

## 1<sup>st</sup> Interim Report

For

MDAC&F Grant under **RFP # 201411868**

### **Establishing Cover Crop Seed Cleaning Capability inside the State of Maine, with associated demonstration of growing practices.**

Aurora Mills & Farm LLC is a well-established organic grain farm, with existing value added capacity to clean and process food grade cereal grains into flour and rolled oats. We seek to increase our existing cleaning line to be able to clean and separate smaller seeds by adding two machines, a dodder mill and a spiral separator. In our farming practices, we need to add no till planting and swathing, to demonstrate the growing techniques needed by us and other farmers to successfully grow the cover crops used commonly in the state. In addition, we propose to demonstrate the use of no till planting and multiple in season cover crops to improve manure management around food safety issues.

#### **Project Goals and Objectives:**

To add additional cleaning machines and devices to our existing grain and seed cleaning system, to allow us to meet purity standards for small seeded forage and cover crops. Medium red clover, annual ryegrass (Westworld ryegrass), vetch, buckwheat, tillage radish are all grown and used in Aroostook County. Canadian and mid-western seed production data on clover and ryegrass, suggests yield ranges 300 to 800 lbs. per acre with lower yield values on clover, indicating that one acre of Maine grown seed should supply approximately 25 acres of cover crop seed at the higher seed rates for each species. Production system will require swathing, since shatter loss for almost all these crops will start at moisture levels of around 40 %. Mechanical desiccation, through swathing versus chemical desiccation will allow the crops to continue growing past seed harvest, letting them continue as cover crops. We want to establish a crop production system that allows for a multi cover crop system and mechanical desiccation by using no till planting and swathing equipment. Existing clover crops in our rotation can be seeded to buckwheat or tillage radish after the first harvest and the seeds can be easily separated by our cleaning process.

Good progress has been made with all equipment purchased building modifications in place. Custom seed cleaning for other growers is now in place with several growers using our services, for crops from buckwheat to heritage grains for seed use. We produced cover crop seed for hairy vetch, buckwheat, and medium red clover, with sales of the vetch going to instate commercial seed house. Mid-summer manure applications were accomplished on both spring and winter

grain fields, with no-till planting scheduled for this spring extending manure interval to over 12 months.

Next Steps and Lessons learned: Pollinated crops such as the medium red clover rely on native pollinators most of which are solitary bees will require enhancement through improved wild flower companion plantings at field edges followed by careful staging to bring yields into the normal 100 to 200 pounds per acre rather than the 50 pounds we averaged. Other crops including the wild flower mix itself will be harvested and processed for seed. Top dressing of nitrogen will be needed on all crops intended for milling to meet protein quality desired for bread flours.

Additional Equipment needed for Cover crop seed production actual	proposed
<b>Growing</b>	
Used Swather 17000	\$ 3500-\$8000
Used Pickup head 4000	\$4000-\$6000
Used No Till drill 17000	\$20000-\$30000
Subtotal 38000	\$27500-\$44000
<b>Cleaning</b>	
Rice Dodder Mill 8000	\$9500-\$11000
Spiral separator 1500	\$1500-\$2800
Bagging scales (switched to pallet platform scale) 1200	\$1300-\$2500
Subtotal 10700	\$12300-\$16300
Trucking machines from Illinois 700	\$1000

Outside labor need for modifications and wiring of machines 1500	\$1200-\$1800
Totals 50900	\$42000-\$63100
In Kind (Building materials and on farm labor for mill alterations) 8000	
Processing building and existing cleaning machines	\$280000
Grain Storage and drying facilities connivance	\$20000
Combine tractors tillage equipment	\$200000