Making High Quality Grass Hay

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Making High Quality Grass Hay and Missed Perceptions

- Grass hay is so hard to make
- Grass hay takes so long to dry
- Grass hay must lay in the windrow for 10 days before baling
- No such thing as 'high quality' grass hay
- Grass hay is just not profitable

Forage Crops for Hay

Grasses

orchardgrass

tall fescue

timothy

Average Moisture Content of Grass by Maturity

- Pasture type = 80-90% (10-20%DM)
- Boot stage = 70-80% (20-30% DM)
- Anthesis = 50-70% (30-50% DM)
- Seed stage < 50% (>50% DM)

Strategies for Hay Harvesting

- 😐 Be a weather watcher
  - Satellite maps
  - High barometric pressure
    - good weather
    - harvest when is building, don't wait till it is here
  - Low barometric pressure
    - cloudy skies, rain, wet soils

Strategies for Hay Harvesting

- ☹ Grazing
  - Early but light grazing can delay seedhead emergence
  - Watch soil moisture to avoid rutting soil with hoof traffic
  - Do not use this strategy with timothy

Strategies for Hay Harvesting

- Cutting
  - Avoid the "hair-cut" look with high hay yields
  - Cutting closer than 3" will reduce stand life, increase weeds and lower long-term hay yields
  - Regrowth will be slower when cut too low, reducing regrowth cutting yields
  - For best grass regrowth, sustain plant health, reduce weed invasion cut >4" stubble height


1/2

To Increase Speed of Drying

- Mechanically injure stems at harvest
- Do not make a windrow to early as this slows rate of drying
- Tedding is essential; plan on tedding the crop up to 6 times before baling
- Pick 4 good days

Strategies for Hay Harvesting

- ☠ Equipment
  - Avoid the sicklebar mower for haymaking – great for clipping weeds, not great for hay
  - Use a mower conditioner, drum-mower, or flail mower to harvest and condition fresh cut forage
  - Use a tedder to fluff and increase drying rate of hay; tedder will keep hay from touching wet soils which will slow drying rate; keep air moving through the forage for rapid dry down


NEW HOLLAND


TRANSGARD

Field Harvest of Hay – First Cutting

- Cut at 3 – 5 inch stubble height, not 1 – 2 inch; use stubble to keep wet forage off wet soil
- Use drum mower, mower-conditioner, or like equipment
- Do not make windrow until just before baling

Field Harvest of Hay – First Cutting

- Higher cutting height will promote more rapid second cutting
- Check baler and bales often
- Broken bales may indicate baling forage to wet
- Watch barometer

Field Harvest of Hay – Regrowth Cuttings

- Leave 3 – 4 inch stubble height
- More legumes in a mixed stand in regrowth cuttings than first
- Check baler and bales often
- Broken bales may indicate baling forage to wet
- Watch barometer

Make Hay in 4 Days or Less

- Day 1
  - Barometer is rising; do not wait until the barometric pressure has topped out, that is too late; likely to get rained on before off the field
  - Clear skies
  - Harvest at 8:00 am; CP will be at its highest for the day but sugars levels will be lowest
  - Tedding about 6 hours later; if very wet then tedd before day is done

Make Hay in 4 Days or Less

- Day 1
  - DO NOT MAKE A WINDROW ON THIS DAY
  - Getting off to a good start reduces time hay lays in the field
  - Cut hay at proper stubble height
  - Need to establish “dry” area to move hay to on Day 2


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Make Hay in 4 Days or Less

- Day 2
  - Pivotal day as this establishes if hay is made on Day 3 or Day 4
  - Drying stubble area is likely moist, so let it dry before tedding hay on to this area
  - Set tedder teeth level, not close to soil level to avoid ripping out plants, dirt and rocks
  - Plan to tedd two or three times this day

Make Hay in 4 Days or Less

- Day 2
  - Evaporate dew from cut forage
  - First tedding about noon
  - Second tedding about 3:30 pm
  - Third tedding about 6:30 pm
  - You can feel and test the change in hay moisture with each tedding operation; can hear it from the tractor seat too

Make Hay in 4 Days or Less

- **Day 2 – Late Afternoon**
  - Check moisture of drying forage swath by twisting or microwave oven techniques
  - If swath is nearly dry from final tedding, then MAKE WINDROW on to dry soil area. Plan to bale on day 3.
  - If swath is still wet inside then tedd again on to dry soil from morning tedding – DO NOT MAKE A WINDROW, plan to bale on day 4.

Make Hay in 4 Days or Less

- Day 3
  - Pay off day!
  - Evaporate dew from cut forage
    - if in windrow from Day 2 then
      - re-rake or final tedd into windrow on to drier stubble
      - hay should be ready to bale by mid-afternoon
      - remove bales before bedtime


PENTAX

Make Hay in 4 Days or Less

- Day 3
  - Evaporate dew from wet swath forage
  - If swath is still wet then tedd onto dry stubble surface before noon
  - If swath is still very wet in mid-afternoon then tedd again, likely will not bale this hay on day 4
  - If swath is dry in mid-afternoon then rake into windrow for baling on Day 4
  - Wet swaths need tedding again after supper

Make Hay in 4 Days or Less

- Day 4 or Day 5 (???)
  - This day used only if forage was still wet in Day 3
  - Evaporate dew in morning
  - Tedding forage about noon
  - Rake mid-afternoon into windrow
  - Check baler, make adjustments, BALE
  - Remove bales from field as quickly as possible

Hay Maturity for Quality

- Boot Stage – Very high quality
- Late Boot Stage – Good quality
- Anthesis – A Little Late; quality is dropping
- Seed Ripe – Gone Too Far; very low quality
- Remember you can not substitute feeding extra grain to make up for lower quality forage or hay!!

The hay package is the one commodity you produce for sale that tells everything about your farm.

Conclusion

- It costs little more to make a good hay bale than a bad one. The difference is the value when you are done. Skill, weather watching, good equipment, harvesting plan, overall management AND a bit of luck, are needed in making high quality hay.

What Happens if Hay Gets Rained on Before Baling?

- Everything is not lost, it has happened before!
- Wet forage must be moved quickly
  - after swath top has dried off then get tedder out and tedd to new area
  - open stubble will dry faster than swath, let's take advantage of this
  - is rain a shower or a big storm?
  - pick up haymaking at Day 2 or 3 and complete through baling

What Happens if Hay Gets Rained on Before Baling?

- **Wet forage must be moved quickly**
  - watch these bales closely for heating, dust and mold development; if bale temperature exceeds 100 degrees F get ready to move them, if temperature exceeds 110 F move rapidly and have water ready to extinguish a fire
  - slugs can cause wet hay to combust resulting in barn fires!

Sweating of Hay

- Natural process of hay making
- Starts once hay is baled and can last for 1 week or more
- Primarily plant respiration
- Secondary microbial respiration
- Use thermometer to follow bale temperatures

Sweating of Hay

- No problems if bale temperatures <90º F
- Must break stack and open bales if >110º F; I'd always move bales at 100 F or less
- Heat resistant fungi active between 110 and 150º F

‘Slugs’ in Hay

- Not a mollusk
- Wet forage, hidden in windrows
- Slug does not dry out in bale
- Moisture from slugs spreads through bale
- Bale(s) heat and mold

Storage of Hay

- With high relative humidity must be drier
- Long term storage hay at 88% DM
- Short term storage hay at >82% DM
- Loose stack out of field for sweating to occur
- After sweat can stack tight in storage

Storage of Hay Outside

- Bales must not touch ground
- Use pallets, ties, etc.
- Stack hay loose during sweat
- Restack tightly after sweat over
- Tie down tarp or plastic cover for rain and snow protection
- Stack bales with cut side down, not on strings

Storage of Hay in Barn

- Barn provides most protection
- Barn roof and structure in good repair
- Allow bales to breath for a month after the sweat
- Keep doors open during post-harvest but keep rain off hay
- Stack bales with cut side down, not strings

Bale Evaluation

- **Visual evaluation**
  - Stage of maturity
  - Leaf / stem
  - Foreign material
  - Ties, color, odor, dust

Bale Evaluation

- Chemical / laboratory tests
  - crude protein
  - ADF
  - NDF
  - minerals
  - moisture (DM)

Haymaking Literature Sources

- Fransen, S.C. and M.R. Hackett. 2001 Haymaking on the Westside. WSU EB1897
- http://cru.cahe.wsu.edu/CEPublications/eb1897/eb1897.pdf

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