



Great Lakes Fruit, Vegetable & Farm Market EXPO

Michigan Greenhouse Growers EXPO

December 9 - 11, 2014

DeVos Place Convention Center, Grand Rapids, MI



Hops

Wednesday morning 9:00 am

Where: Gallery Overlook (upper level) Room E & F

MI Recertification credits: 2 (COMM CORE, PRIV CORE)

CCA Credits: CM(1.0)

Moderator: Erin Lizotte, Extension Educator, MSU Extension, Cadillac, MI

- 9:00 am Introductions
- Robert Sirrine, Extension Educator, MSU Extension, Suttons Bay, MI
- 9:05 am National Hop Market Update
- Ann George, Hop Growers of America, Moxee, WA
- 9:35 am Hop Quality Control: From Field to Kettle
- Bradly Studer, Formerly with SS Steiner & Manager of Roza Ranch, Prosser, WA
- 10:15 am Hop Quality Roundtable
- Ann George, Hop Growers of America, Moxee, WA
 - Bradly Studer, Formerly with SS Steiner & Manager of Roza Ranch, Prosser, WA
 - Scott Graham, Executive Director, Michigan Brewers Guild, Lansing, MI
 - John Mallet, Bells Brewery, Kalamazoo, MI
 - Alec Mull, Founders Brewing Co., Grand Rapids, MI
 - Jake Brenner, Grand Rapids Brewing Co., Grand Rapids, MI
- 11:00 am Session Ends



Hop Quality: Field to Kettle

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Supply Chain of Hop Traceability

- Farming Practices
- Harvest Procedures
- Receiving Procedures
- Lab Procedures
- Processing Procedures
- Quality Management

Farming Practices

- New or replanted fields are completely tilled and fumigated.
- Rootstock is sourced from the Hop Clean Plant Network, propagated internally from selected plants or collected from established fields.
- Removal of off-types is done throughout growing season.
- In the USA there is a small number of growers making frequent farm visits possible. We maintain maps of the source hop yards.
- The grower's contractual obligations include providing legal descriptions of contracted fields and "pure in variety" hops.
- We provide our contract growers with pesticide application letters and pre-harvest guidelines.

Harvest Procedures

- Facilities pick one variety at a time.
- Equipment is cleaned between varieties.
- Varieties are kept separate in kilns and a kilning record is maintained.
- Each baled lot is assigned a unique grower lot number and each bale is numbered.

Hop Receiving Procedures

- A “load delivery report” is required for all hops received.
- Each lot is also assigned a unique Steiner lot number (numbering is arranged by variety) and entered into the ERP system.
- Each bale is individually inspected, core samples and bale cuts are taken and evaluated.
- Non-conforming hops are rejected.
- The process is monitored on-site by State Inspectors (who also perform seed, stem and leaf inspection).

Lab Procedures

- Bale cuts are evaluated, graded and a quality report is issued.
- Each lab sample is checked against the daily take-in list and entered into the ERP System.
- All samples are analyzed by UV.
 - Alpha and Beta results are compared to the variety standard values.
- Unusual results are re-analyzed. A new sample may be requested if necessary.
- Further confirmation may be provided by:
 - HPLC (CoH:H ratio),
 - GC analysis of the oils, or by
 - DNA analysis.

Processing Procedures

- Lot numbers are listed on:
 - work orders,
 - hauling lists,
 - set-up sheets and
 - order composition sheets.
- “Like” orders are run in succession
 - between orders the system is run “dry” followed by a mill purge with food grade oats
 - first 50 lbs of next run are discarded
- Individual pellet pouch or extract package is stamped with a unique number. Each outer box and pallet is labeled per customer instructions.
- Analyses are performed during production. We retain a representative sample from each order.
- All production and lab results are entered into the ERP System.

Quality Management

- ISO 9001:2008 certified Quality Management System.
- Fully integrated ERP System (Microsoft’s Navision).
- Lab internal, local, and international ring analysis.
- Frequent customer audits.

Title: **The US Hop Market:**

- **Where we've been...**
- **Where we are today...**
- **Where will we be in the future?**

Presented by:

Ann E. George, Executive Director

Hop Growers of America

PO Box 1207, Moxee, WA 98936

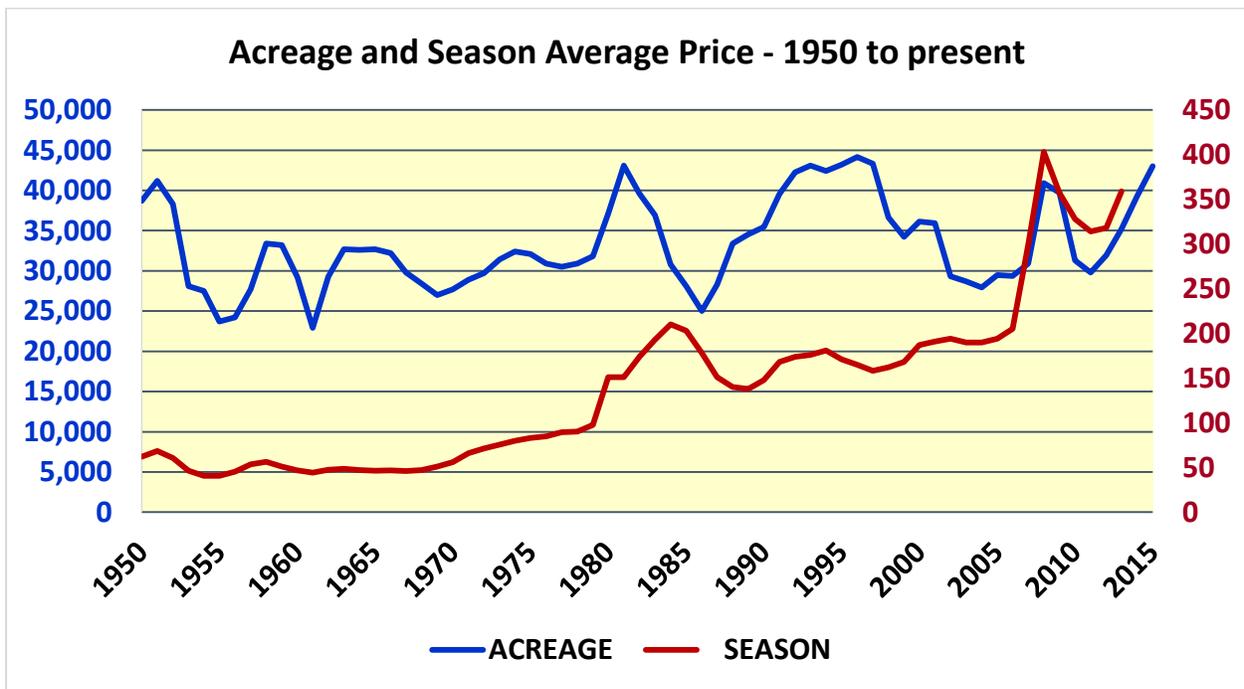
Voice: 509.453.4749; Email ageorge@wahops.org

Hop Growers of America

- Established in 1957 to represent the interests of US hop growers.
- Current areas of focus include:
 - statistics
 - public relations
 - trade education
 - market development (primarily foreign)

Hop Market History

- The hop market has a history of wide swings in prices and acreage.
 - Relatively stable demand by the brewing industry
 - Very efficient producers, able to rapidly expand acreage
 - Small acreage worldwide compared to many other crops; annual yield variations have greater impact
 - Long shelf life – surpluses must be used by brewing industry, which can take years.



Factors causing “peaks” and “valleys”

- Growers:
 - Yield variability
 - Producing “spot” (uncontracted) hops
- Brewers:
 - Recipe changes (substituting alpha hops for aromas, changing hopping rates, use of “downstream” products that increase efficiency)
 - Shifting purchases based on currency values
 - Global economics impact on beer volume growth (beer is not recession-proof)

Forward Contracting

- Primary mechanism to manage market risk for growers and brewers
- Growers contract with merchants or brewers; brewers contract with merchants or directly with growers
- Industry standard is a 5 year forward contract, locking in price for ave. yield
 - If supplies are short, “spot” prices rise
 - If supplies are long, “spot” prices decrease
 - Provides brewers with security that they will receive their hops, even if crop is short.

US Standing in World Hop Market

- US and Germany are 2 biggest hop producers globally
- On average, each produce nearly 1/3 of the world’s supply of hops
- All other hop producing countries contribute the remaining 1/3
- Two biggest production regions in the world: Yakima Valley and Hallertauer
- US annually exports over 60% of the crop to 60+ markets

Brewing Industry Changes

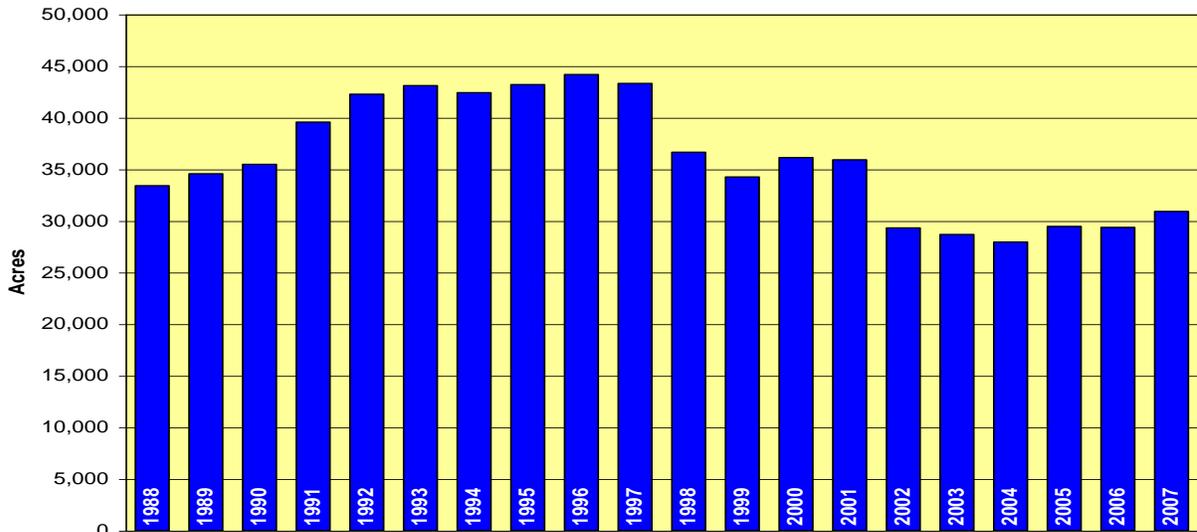
- During 1990s and 2000s, there was continued consolidation worldwide for the large brewing companies:
 - SAB-Miller, MillerCoors, CoorsMolson, Heineken-Femsa, AB-InBev
 - As of 2008, top 3 brewing groups controlled 44% of market share (ABI, Heineken-Femsa, SAB Miller)
- Microbrewing and Craft Brewing sectors were growing, but not yet a major factor in hop market (limited contracting, able to procure “spot” hops to meet their needs)

2007 – HOP SHORTAGE!

- Hop Industry Factors leading to this phenomenon:
 - Sizeable hop surplus created in late ‘90s due to new super-alpha varieties. Alpha surplus also caused decrease in aroma prices/demand.
 - No new contracts available for additional acres, and many existing contracts were not renewed.
 - Beer Volume growth of 3-5% during early to mid 2000s.
 - Worldwide hop acres reduced below annual brewing requirements to use surplus.
 - Many growers left the industry; others idled acreage and equipment, mothballed harvesters, and relied on other crops to carry their operations.
- Brewing Industry Factors leading to this phenomenon:
 - Beer Volume growth of 3-5% during early to mid 2000s (remember the situation with financial and real estate markets at that time?)
 - Hops plentiful and inexpensive for a decade, due to surplus inventory

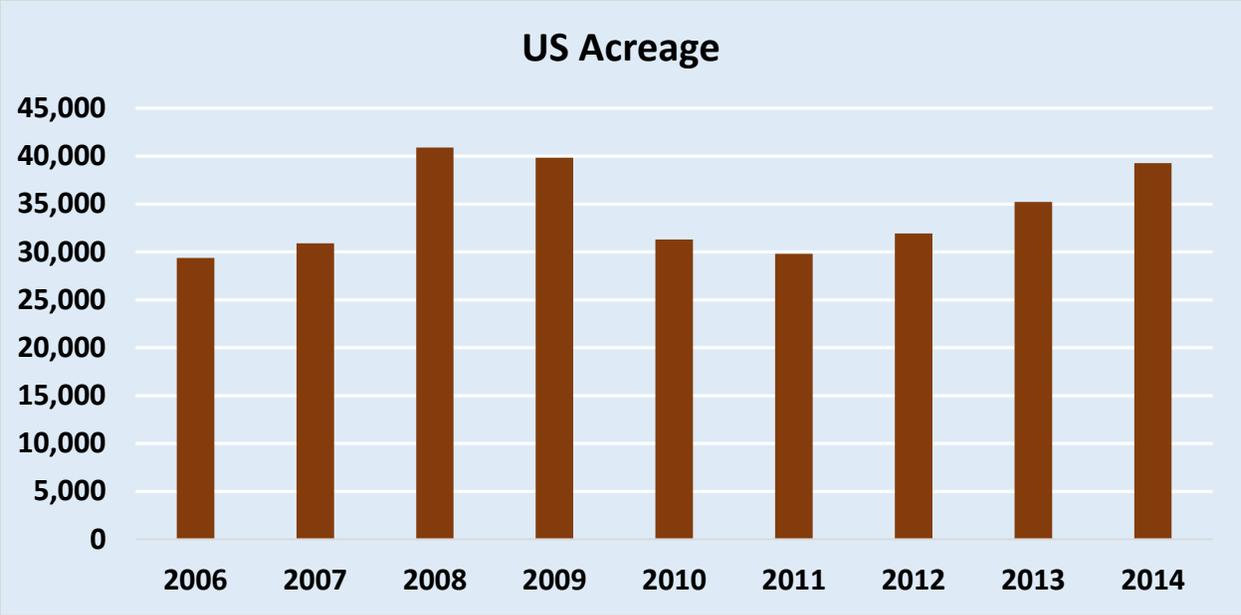
- Ongoing consolidation of large brewers worldwide; changes in purchasing programs and staff; pressure to cut input costs and produce profits for shareholders.
- Brewer hesitation to sign new contracts at higher prices (to cover inflation, recapitalization)
- Without brewer contracts, merchants could not offer grower contracts and banks would not approve financing for operating and capital investment

US Total Hop Acreage 1988-2007 (20 Years)



2007-2009

- 2007 hop shortage was devastating to uncontracted brewers
- Some “panic buying” pushed prices higher
- Growers scrambled to add 10,000 more acres in 2008 (39% increase in 2 years)
- Value of an entire year’s crop was invested in grower and processor infrastructure repairs and equipment upgrades
- 2009 crop – Record Yields (US and Germany)
 - US average yield 2,383 lb/ac compared to mid-1,900s in 3 previous seasons
 - Excess hops flowed into “spot” market (contracts based on average yields)
- Worldwide recession
- Beer is not recession-proof!
- Beer volume growth rates decreased to 1% in 2008 and lost 1.5% in 2009
- Many brewers had over-contracted due to high volume growth in mid 2000s
- Spot hop prices well below contracts
- Brewers cancelled contracts with merchants; merchants cancelled contracts with growers
- All acreage established in 2008 was removed by 2011



2010 to present

- Craft growth over last 20 years; devastating impact of 2007 shortage due to limited contracting and increasing demand
 - BA educational efforts have dramatically increased contracting
- Double-digit volume growth of all-malt beer (craft, craft-like)
- After 2007 experience, more small brewers contracting
- Considerably higher hopping rates (US average 0.25 lb/bbl; craft 1.3 lb/bbl)
- Craft is now 8% of US beer volume, but accounts for 25% of US hop crop!



Source: Brewers Association, Boulder, CO

Variety Shift

- US historically 70% alpha varieties, 30% aromas
- Europe historically 60% aromas, 40% alphas
- Roles are now reversed with Europe producing more alpha and US producing more aroma
 - 2014 US acreage was 60% aroma and dual purpose varieties, 40% alpha
 - Cascade is now the most widely planted variety in the US
 - Many new varieties being released to provide new flavor options
 - Still a high reliance on the export market for traditional brewing customers and a growing foreign craft brewing industry

Public and Proprietary Varieties

- Proprietary varieties now account for about ½ of US hop acreage
- Growers must be approved; expansion is controlled to insure price level can be maintained, to allow growers a fair profit while also generating enough income to cover royalty payments
 - Necessary for continuation of programs and future new variety releases
 - Includes a number of popular flavor hop varieties (Simcoe, Mosaic, Citra, Calypso, etc.)

Current Hop Shortage?

- Ongoing rumors of hop shortages...
- If customers are willing to contract, and understand the lead time necessary to obtain/propagate planting stock and bring a new field into full production, they should be able to obtain the hops they need.
- If customers prefer to purchase from the spot market, and wish to have the merchant network carry the risks associated with uncontracted inventories, they may or may not be able to get the specific varieties at the specific time they desire.

Outlook

- Continued increases in acreage of varieties favored by craft/all-malt beer sector
 - Requires contracts for bank financing, planting stock, land
 - Impact of acreage shift on picking window and harvesting capacity
 - Hop prices must support the cost of new/enhanced production and harvesting infrastructure
- Focus on quality hops + social responsibility/environmental footprint/etc. – requires investment in P&E as well as increased operating costs (Global Gap, Salmon Safe, etc.) – examples include drip irrigation, food safety systems, reduced risk pesticides

New Opportunities

- Opportunities for new growers to enter the industry
- Due diligence is necessary
 - Determine your customer --this will drive variety selection and determine need for harvesting infrastructure (dried vs. fresh hops)
 - Budget and source for materials and equipment, planting stock
 - Time frame to propagate planting stock and establish new hop yards, then bring into full production. May take 3-4 years from the time a brewer agrees to purchase crop for actual delivery
 - Contract. This is not a “build it and they will come” industry.