spare parts for the kits. Our team of engineers, public health professionals, and experienced business owners/operators will help farmers in India improve the irrigation of their fields with drip irrigation. This will address the main problems of poverty, malnutrition, and poor irrigation methods, which face many subsistence farmers throughout India. Drip irrigation uses 50 to 65 percent less water than current irrigation methods and increases crop yields between 50% and 140%, depending upon the crop.

Drip irrigation is a proven technology that was originally developed for large commercial farms in the 1960’s. However, in recent years, drip irrigation systems have been scaled down and simplified for use on smaller, family farms. Even with the reduced size and complexity, the up-front costs have been more than the subsistence farmers in India could afford.

myRain will solve that problem by selling the kits for 12 monthly payments of $2.50. The drip irrigation kits will be supplied by IDE-India, a company that has manufactured drip irrigation equipment since 1995. We have a letter of agreement with them to sell their drip irrigation kits and will purchase the kits from their plant in Delhi, India.

The drip irrigation kit will help address the farmers’ most pressing problem of malnutrition by increasing the yield of their crops, which will provide more food for their family. The increased yield will also provide a surplus crop that they can sell to provide more income for the family. This increased income can be used to purchase a wider variety of food that will enhance the family’s nutrition.

Introduction

Meet the Verma family from the village of Chharba in Uttarakhand State in India. They are typical of the 1600 families who live in Chharba, with similar concerns and struggles. The Verma’s have 4 children, and they live on $40.00 per month. Mr. Verma is a subsistence farmer who has supplementary income from a job in a nearby factory. Their farm is about 2 acres in size.

Problems faced by the Verma family include poverty, malnutrition, and poor irrigation of their fields. Current irrigation methods are inefficient...
and therefore result in low crop yields. This reduces the food available to the family, and it reduces or eliminates the portion of the crop available for them to sell to generate income. Improved irrigation methods are currently available in northern India, but they are beyond the means of the Verma family. However, when asked what they would spend extra income on, they said they would improve the irrigation of their fields.

myRain is a social venture that will sell affordable drip irrigation kits to families in Chharba, allowing the Vermas’ and other families to maximize their crop yields. This will provide them with more food to eat, which will reduce malnutrition. In addition, it will provide more crops to sell to increase their income. This will allow them to purchase necessities including a variety of foods that will further enhance their nutrition.

The kits will be sold on a lease-to-own model, with twelve monthly payments of $2.50. Lease to own is common in India, where it is commonly referred to as “installments”. This will be affordable to the families in Chharba, while providing myRain with enough income to expand the venture to other villages. In addition to retail sales of the drip irrigation kits, myRain will also provide local service, support, and spare parts.

**Business Description**

myRain will provide retail sales of drip irrigation kits and sell them using a lease-to-own model to low income farmers. In addition to local sales, myRain will provide service and parts through our local technician in each village. The inventory of kits and parts will be stored in a fenced lot, and this will serve as the sales location, as well as the place where the farmers bring their monthly payment.

**Product Description**

The drip irrigation kits consist of a water reservoir with tubing that extends outward from the bottom of the reservoir. The reservoir is placed on a platform approximately 2 meters off of the ground, and the tubing is placed on the ground along rows of crops. Water is pushed through the tubing by gravity, and small perforations in the tubing release water at a specified rate, right at the root of each plant. This has many benefits, including:

- Virtually no water is wasted, so there is a 50% to 65% reduction in the amount of water needed for irrigation, compared with current irrigation methods.
- Since the water is applied only to the root zone of the crops, it is not available to weeds that might sprout up between the crop plants. This reduces the need for herbicides and/or effort on the part of the farmer to remove weeds.
- Drip irrigation provides a steady amount of water on a regular basis, which is critical for crops like potatoes to achieve their maximum yield.
- Documented increases of crop yields have ranged from 50% for potatoes to 140% for green beans (Gencoglan, 2006 and Sczen, 2008)
- Drip irrigation does not use electricity and therefore is not subject to interruptions from power outages, which are common throughout India.

A detailed description of drip irrigation, along with a discussion of how it works, is attached in Appendix C.

**Partners**
myRain will partner with IDE, which is a manufacturer of drip irrigation kits in Delhi, India. IDE is a social venture that has been manufacturing drip irrigation kits for 15 years. They sell these kits around the world to improve crop yields in areas where existing irrigation methods are inadequate. We have received advice from IDE technical experts throughout the development of this business plan. In addition, an IDE expert brought a drip irrigation kit to Chharba to perform a pilot study with our team from IIT Roorkee and local Chharba residents. The pilot study showed that drip irrigation is compatible with the crops, farming methods, and soil conditions in Chharba. IDE’s expert, Madan Singh, told us that drip irrigation will work well in Chharba.

We have secured a letter of agreement with IDE, establishing them as our supplier for drip irrigation systems and as a resource for technical knowledge. The letter of agreement is attached in Appendix D. myRain will initially sell drip irrigation kits in the western ⅔ of Uttarakhand State, which represents a market size of 40,000,000 kits, as described in the Market Analysis section on page 8.

Launch and Future Expansion

We will launch the business in Chharba, which represents a total market of 80,000 kits. Initially, farmers will be able to afford one kit each. We expect to sell 600 kits in the first year, and this represents one kit each purchased by 50% of the subsistence farmers in the village. As the farmers’ incomes increase, many of them will purchase additional kits. We estimate that the minimum amount of time it will take for a farmer to purchase enough kits to cover an entire 1.5 acre farm will be 5 years. Therefore, we expect to continue to sell kits in Chharba for at least 5 years after launching the business.

One year after launching the business in Chharba, we expect to expand the business to serve Chakrata Tehsil, an area that represents a total market of 800,000 kits. We will focus growth on this area in years 2 through 4 of the business. The villages in this area are smaller than Chharba, so we will serve 3 to 4 villages from one sales location. The villages are relatively close together, so this model for serving villages in Chakrata is feasible.

Maintenance and Service

myRain will maintain a local service location in Chharba and other villages while drip irrigation kits are being sold, and it will remain after we are no longer selling new kits. Most of the maintenance of the drip irrigation kits consists of replacing parts that break or wear out. Other maintenance items include unclogging the perforations in the tubing (which is usually done by disconnecting the tube from the reservoir and blowing into the tube) and running a bleach solution through the tubing to remove slime growth. We expect that the farmers will perform many of the repairs themselves, but they may need some training, and they will need to purchase replacement parts.

Business Environment Analysis

Agriculture in Chharba and northern India is governed by the cycles of the monsoon rains and the dry season that exists at other times. During the 3-month monsoon season, an average of 3 feet of rain (per season) falls in this area. However, since it falls within such a short time frame, most of it runs off across the ground surface and into rivers, where it flows away. The rest of the year it is dry, and crops must be irrigated. Since many of the smaller rivers run dry, ground water is the only consistent source of irrigation water. The government of India has installed tube wells throughout rural areas to provide this water. In Chharba, these wells are 300 to 350 feet deep.
Government Owned Tubewells

Each farmer has access to the tubewell once every 15 days, and amount of time he is allocated to use the tube well varies according to the size of his farm. For most farmers in Chharba, this amounts to 1.5 to 2 hours of tubewell time every 15 days. This time is allocated by the government, and farmers pay an average of $3 per month for the use of the tube wells.

The tube well pumps are electric, and power outages are common. If a power outage occurs during a particular farmers turn at the well, that farmer will not get water for another 15 days. In addition, if the pump breaks down, it takes weeks for a government employee to repair it. Local people do not have the equipment to pull a pump out of a 350 foot deep well to repair it themselves.

Water travels from the tube well to the field via a system of earthen channels. When a farmer gets his turn at the tubewell, he uses clay to plug the channels leading to other farms and opens the channel to his farm. When the tube well is turned on, the water rushes onto his field, flooding it. The entire field is flooded, including between crop rows and areas that are not planted with a crop at the moment.

Problems with Current Irrigation Methods

The problem with this method of irrigation is that the farm is flooded every 15 days, providing too much water to the crop. The farm dries out in between watering, and this stunts the growth of many of the crops, especially potatoes. Also, this irrigation method tends to wash away fertilizer and herbicides, requiring the farmer to apply these more frequently than he otherwise would need to.

Farmers use this water to grow wheat, potatoes, and dry rice both for subsistence and as cash crops. Some farmers also grow sugarcane, which is a cash crop that is sold to a local sugar plant. They cite the lack of access to irrigation water as the main barrier to relieving poverty and malnutrition, as well as to increasing their family's income. However, they cannot afford to purchase more water from private sources, and they cannot afford to purchase more effective systems such as drip irrigation due to the high upfront cost.

Industry Background

Drip irrigation can improve crop yield and save water by allowing water to drip directly to the roots of plants. Modern drip irrigation was developed in 1959 by Netafim, an Israeli company. Netafim used pressurized hoses and plastic emitters to create highly efficient drip irrigation systems that would cover more than 5 acres and cost at least several thousand dollars. These systems were designed for large, industrial farms that grow cash crops. These early drip irrigation systems were too expensive for a poor farmer to purchase and too large for a small acreage farmer to use. In 1989, Jain Irrigation Systems Ltd began to introduce drip irrigation technologies to India, focusing on advanced machinery to grow grapes, banana, sugarcane, tea, coffee, cotton, and other cash crops.

Although approximately 80% of India’s 93 million farms are smaller than 5 acres, and the average farm size in India is only 3.4 acres, drip irrigation has historically only been available for medium and large sized farms. It wasn’t until 1995, when International Development Enterprises (IDE) began to develop and market low-cost, small-scale drip systems for small acreage farmers and home gardens. Starting in Nepal, IDE quickly moved into India and opened a branch in Delhi in 2001. IDE-India has since offered its customers a range of irrigation solutions, including drip irrigation, sprinklers, treadle (foot) pumps, water storage tanks. IDE became a leader in creating drip irrigation systems for poor farmers by continually
driving down the cost as much as possible. IDE was able to do this by redesigning the drip irrigation system to be as simple as possible, use as few moving or expensive parts as possible, and making the entire system small enough to be appropriate for small-acreage farmers, all while keeping the kit as efficient as the more expensive models. IDE currently has a model that covers 20 m² for $2, a 100 m² model for $15, and even larger units.

Paul Polak, the founder and president of IDE, has identified three critical success factors for low-cost drip irrigation systems: appropriate water conditions, access to markets, and the existence of microcredit. myRain has all of these factors in place.

The myRain team considered using some of the other irrigation methods in Chharba, but none of them are as effective as drip irrigation. With sprinklers, some of the water is lost to evaporation when the mist of water is sprayed through the air. Treadle pumps can only move water vertically for a distance of 7 to 10 feet. The wells in Chharba are 300 to 350 feet deep, so treadle pumps are not powerful enough to lift water out of the wells in Chharba.

**Competitive Analysis**

No companies are currently selling drip irrigation kits in the western half of Uttarakhand state, where Chharba is located. In all of India, no company is offering a lease to own program for drip irrigation kits in any significant way.

**Potential Competitors**

Potential competitors include for-profit businesses, non-profit businesses, other social ventures, and rudimentary solutions. Since myRain does not require a large profit margin, it will be difficult for a for-profit business to compete with our prices for drip irrigation. Non-profits provide equipment but do not provide service and parts when the equipment breaks down. For example the Adopt Foundation built several biogas plants in Chharba but failed to provide extended services, which resulted in the plants being ineffective. Because myRain is able to offer ongoing local service and access to spare parts, non-profits will find it difficult to compete with myRain.

Other social ventures could effectively compete with myRain to provide drip irrigation systems. However, the market for drip irrigation is vast, with a potential of 6,000,000,000 kits in India. There are many areas of India that are not being offered drip irrigation, and the market is large enough to support other social ventures. It is likely that any competing social ventures would be launched in a different area.

Rudimentary solutions include the current methods of flood irrigation, as well as other manual or natural methods such as hand-carried water from the water source, precipitation, or even foregoing irrigation entirely. Although the rudimentary solutions are free, the drip irrigation system sold by myRain provides significantly higher yields than these methods and will be viewed as a superior irrigation technique that provides greater value.

**Barriers to Competition**

As stated earlier in the Business Description section, myRain has a letter of agreement with IDE to sell their drip irrigation kits in the western half of Uttarakhand State. In addition, our team in India has been working with the residents of Chharba for the last 2.5 years on a project that has provided the villagers
with job skills training via the internet. Through their ongoing work with the villagers, they have
developed a relationship of trust that a competitor will not have.

**Market Analysis**

Our team from IIT Roorkee interviewed a random sample of villagers to assess the current irrigation
methods and to determine if families like the Vermas’ could benefit from improved irrigation methods. Discoveries made on this trip are described below.

- The crop yields are limited by the amount and frequency of irrigation water being applied.
- Families do not have enough money to purchase more water from the government.
- More effective irrigation methods would improve crop yields without purchasing additional water. However these systems are too expensive for most families.
- 70% of the 1600 families in Chharba grow food primarily for their own use and only sell excess crops beyond what they need for themselves.
- If a more effective, affordable irrigation system is available, the families are interested in purchasing the system.

After this visit, our team arranged for a pilot study to be performed in Chharba. This involved installing a
drip irrigation kit from our partner, IDE, in a farm within the village. An expert from IDE brought the kit
to the village, set it up, and demonstrated how it works. Seven local farmers attended the
demonstration and asked where they could purchase the kit and how much it costs. All of them were interested in learning more about drip irrigation and in purchasing a kit.

Once we learned that farmers in Chharba were interested in drip irrigation, we investigated other
nearby areas to determine if a market for these kits exists beyond Chharba. Many of the nearby villages
are much smaller than Chharba, ranging from 5 to 20 households per village. However, there is a nearby
Tehsil called Chakrata where 72 percent of the households farm the land. The government of
Uttarakhand has identified six specific villages in Chakrata where the groundwater table is being
depleted due to irrigation of crops, similar to Chharba. These villages include Maletha, Kondi Bhondi,
Ludhera, Chirgad, Latao, and Chanao-2. Future expansion of myRain will focus on Chakrata within the
first three years of launching the business.

Further expansion will be to other Tehsils in Uttarakhand state, where the India 2001 census
(www.trendsindia.org) shows a total rural population of 6,300,000. The following table shows the
maximum number of drip irrigation kits (maximum market size) for Chharba, Chakrata, Uttarakhand,
and India. The maximum market size assumes that every farmer will purchase enough drip irrigation kits
to cover his entire farm (70 kits for a 1.5 acre farm).

### Market for Drip Irrigation

<table>
<thead>
<tr>
<th>Location</th>
<th>Unit of Government</th>
<th>Number of Households</th>
<th>Percent of Farm Households</th>
<th>Number of Farms</th>
<th>Average Farm Size (acres)</th>
<th>Maximum Number of Drip Irrigation Kits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chharba</td>
<td>Village</td>
<td>1,600</td>
<td>70%</td>
<td>1,000</td>
<td>1.5</td>
<td>80,000</td>
</tr>
<tr>
<td>Chakrata</td>
<td>Tehsil*</td>
<td>15,000</td>
<td>72%</td>
<td>11,000</td>
<td>1.5</td>
<td>800,000</td>
</tr>
<tr>
<td>Uttarakhand</td>
<td>State</td>
<td>787,000</td>
<td>72%</td>
<td>560,000</td>
<td>1.5</td>
<td>40,000,000</td>
</tr>
</tbody>
</table>
India Nation
135,000,000 72% 105,000,000 1.5 6,000,000,000

*Tehsil is a unit within a subdistrict, similar to a county in the United States.

**Marketing Plan**

*Target Customer Segment*

In Chharba, 70% of the village families are subsistence farmers, and these are myRain’s target customers. The subsistence farmers have not been able to afford drip irrigation because of the high initial cost of purchasing the kit. My Rain will be the first to provide a lease to own option for these kits, making them affordable to subsistence farmers for the first time.

*Why Farmers Will Purchase from myRain*

myRain has chosen a drip irrigation kit that covers 1000 square feet. This is small enough to make the kit affordable, but large enough to make a significant increase in the amount of food available to a family or in crops available to sell. In addition, a farmer can purchase more of these kits as his income grows. For example, one drip irrigation kit will increase the yield of a potato crop by 46% in that 1000 square foot area. This would provide the farmer with an additional 140kg of potatoes per year. If the farmer used drip irrigation to grow sugarcane instead, he could increase his yield to 800kg per year, which he could sell for about $35. The price of sugarcane, $4.40 per 100kg, is regulated by the state government of Uttarakhand.

Farmers will buy the drip irrigation kits because the kits will help them irrigate their fields more effectively and efficiently. They know that the current methods of irrigation are not adequate to maximize crop yields, based on our survey of farmers in Chharba. Increased crop yield will provide more food for their family, thereby addressing his family’s malnutrition. It will also provide crops to sell, which will increase the farmer’s income and alleviate poverty. Drip irrigation uses 16% to 67% less water than their current irrigation methods, and this will save the farmer money over time as the farmer purchases multiple kits to cover more of his field. However, the main reason that the farmer will purchase drip irrigation from myRain is that it is affordable.

*Pricing Strategy*

The drip irrigation kits will be priced at $2.50 per month for one year. This is $0.08 per day, compared to the farmer’s income of $1.50 per day. Farmers currently spend $3 per month for water from the tube wells, and the use of drip irrigation will reduce this amount. In addition, their largest expenditure per month is for their crops - irrigation, fertilizer, and seed. They are accustomed to spending a large portion of their income on their crops. This price will provide myRain with enough income to finance expansion to other villages, in accordance with its mission as a social venture.

*Promotion*

Our India team has identified champions within Chharba who support us in our effort to provide affordable drip irrigation kits. These champions attended the pilot study and will be early adapters of drip irrigation. They are respected throughout the village and will use their influence to persuade others to try drip irrigation.
IDE will provide product demonstrations in Chharba for a fee, to help launch myRain. Our financial plan accounts for these costs. Just prior to launch, a technical expert from IDE will bring a drip irrigation kit to the village and demonstrate it on a farm in Chharba. Our sales and service technician will also attend these demonstrations so that the villagers know that he is the one they can purchase a kit from.

**Operations Plan**

*Transportation*

Our production partners, IDEI, have distribution partners in place for Uttarakhand. The kits will be delivered to Chharba on trucks using the highway system. Transportation is significantly slower in India than it is in the U.S. because of the quality of the road and the large amount of people that use them. myRain will achieve economies of scale with transportation by ordering kits by the truckload, which is 600 kits.

*Storage and Sales*

Once the kits are in Chharba they will be held at our storage facility, which consists of a fenced-in lot on our technician’s property. This will provide the security we need while keeping costs low. We estimate that the cost of construction, maintenance and rent will be $100 per year. This storage facility will also be our point-of-sale.

Kits will be sold from our storage facility. Customers will pick up their kit at our facility, where our technician will demonstrate how to set it up in their field, as well as how to maintain it. The customer will then transport it home.

*Employees*

myRain will employ the equivalent of two full time employees at the standard wage in Chharba. The sales cycle is such that we will be busy during the beginning of the 9 month growing season, then very slow during the monsoon season from June to September. To cater to that demand, we will have several technicians available during the growing season and only one during the slow parts of the year.

IDEI has already identified several technically adept villagers that are prime technician candidates. IDEI, as our knowledge partners, will train our employees about the drip kits and how to service them. We will compensate the employees on a monthly salary basis, with the salary based on $500 per year.

*Filling the Drip Irrigation Reservoir*

Farmers will need to fill the reservoir on the drip irrigation kit once per day with 25 gallons of water. When a farmer has between 1 and 3 kits, they will obtain water at one of three reservoirs in Chharba and carry the water in buckets to their field to fill the drip irrigation kit. Once the farmer has more than 3 kits, it will no longer be practical to transport water from the village reservoirs.

At this point, the farmer will need to impound water on his field by constructing berms around a small area (15’x15’) and filling that area from the tubewell and ditch system described earlier in this business plan. Farmers are familiar with this type of construction, and the clay to make the berms is available at no cost. Farmers already construct berms to separate their fields and prevent their irrigation water from flowing onto their neighbor’s field.
Description of Venture Team

The qualifications of everyone on the venture team are described in detail in Appendix A.

Financial Plan

The detailed forecast income statement and other financial spreadsheets are attached in Appendix B.

Startup Costs

Startup costs will include rental of land for inventory storage, fencing, purchasing inventory of drip irrigation kits, transportation of drip irrigation kits, and one year of operating costs. These are described below.

- Total startup cost = $20,000
- Purchase and transportation of 600 drip irrigation kits = $11,000
- Operating costs for one year = $3,000
- Startup Costs and reserve capital = $6,000

Acara Institute Cost

We will have four team members participate in the Acara Institute. Below are the costs associated with the event

- Total cost = $31,000
- Cost for the institute = $15,000
- Cost for travel and stipend = $16,000

Operating Costs and Cost of Goods

Operating costs will include wages for two full time equivalent employees, income from sales of drip irrigation kits, income from service calls and replacement parts

- Total = $2,350
- Salaries = $1,250
- Rent = $100
- Selling, General, and Administrative = $100
- Bad Debt = $900
- Office Supplies = $50

The drip irrigation kits cost $14.00 each.

Income

Each drip irrigation kit will sell for 12 payments of $2.50 each, for a total of $30.00 per kit. In addition, we will sell parts for the drip irrigation kit and provide repair services for the kits. Parts and repair service will be sold to the customer at our cost, so this part of the venture will break even.

Financing Expansion to Other Villages
Each village where myRain successfully establishes a drip irrigation sales/service location will fund expansion to other villages the following year. Our plan is start with one village, and we will serve thirteen villages by our fifth year. As part of our sustainability we will invest all profits back into our own growth. The initial startup cost is the only round of financing we require, unless we decide to expand at a faster rate in the future.

Risks

There are some risks and assumptions involved with the implementation of the myRain plan. We have recognized the following risks and have taken measures to mitigate them.

- **Market risks** – There may be a slower-than-expected adoption rate for drip irrigation, leading to medium/low penetration in the market. But our market research in Chharba revealed that improved irrigation is a priority for farmers in the village. This was confirmed by the interest in drip irrigation generated by our pilot study. Based on these findings, we expect that the crop results obtained by early adopters will generate high demand for the drip irrigation kits.

- **Technology risks** – The technology of the product is simple, and the manufacturer provides a one-year warranty for the product. The company is aware that filling the water reservoir may be laborious and is considering options to mitigate this. Our research on small-acreage farmers showed that the farmers in Chharba, when faced with such an issue, are often innovative and resourceful and develop their own solution.

- **Default of Payment** – There is a risk that some customers who purchase drip irrigation kits will fall behind on their payments or quit paying entirely. When this occurs, the customer will no longer be eligible for credit, and we will not sell any additional kits to that customer until their account is paid in full. We have accounted for bad debt as a cost in the financial model for the business.

Next steps

As stated in the Financial Plan on page 11, we are seeking $20,000 from investors to launch myRain. This includes purchase of 600 drip irrigation kits, the cost of operating the business in Chharba for one year, and $6,800 to account for unforeseen variances from financial estimates in the business plan.

Once our venture receives funding, the next steps are described below.

- Rent land for sales/service area
- Set up the sales/service area
- Train our employees
- Purchase inventory of drip irrigation kits
- Scale up demonstrations in Chharba
- Begin selling the kits
Appendix A

Venture Team Qualifications
Sri Latha

Sri Latha Ganti is a graduate student at University of Minnesota, pursuing a master's degree in electrical engineering. Scaling successful social innovations to other 'problem communities' interest her. Her experience working with Acara Institute in US and other start ups in India helps her in coordinating and managing among the various stakeholders.

A.J. Schwidder

A.J. is currently completing a Master of Business Administration degree at the Carlson School of Management at the University of Minnesota. He holds Bachelor and Master of Science degrees in civil engineering from Oklahoma State University. For the last 15 years, he has worked for various civil engineering consulting firms as a design engineer and project manager on highway reconstruction projects ranging from $2,000,000 to $140,000,000. A.J. is also the owner of Additional Storage, Inc., which he founded in 2001.

Sam Westlund

Samuel is an undergraduate student University of Minnesota College of Science and Engineering, studying civil engineering with an emphasis on environmental engineering and design. His aspirations are to spend the majority of his engineering career in developing countries, with the goal of alleviating the many ramifications of extreme poverty. The Acara Challenge offered to provide an effective and guided glimpse into those future aspirations. Samuel spent three years interning with a start-up medical device company called Cardiac Concepts, Inc., and several months interning in the Water Business Group of CH2M HILL.

Samuel Lee

Samuel Lee is a graduate student at the University Of Minnesota School Of Public Health, pursuing a master’s degree in public health administration and policy. He joined the Acara challenge as a way to apply his academic interests of international development, diffusion of innovations, and interdisciplinary solutions to public health challenges. Samuel volunteers with Compatible Technologies International, developing plans to market low-cost food and water technologies in developing nations. He is also the Vice President of the School of Public Health Student Senate and the Projects Coordinator for Engineers Without Borders, University of Minnesota chapter.

Steele Lorenz

Steele is a graduating senior in the Carlson School of Management at the University of Minnesota. Steele studied marketing and entrepreneurial management with an emphasis in discontinuous innovation and new ventures. His diverse background includes being the Director of Marketing at a local running shoe specialty store and working with the Global Commodities division of Prudential on Wall St.
Although new to the social venture world, Steele's knowledge of market analysis and new business expansion add unique and valuable perspective to the myRain group.

**Yash Baheti**

Yash Baheti is a freshman in Bio-technology at Indian Institute of Technology, Roorkee. He is one among the seven students selected for Acara Corps Fellowship 2010. His insight into the practical difficulties of the customers helps myRain better design the delivery model.

**Rudra Rameshwar**

Rudra Rameshwar is currently a Ph.D. National Doctoral Fellow in energy management from the India Institute of Technology (IIT) Roorkee, India. He holds a Master of Technology degree in Alternate Hydro Energy Systems from IIT Roorkee and Bachelor of Science degrees in Electrical Engineering, Physics and Mathematics from Dayalbagh Educational Institute in India. He has been recipient of ‘All India Prestigious Fellowship’ National Doctoral Fellowship from A.I.C.T.E., New Delhi. He has been twice awarded the All India Gold Medal in the areas of Electrical Engineering and Electronics and Telecommunication Eng. and Bronze Medal in the area of Environmental Engineering.

**Lovlesh Kaushik**

Lovlesh Kaushik is a sophomore in Mechanical Engineering at Indian Institute of Technology, Roorkee. His understanding of the technical aspects of the product will be useful for the service-after-sale aspect of myRain.

**Gurdeep Singh**

Gurdeep Singh is a junior in Bio-technology at Indian Institute of Technology, Roorkee. He is one of the most active members of the Students’ Initiative for Integrated Rural Development (SIIRD) at IIT Roorkee. His experience and reputation in the village Chharba will be very helpful in myRain's operations.

**Ankit Verma**

Ankit Verma is a junior in GPT at Indian Institute of Technology, Roorkee. As an active member of the Students' Initiative for Integrated Rural Development (SIIRD) at IIT Roorkee he has experience in the village, Chharba. This will be very helpful in myRain's operations.
Appendix B
Projected Financial Statements
### myRain

**Forecast Income Statement and Projected Sales**

**Launch of Business in Summer 2010**

<table>
<thead>
<tr>
<th></th>
<th>Y1</th>
<th>Y2</th>
<th>Y3</th>
<th>Y4</th>
<th>Y5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Facilities</strong></td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>7</td>
<td>13</td>
</tr>
<tr>
<td><strong>Cash at Beg of Period</strong></td>
<td>20,000</td>
<td>24,525</td>
<td>43,743</td>
<td>79,482</td>
<td>144,811</td>
</tr>
<tr>
<td><strong>Revenue</strong></td>
<td>18,000</td>
<td>52,554</td>
<td>93,736</td>
<td>170,318</td>
<td>310,310</td>
</tr>
<tr>
<td><strong>COGS</strong></td>
<td>(8,400)</td>
<td>(24,525)</td>
<td>(43,743)</td>
<td>(79,482)</td>
<td>(144,811)</td>
</tr>
<tr>
<td><strong>Operating Exp</strong></td>
<td>(1,450)</td>
<td>(4,350)</td>
<td>(5,800)</td>
<td>(10,150)</td>
<td>(18,850)</td>
</tr>
<tr>
<td><strong>Bad Debt</strong></td>
<td>(900)</td>
<td>(2,628)</td>
<td>(4,687)</td>
<td>(8,516)</td>
<td>(15,516)</td>
</tr>
<tr>
<td><strong>Operating Profits</strong></td>
<td>7,250</td>
<td>21,051</td>
<td>39,506</td>
<td>72,170</td>
<td>131,133</td>
</tr>
<tr>
<td><strong>Cash End</strong></td>
<td>27,250</td>
<td>45,576</td>
<td>83,249</td>
<td>151,652</td>
<td>275,945</td>
</tr>
<tr>
<td><strong>Cash Account</strong></td>
<td>0</td>
<td>2,725</td>
<td>4,558</td>
<td>8,325</td>
<td>15,165</td>
</tr>
<tr>
<td><strong>Wholesale</strong></td>
<td>14</td>
<td>14</td>
<td>14</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td><strong>Price</strong></td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td><strong>Units Demanded</strong></td>
<td>600</td>
<td>1,752</td>
<td>3,125</td>
<td>5,677</td>
<td>10,344</td>
</tr>
</tbody>
</table>
Appendix C

Detailed Description of Drip Irrigation

And How It Works
Simple Drip Irrigation

Application
Fresh vegetables, fruits, greenhouse crops
Layout Design: Single Bed

Layout Design: Double Bed
Components
Head unit, pipes, fittings

Head Unit

Head Tank
Filters – coarse & fine
Outlet Set – tap & gate valve
Pipes

Mainline Pipe
(14 mm PVC soft pipe)

Drip pipe
(8 mm diameter PVC soft pipe)

Level pipe

Fittings

Vertical Tee

L

Gate valve

Peg

Baffle

Drip Tee

End Plug
Materials for Installation
Drip kit, Spade, driller, seedlings, compost, water

Constructing the Head Structure

Drill four holes to erect poles
Make the platform
Laying and joining pipes

Marking the planting spots

Fill tank and open valve

Mark the wet spots for planting
Laying and joining pipes

Marking the planting spots

Fill tank and open valve

Mark the wet spots for planting
Operation of the system
Appendix D

Letter of Agreement from IDE
To whom so ever it may concern

This is to certify that the student team formed by University of Minnesota students – Samuel Lee, Sri Latha Ganti, Samuel Westlund, Steele Lorenz and Arthur AJ Schwidder and Indian Institute of Technology students – Rudra Rameshwar, Gurdeep Singh, Yash Baheti, Ankit Verma and Lovlesh Kaushik has contacted IDE-India. IDE-India is willing to be the technology and knowledge partner for the organization that will be formed by the group. IDE India will partner with the group on mutually agreeable terms and conditions confirming with the mission and operations of IDE India.

Amitabha Sadangi
Chief Executive Office
Appendix E

Field Notes from Interviews with

Chharba Residents
OVERVIEW OF IRRIGATION SYSTEM AT CHARBA

Last weekend I had a visit to Charba, our targeted village to have a general information about the process of irrigation which the villagers of Charba use for their fields. There I found that water is a big concern for villagers. They have 8 tubewells in Charba from which they get water for all types of usages like drinking, bathing, other daily usage and even for irrigation too. Talking about the irrigation every person has allotted a fixed scheduled time so that he can get water from tube well. The time has been decided on the amount of land which they have. The time is decided by the Govt. which is an about 30 mins / Bheega. And on an average each farmer in Charba has a 4-5 bheegas of land. Each farmer gets his turn again at an interval of 15 days. As the tubewells are spread across the whole village so it is not necessary that all of them have fields near to it. One of the farmer to whom I had a talk told me that he has his field at about 2 kms from the tubewell which is supplying water to him and also it is nearest one to him. So the whole village has been bind with a system of canals dugged out in the land and soil itself. It is not that each and every farmer has exclusively his own set of canals. It is that the system is common. The water flow is decided by the gates which are operated by farmers which are made up of mud which ensures that the water must flow in the right direction. In this way the irrigation system works in the village.

Talking about the problems the main problem told by the villagers is the water loss through dry mud canals and the power cut off. As we already know that every 15 days each landowner gets his turn back so suppose that if the power cuts off at any of villagers turn then his turn has been cancelled and other person will get the turn. Because of this if any person by any reason wont be able to get his turn for 2 to 3 times then his crop would be destroyed and no one can do anything on that. Because the crop needs water at an interval of 15 to 30 days which is not happening at that time. Also note that 8 to 12 in morning and 7 to 8.30 in night is a scheduled daily cutoff. Besides this also power goes many times and there is no fixed time of its returning.

Dryness of canals also creates a major problem as the canals are dry do a 2 to 3 kms long canal absorbs a lot of water. One of the villagers told me that he has a short run of water about an 2 hours and half an hour is what water takes to reach his farm from the tubewell so it’s a problem for them.

Sometimes this also happens that the motor collapses due to such a long run. If any such happens then the villagers are helpless because they cant take out the motor from 350 feet deep inside the earth. The only solution is that they have to write to Government for it. and it takes a lot of time by Govt. to take any action. Last year this has happen and the motor was repaired about two months after. Due to this long dryness all the crops of villagers collapsed and they are able to save it.
Talking about the water for daily usage. They get that too from same tubewell. A time is decided by Govt. I which they fill the tanks through those tanks water is supplied to the villagers. Villagers get an about 4 hours of water supply for daily usage and that too if power stays. If somehow motor or power fails then there is long line at the handpump for getting water.

**SOME FACTS REGARDING THE VILLAGE:**

<table>
<thead>
<tr>
<th><strong>Main crops</strong></th>
<th>Rice, Wheat, Sugarcane</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No of persons having there own land</strong></td>
<td>90%</td>
</tr>
<tr>
<td><strong>Avrage amount of land</strong></td>
<td>4-5 Bheegas/person</td>
</tr>
<tr>
<td><strong>Cost of water from tubewell for irrigation</strong></td>
<td>35-40 rs/ hour</td>
</tr>
<tr>
<td><strong>Time land relationship for water supply</strong></td>
<td>30 mins/bheega</td>
</tr>
<tr>
<td><strong>Avrage income per person</strong></td>
<td>1000 to 2000 Rs/ month</td>
</tr>
<tr>
<td><strong>No of tubewells in village</strong></td>
<td>8</td>
</tr>
<tr>
<td><strong>Net profit on selling whole crop(wheat)</strong></td>
<td>6000 to 7000 Rs</td>
</tr>
<tr>
<td><strong>Net profit on selling whole crop(Rice)</strong></td>
<td>8000 Rs</td>
</tr>
<tr>
<td><strong>Water fees for daily usage</strong></td>
<td>195 Rs/ month</td>
</tr>
<tr>
<td><strong>Do having more water helps them</strong></td>
<td>YES</td>
</tr>
<tr>
<td><strong>having better yield</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Yield per bheega</strong></td>
<td>3 to 4 quintals (may vary on amount of water)</td>
</tr>
</tbody>
</table>

Talking to the villagers I realized that having more water definitely helps them in having better yield but they cannot pay a large amount for it because they don’t have enough money to spent on. Nearly 70% of farmers grow crop for there personal use and not for the commercial. They have to work outside to run there expenses. And if the crops failed we can assume that in how much worst situation they are gonna be.
SOME PICTURES REGARDING PROCESS OF IRRIGATION.

Picture showing little ways inside the field
Picture showing one of canal in the canal system of village
Canal view

It also helps in loosage of water which the dry mud absorbs
Recently watered canal...

As we can look here water also sometimes stay in canal itself which is a loss too
With Regards:

YASH BAHETI

UMN-IITR WHITE TEAM
Appendix F
References


Fred Rose, In Class Presentation, University of Minnesota, Minneapolis, February 12, 2010.


