Growing, processing, and using your own home-grown hops

- **History:**
  - First known instance of hop cultivation was in the Hallertau region of present-day Germany in 736
  - It is still the most important production center with 25% of the world's production
  - The first mention of use for brewing was in 1079
  - Hops were introduced to British beers in the early 1500's and cultivation in the U.S. started in 1629
  - Germany is the leader in hop production followed by the U.S., China, Czech Rep., Poland, Australia, UK, Slovenia
  - New Zealand is the leader in organic hop production
- **Site Preparation:**
  - Southern exposure is ideal but east/west-facing locations can work
  - More sun= larger, more productive cones (6-8+ hours of sun is ideal)
  - Good air circulation but not too much wind (wind break can be used in windy areas)
  - Plenty of vertical space; existing structures (eaves/poles) can be used for a trellis
  - Well-draining soil with pH of 6-8 is ideal
- **Planting:**
  - Soil should be prepared and worked with compost or well-rotted manure (or other organic matter) for best results
  - "Hills" (mounds) can also be formed about 6 inches high with 1-2 rhizomes planted/hill
  - Space rhizomes 3 feet apart for same varieties and 5 feet apart for different varieties
  - Plant rhizomes horizontally 2-3 inches deep with the buds pointed up and roots pointed down
  - You can cover the rhizome with a 1-2 inch layer of mulch such as rotten straw
  - Keep soil around newly-planted rhizome moist but not overly-wet/saturated
- **Trellis:**
  - Hops can be grown on fences, poles, strings, wires, or anything they can be trained to wind around
  - A single pole made of wood or metal with wires extending out 7 feet from the pole is one method
  - Connecting to a gutter/structure with wires/twine is convenient; 2-6 wires/rhizome
  - Elaborate trellis systems can be made with adequate space; commercial hop trellis' are 18' tall!
  - Two poles spaced 20 feet apart with a guy-wire/cross-bar can accommodate 4-6 plants or hills
  - Make sure trellis is VERY sturdy and can withstand heavy weight and wind
- **Training:**
  - Hop vines can grow up to 1 foot/week and established vines can grow 30 feet/season!
  - Choose 2-6 of the healthiest shoots for each rhizome and prune off the rest
  - Train the shoots in a CLOCKWISE direction around the wire/pole (be careful not to break them)
  - After about a week the vines will start to climb on their own; prune off any new shoots that appear
- **Watering:**
  - In Colorado water is THE limiting factor
  - Hops use a LOT of moisture producing huge vines and plentiful cones
  - Keep the soil around the plant MOIST but not waterlogged
  - Sprinklers, soaker hoses, drip-irrigation, and hand-watering are all effective methods
- **Nutrition:**
  - Incorporating lots of organic matter before/during planting will ensure success
  - A complete, balanced fertilizer can also be used to supplement during growth (high phosphorus during flowering)
  - Compost, rotted-manure, seaweed extracts, worm-castings, bat guanos are all good organics
- **Pests and diseases:**
  - Healthy, strong, well cared-for plants is the best prevention against insects and disease
  - Main pests include Japanese beetles, spotted cucumber beetles, aphids, and spider mites
  - Main diseases include powdery mildew, downy mildew, and verticillium/fusarium wilts
  - Control of pests can be effective with insecticidal soaps, oils, and pyrethrins
  - Mildews/wilts can be controlled with copper-based solutions (copper sulfate) or compost/manure teas & baking soda

•Harvest:

- Late Summer-Fall is the time to harvest the mature hop cones (generally July-September in Colorado)
- The most obvious sign of maturity is when the cones have a plentiful amount of lupulin glands at their base
- Lupulin glands should be a dark yellow-gold and have a strong aroma when rubbed between the fingers
- Cones begin to feel "papery", dry out slightly and swell before they are fully mature
- Harvest before the cones begin to turn brown and wither
- Harvesting can be easily accomplished by hand-harvesting cones into paper grocery bags
- The entire top of the plant can also be cut down and cones harvested off the ground
- If harvesting by hand it is possible to get multiple harvests between several weeks

•Drying/Curing:

- Small harvests can be dried in paper grocery bags in a warm, dark, dry place with good air circulation
- Fill grocery bags only ¼- 1/3 full and toss the hops around a few times a day
- Screens can also be used to air dry hops
- Dehydrators are effective at low temps (95F) but do not hold a lot of hops
- For large harvests, an oast can be made and used for drying hops
- An oast is basically a box with screens; warm air is pushed through the top of the box and out the bottom
- Ovens do NOT work well due to volatilization of delicate hop oils
- Hops are dried when they feel dry to the touch and the strig (hop cone stem) will break before bending

• Using Homegrown Hops:

- If you know the variety and have an estimate of alpha acid content you can use them at any step (including bittering)
- Generally shoot for the mid-range of the average AA% for any given variety (if 12-14% is average, go with 13%)
- Homegrown hops are generally fresher and more pungent than commercial
- You can also use hops undried but they are best used for late additions (flavor/aroma)

• Storage of Dried Hops:

- Hops should be stored in air tight containers or bags in the freezer until used
- Some varieties lose potency quickly so it's important to store cold and away from air (oxygen)
- Vacuum sealed bags are ideal and compress the hops into more manageable sizes to store in the freezer
- Zip-lock bags can be used for short-term storage

• Root Pruning/Propagation:

- Hops are asexually propagated due to variability issues with seeds
- Roots should be pruned after the first 3 years of growth
- Established hop gardens can have roots pruned yearly in the Spring to stimulate growth and remove "suckers"
- Cut existing roots to about a 1-2 square-foot area around the plant/trellis
- Cut up rhizomes into 4-6 inch sections for planting elsewhere or giving to friends
- Plants can also be propagated via leafy, herbaceous cuttings with a auxin-based rooting hormone & high humidity

• References:

- Wikipedia.org
- The Homebrewer's Garden by Joe and Dennis Fisher
- Hopunion.com
- probrewer.com/resources/hops/

Family: *Cannabaceae* (Hemp family)
Genus: *Humulus*
Species: *lupulus*
Sub-Species: *lupuloides*