CYON

King Hill Farm
Final Report
12.4.14

CYON

www.cyonsolutions.com

Report Overview:

After reviewing existing farm operations, CYON determined in conjunction with farm management that the wash/pack process was one of the least efficient production processes at the farm. The existing pack house posed a series of risk management and food safety concerns that could threaten the farm's success in obtaining Good Agricultural Practice (GAP) certification, required by one of their largest buyers before 2016. Through a series of interviews, flow charting, and workflow process design CYON created a design for a new pack house that takes these food safety and risk management concerns into account and also greatly increases both production efficiency and the potential for expansion and growth of both their commercial and CSA accounts.

By increasing potential capacity for production, reducing both labor hours and labor cost, and increasing food safety, traceability and separation of CSA/commercial product, CYON believes that the farm can operate far more efficiently and is on stable ground for significant growth going forward. In addition, barrier to achieving GAP certification going forward will have been removed through this new design.

Agreement and Scope of Work:

Below is what was agreed to per the contract as included within the Scope of Work for this engagement. CYON will address each of these areas with an overview of work completed under each section and the related findings and recommendations.

Remove Barriers to GAP Certification and Create Efficient Pack House Design and Corresponding Budget:

- *Design, Validate, Test, Revise, Publish/Finalize - these are the steps to any efficient workflow design process*
- *Acquire and review GAP Certification and Audit Guidelines*
- *Create Floor Plan and Workflow Analysis for Pack House*
- *Challenge the Assumptions, do Trial Testing in New Layout*
- *Create Budget for Pack House*

- **Initial Interview and Work Flow Assessment**

FINDINGS: CYON reviewed current production practices with farm management and determined that while they were currently using a dedicated wash/pack area and had installed a large storage cooler, certain risk management practices were lacking. In addition, the set up of the wash/pack area was haphazard, cluttered and overcrowded. CSA customers would routinely enter the wash/pack area, set stuff on prep tables and distract employees from their work, proving the need for better CSA customer pick up procedures. Budgeting for farm infrastructure projects was not a regular practice. Instead, farm improvements were made as necessary and typically were self-financed slowly, or were postponed until the necessary materials or equipment became available either through purchase, repurposing or through a little Yankee ingenuity (handmade).

RECOMMENDATIONS:

- **Create Project Budgets** – Creating a project budget for farm infrastructure can help keep the project on track, allow for proactive (rather than reactive) development of stable infrastructure and allow for better production planning.
- **Do Regular Workflow Assessments** – to avoid unnecessary bottlenecks, regular (yearly?) workflow assessments can identify issues before they start affecting either the bottom line or work/life balance (happiness). Such was the case of the pack house. When the farm is in full swing during the height of the season, that is when little inefficiencies start to have a larger impact. Proactive planning can help to reduce inconveniences and expensive mishaps.
- **Don't Be Afraid Of Change!** – Redesigning the pack house was not a lengthy process and it illuminated certain risk management issues that could be easily remedied. Revamping the design of the pack house also enabled the farm to think proactively about applying for GAP certification down the road and ensured that there would be fewer (I hesitate to say "no") surprises during that certification process. It also ensured that the farm doesn't do anything in the short term that could potentially hurt them in the long term.
- **Accurately document all production losses** – Data around yield and production losses, through spoilage, animal damage or other circumstances that might reduce expected profits (such as lower quality

product or products kept for home use) need to be documented accurately so that better risk management planning can occur and so that Healthy Acadia can provide the best level of service to aid in gleaning such product. Current numbers are based on estimates and memory, with little data on total value of the losses. This can be documented within a simple Excel spreadsheet that shows total pounds of culls, spoilage or product kept for home use. King Hill should start each new year with losses recorded throughout the previous year, along with total value (retail sale value, or replacement value – whichever you use consistently for your accounting purposes). Alternatively, loss value can be tracked on a clipboard that hangs in the greenhouse or pack house where that same data is documented each time a loss is noted. That data needs to then be incorporated into the yearly P&L.

- **Acquire and Review GAP Certification and Audit Requirements**

FINDINGS: CYON procured two guidance documents and an audit-rating document and went over them in detail with farm management. These documents outline a few issues, such as wastewater control systems, that may pose an issue for the farm given the current pack house design. Other issues identified were the proximity of animal pastures to vegetable fields, the availability of outhouses and hand wash facilities to field workers and within the pack house. Finally, regular monitoring and documentation of the cooler temperature would be required to ensure food safety and quality.

RECOMMENDATIONS: Farm management was provided with the name of a GAP certification consultant and the availability of GAP training classes. The guidance documents also provide some significant information on the overall requirements for GAP Certification. In addition, we discussed diversification of their customer base to help defray the risk associated with losing a very large client. Healthy Acadia provided several contacts for buyers closer to home that would both reduce the need for King Hill Farm to pursue GAP certification, if it was found that the certification process was either too costly or impractical given the diversification and regular operation of the farm, and would reduce delivery costs.

- **Create Floor Plan and Workflow Analysis for Pack House**

FINDINGS: CYON used a process mapping technique to capture the current process for production once the crop left the field. Through various field exercises different layouts for the pack house were considered with farm management and staff. Then a draft layout was created to include various design improvements, better water access and wastewater management and cleaner egress pathways. Finally, passive energy systems were discussed to both reduce cost and improve sustainability of the pack house.

RECOMMENDATIONS:

- **Enclose the pack house** to reduce potential food contamination, keep visitors to the farm out of the "clean" areas, and allow for year-round use
- **Use passive solar energy for heat and light** – Translucent Panels
- **Create a dedicated shelving area** to reduce clutter and keep personal items and unused equipment/supplies away from the food production area
- **Increase waste water capture systems** to eliminate "overflow" problems
- **Streamline Efficiency** – Rearrange the layout of the packhouse to reduce redundancy, transportation of product from one place to another and segregate the clean and dirty sides of the processing line
- **Create dedicated "work areas"** and give certain workers specific tasks rather than having one worker follow one bin all the way through the production process...
- **Increase access to electrical outlets**
- **Create a staff message center** to help eliminate redundancy, provide a place for regular staff communication during production and to track product loss rate and other potential issues
- **Build CSA pick up shelves** on the exterior of the building to help make CSA pick up procedures cleaner, keep visitors out of the "clean" pack area and reduce gathering around the egress pathways

- **Challenge the Assumptions, Do Trial Testing**

FINDINGS: CYON discussed building codes, site constraints, cost and time for renovation with farm management to identify any barriers to the new layout. The largest barrier was wastewater management. Various methods for handling wastewater were discussed. CYON also reviewed layout acceptance with farm management and staff (would the staff really use the shelves instead of piling stuff on the tables). Acceptance by staff largely revolved around good communication and integrating their feedback into the design. Farm management felt that acceptance wouldn't be a problem. Finally, trial testing was done – the wash/pack process was tested using root crops in the new layout. Issues with the staff communication board location and the storage of fresh packing crates were discovered. Solutions were incorporated into a new design.

RECOMMENDATIONS:

- **Work with local code officer or GAP Consultant to establish better wastewater control points** – It's possible that the wastewater control system currently in place is perfectly sufficient for GAP certification, given the volumes processed. Rather than overdesign, a new idea for a catch basin under the spray table to help channel water to the drain was developed and the decision was made to seek further guidance once a decision to pursue GAP certification was made.
- **Reduce Shelving for Better Crate Storage** – reducing the amount of shelving might help reduce clutter stored in the pack house. By adding shelving above 3' and using the lower areas for storage of packing crates, we could enable the ready availability of packing crates inside the space, rather than having to retrieve them from outside.
- **Create windows or Dutch-doors to allow for airflow** – using the passive solar design may cause significant heat build up in the pack house, which would be undesirable. Creating high windows would reduce interference, but increase air flow into the pack house.

- **Create Budget for Pack House**

Findings: Creating a budget for the pack house was dependent on some decisions around buying new equipment or reusing existing equipment. It

required some decisions to be made around sheathing. For this reason, we instead decided to create a draft budget that could be used as a template by the farm so that they could think on these decisions, obtain specific pricing at the time of the renovations and create a more accurate picture of their capital investment in farm infrastructure, which would be important to their financials. It would also help them to keep the project on task and on budget, hopefully helping to reduce cost down the road.

RECOMMENDATIONS:

- **Use FRP panels for the interior or steel sheathing product** – various wall sheathing options are available, however to comply with food safety standards, interior walls must be cleanable and free of any penetrations or protrusions that could collect dust or other particulates. Typically, food processing areas are made using either FRP (fiber reinforced plastic) or steel insulated wall panels that can be sprayed down. Here is a website that lists many various steel wall panels http://www.cecobuildings.com/products/panel-systems/wall-panels/products-paneling-wall.html and Home Depot sells FRP wall board by the 4' x 8' sheet for $30.
- **Buy Stainless Steel Prep Tables and Sinks** – stainless steel will be more readily accepted as an adequate standard for food processing, being impermeable and durable. Wooden tables may be fine for some uses, but will need to be regularly cleaned with bleach or other antibacterial cleanser, which may pose issues for Organic Certification. These can usually be found used online either through Uncle Henry's, Craigslist or through Restaurant Auction sites for very little money.
- **Use Polycarbonate Roofing Panels for Passive Solar Gain** – many stores sell these roofing panels in a variety of sizes and thicknesses. You may need to check around for the best price in your area. Lowes sells 12' x 26" panels for $36.

- **Final Layout and Corresponding Budget**

  Attached please find the layout and budget, with certain assumptions outlined to validate cost estimates.

Timeline: Implementation should begin in 2015 and the GAP Certification decision should be made no later than August 2015, if King Hill Farm wants to be fully certified by 2016. Certification can often be a lengthy process, requiring a few farm visits. Risk management factors relevant to GAP, such as increased hand sanitizer stations or screens on the windows to keep insects and pests out of the pack house should all be implemented. Animal proximity to open fields should be discussed and relevant measures taken to reduce cross-contamination from animal containment areas to vegetable production areas.

Success metrics should include:

- Increased throughput capacity of new pack house
- Successful use of pack house during extended season
- $ value of farm improvements
- Increased efficiency and reduction of labor
- Increased cleanliness
- Reduction of interference from CSA customers
- Successful GAP Certification
- Overall work/life balance and "happiness" factor

Cost of Implementation:

Capital Improvements: $2,500 - $3,000 for pack house renovation

Thank You: I would like to thank you for the opportunity to work and learn together. I have greatly enjoyed our interactions and appreciate the opportunity you gave me to learn more about your farm, the customers you serve and the larger vision you have for your farm business. If you have any questions after reading through this report, please do not hesitate to call on me.

Jamien Richardson
Principal– CYON Business Solutions, LLC
jamien@cyonsolutions.com
207-232-8247 cell