

Establishing and Managing Hazelnuts

Dr. Mike Demchik
UW-Steven's Point

Topics

- Site selection/preparation
- Planting/Weed control
- Hazelnut pests

Disclaimer

While I have planted two plantations of hazelnuts, I used standard treeplanting/management protocols and it worked fine

Hazel has been a part of other plantings

I am presenting standard tree planting and management protocols here

General

- Hazelnuts can grow across a broad range of sites
- However, they are more competitive on sandier soils
- This is unfortunate because they seem more productive on richer soils

What we did to get good survival

- Irrigation
- Good within row weed control

Year 1

If possible

- Plant into tilled, perennial weed-free (ish) ag ground
- Round-up ready soybeans the year before is a good planting bed for trees
- Generally, trees are more resistant to competition with annuals than with perennials



Maintain the in-row areas as
weed-free as possible for year 1

Weed Badger missed this one



AUG 10 2000

Year 2 there is probably more
ability to compete, esp. with
annuals

This is actually Year 3 (in our case Year 2 was pretty weed-free also)



Year three (block plantings)

- On site 1 we mulched with woodchips
- Seeded the alleys with rye?



Year 3 (windbreak)

- Continued tillage (these were still small and soybeans were adjacent)
- I might have been able to stop, but this was along main entrance to farm and seeing “weeds” means that you are a bad farmer in Central Minnesota



- Tillage was less frequent in the third year in this plot (only twice)
- By year 4, crops were planted closer and tillage was stopped



Survival

- Our survival was quite good in this system
- Talking to Lois, our yields were not
- This is probably due to low nutrient soils and very cold environment

Possible Scenarios

- Plant into sod
- Planting into cover crop
- Planting into killed cover crop
- Planting into clean ground
- Mulching
- Herbicides?

Planting into sod

- This may be possible but it makes first year care difficult
- This has resulted in a lot of mortality for multiple species
- With wild hazelnuts I have still been able to pull it off using “scalping”
- **I DO NOT RECOMMEND THIS MYSELF**

Planting into cover crop

- This may be specific to the cover crop
- Tall cool season grasses (orchard etc) and cereals (rye) can be a significant competitor
- Short, warm season grasses (sideoats etc.) and short legumes may be possible
- This has not been researched enough to make a recommendation

Planting into killed covercrop

- I have tried this very successfully with other species
- I have NOT tried this with hazelnut
- So, here is hybrid poplar in killed cover crop

Cost of Conventional

- \$90 tillage and chemical year one (old fuel prices, closer to \$140 now)
- \$50 year two (closer to \$70 now)
- 38-50% of cost of growing crop is in tillage and chemicals

Killed Cover Crops

- Cheap to establish
- Often high biomass yielders
- Maintenance window widened and costs reduced
- Effective in other crops (hort crops)

What we did...

- Sorghum Sudan hybrid planted in late June 2001
- Grow for the rest of season
- Sicklebar in spring
- Plant into residue in spring

Results

- Killed cover crop 85% survival
- Conventional tillage 51%
- Note that this was a dry year

Growth

- 1.34 and 1.37 feet (i.e. no sig. diff)
- Growth is basically the same between treatments

Weed Infestation

- Weed infestation was minimal in the killed cover crop area (about 1 weed per 8 feet)
- This is only a mild aesthetic problem, not really a competition problem

Hazelnuts

- This could present a possibly solution for the first couple of years
- Mice population could be much higher and could present a problem
- This was the easiest weed control that I have ever done

Planting into clean ground



Clean ground

- Either strip sprayed or cultivated
- This is the surest way to get establishment (it has worked for most species I have tried)
- Cultivation should be shallow to reduce root damage

Issues

- Erosion
- Loss of soil organic matter
- Potential root damage

Mulching

Mulching

- Fabric
- Organic mulch
- Others?????

Mulches

- Chips/Shavings- 2-5 inches
- Shredded leaves- 2-4 inches
- Hulls, cobs and shells- 2-4 inches
- Straw, hay and sloo grass- 6-8 inches
- Newspaper- 12 sheets
- Pine needles- 4-6 inches
- Grass clippings (Dry)- up to 2 inches

Problems

- Small mammals/some insect pests
- Delayed bud out and possibly onset of dormancy
- It rots away

Benefits

- It rots away
- Added soil carbon
- Soil moisture conservation

Fabric

- Cheap fabric is bad
- Poor anchoring is bad
- Can favor small mammals
- Can shed water instead of soak in
- Can inhibit sprouting

Fabric

- Good fabric can do wonders
- Conserves water
- If properly installed can allow water to soak in
- Can last for years

This site

- Swales were installed with a 2 bottom plow
- Fabric was installed on some rows above the swales
- Woodchip mulch (right-of-way clearing chips) applied to the others
- Irrigation was installed on half of the sites

Fabric vs Woodchips

- Hazelnuts in fabric grew app. the same/slightly slower
- Wood chip mulch required significantly more attention (weeding)

Generally

- Irrigation provided little additional benefit
- The fabric/swale combination was adequate without additional water
- Irrigation was not specifically tested on hazelnuts on this site, however.

Some combinations?

A photograph of a field of young plants, likely a nursery or experimental plot. The plants are arranged in rows and are surrounded by tall, dry grasses. In the background, there is a dense forest of trees, some of which are bare, suggesting a late autumn or winter setting. The overall scene is a mix of green and brown tones.

Norm Erickson's

Photo Lois Braun

Herbicides

?

- Oregon has a number of chemicals labeled including;
 - Grass herbicides- Fusilade, Poast etc.
 - Composites- Transline
 - Pre-emerge- Surflan, Treflan, Prowl
 - General- Glyphosate
 - AND OTHERS

What can we use?

- At this point, rope wicked glyphosate (not hazelnut contact) may be the most viable
- Not sure about anything else
- I would love to set up a test at some point

After establishment, cover crops
are probably essential

Spacing?

What to consider

- Operability with machines
- Terminal size
- Frequency of coppice, if use

Possibilities

- 5 or more feet in row
- 15 feet between rows
- Tighter than 15 will limit operability with tractors as the hazels grow

Terminal size

- I have seen wild hazels that are 20 feet wide
- I have seen hybrids that are 10 feet wide
- If the plants are coppiced regularly (10 years?), their size may be a bit smaller

Topics

- Site selection/preparation
- Planting/Weed control
- Hazelnut pests

Pests

- EFB
- Big Bud Mite
- Weevils
- Others

Conclusions

- Planting and establishment of hazelnuts is not that different from other woody plants
- Ways to cut costs and increase operability of vegetation management will require research
- Insects and diseases may present a problem