



Angus
Shire

Hops Farm

Hop Harvesting Standard Operating Procedure

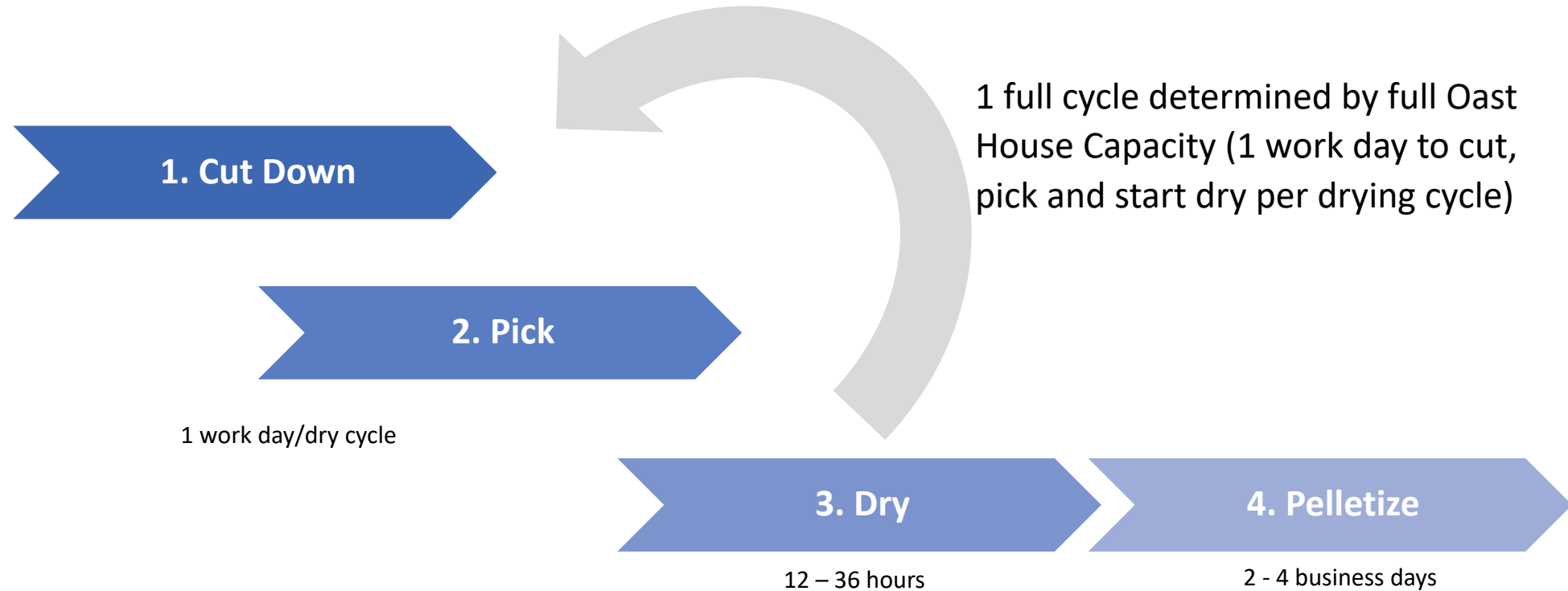
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Introduction

- Angus Shire Farms is a family owned and operated hop farm in Northumberland County, Ontario, Canada. We grow a variety of hop varieties, including chinook, magnum and fuggles.
- The hops are perennially grown and every fall (typically September) must be picked, dried and pelletized prior to being sold for beer brewing.
- The harvest is a social event and may include meals and casual fun in the evenings with friends and family, after the hard days' work.
- This document outlines the standard operating procedure (SOP) for a typical hop picking harvest period.



Hop Harvesting Process Overview



1. Cut down

- ✓ Hops are cut down from the Hop Rig
- ✓ Cut down bines are laid on a wagon next to the Hop Picker

2-4 People

2. Pick

- ✓ Cut bines are taken from wagon and fed into the Hop Picker
- ✓ Hop Picker picks hop cones from bines and fills into a bucket
- ✓ Buckets of hop cones are driven to the Oast House

1-3 People

3. Dry

- ✓ Cones are spread out on drying racks in the Oast House
- ✓ Generator run drying system dries the cones
- ✓ Dry cones are removed from drying racks and paper yard waste bags are filled

1 Person

4. Pelletize

- ✓ Bags of dry hop cones are driven to Pelletizing Plant for processing
- ✓ Pelletized and packaged hops are picked up

1 Person

Roles and Responsibilities

Note that team roles do not necessarily represent number of team members, and one person may assume multiple roles

Core Team Roles



Harvest Manager – Oversees the entire operation and assists with tasks throughout (1 person)



Bine Cutters – Cuts down hop bines from the rig and stacks bines for picking (2-4 people)



Cone Pickers – Feeds hop bines into the Hop Picker and collects picked cones in a bucket (1-3 people)



Hop Dryer – Picks up buckets of picked cones and loads the Oast House for drying (1 person)



Driver – Fills bags of dried hops from the Oast House and drives to the Pelletizer Plant and picks up after they are pelletized (1 person)

Support Team Roles



Child Caretaker – Takes care of any children present of the core team members' (1 person)



Cook – Grocery shops and cooks to provide meals and beverages to the entire team (1 person)



Observers – Observes the entire hop picking process, participating in social activities, odd job supporting activities and potentially participating temporarily in core team roles activities (unlimited # people)

Equipment and Supplies

Item	Ideal Quantity	Description
“The Hop Rig”	1 per row of grown hops	The hops are grown on bines, supported by the Hop Rig, which is an engineered system of suspended aircraft cables that the bines can grow up and can be let down for picking
“The Hop Picker”	1	The Hop Picker is a machine that automates the picking of cones off of bines
“The Oast House “	1	The Oast House is a closed chamber that is de-humified with air conditioners to dry the hop cones
Machete knife	2-4	Sharp knives are required for all Bine Cutters to cut down hop bines
Work gloves	1 set per person	All team members handling hop bines are recommended to wear work gloves (per their personal choice)
Tractor	1-2	A tractor is required to run Hop Picker and to let down the hop rig cables
Flatbed tractor wagon	1-2	A wagon is recommended to stack hop bines on after they have been cut (a tarp can be used if a wagon is not available)
Generator	1	The Oast House is run off of a generator
Gasoline	Dependent on hop volume	The generator must be continuously run off of gasoline during a drying cycle
Large buckets/tubs	3-5	The picked cones from the Hop Picker must be collected and transported to the Oast House in containers
Food and beverages	Enough for entire team	The entire Hop Picking Harvest Team must be kept fed and supplied with beverages through the entire hop harvesting duration

Considerations

- The quantity of hops that are picked each day is dependent on the drying capacity of the Oast House. Once hops have been picked from the bine, they must be placed within the Oast House immediately so that drying can commence, otherwise they may spoil.
- An entire row of hops must be picked in the same day, as once the Hop Rig cables have been let down to cut down bines, all bines must be picked, as hops laying on the ground may spoil.
- Once a backlog of hop bines have been cut down, hop picking using the Hop Picker may begin. Likewise once a backlog of hop cones have been picked, the Oast House can start to be loaded for drying. Therefore, at the beginning of a hop picking day, only bine cutting occurs, and at the end of the day, only loading of the Oast House occurs, but in the middle of the day, all three activities may occur. The Oast House must be emptied, with dried hops being delivered to the Pelletizing Plant prior to starting another picking/drying cycle.
- It is the responsibility of the Harvest Manager to manage these considerations, to ensure optimum harvesting efficiency, while preventing over-picking, resulting in hops being picked that are not dried.
- At peak operations during the picking/drying cycle, the ideal # of core team members is 6: 1 Hop Dryer, 3 Cone Pickers, 1 Bine Cutter, and 1 Harvest Manager who also assists with bine cutting and assorted tasks and will likely also assume the role of Driver. It is not recommended that this number of team members is exceed as efficiency past this number is not increased. The minimum recommended number of core team members to complete a harvest is 3.

Detailed Process

The following chart describes the hop picking process for one full day/one full drying cycle. This process is repeated for as many days as is necessary to harvest all rows of hops.

