Equipment & Facilities Topics for Innovative Tobacco Growers Program
March, 2007
Updated 6/2007, 6/2013

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UK Biosystems & Agric. Engr. Dept.
Topics:

- Overview – Past Burley Labor Reductions
  (Future projections to be added soon)
- Burley Harvesting Machines
- Barns, Field Structures & Curing
- Stripping Innovations
- Leaf Moisture Testing Device Evaluation
Overview Past Labor Reductions:

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<td>% Labor Reduction:</td>
<td>-22%</td>
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<td>-5%</td>
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<td>-4%</td>
<td>-5%</td>
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<td>Net Cost/Lb Change</td>
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Note: Details of these data available from BAE Dept.
Harvesting Machines:

Carolina Greenhouses

Investment:
Harv.: $379,000  Frame: $808 ea., Cover $100 ea
100 Acres = $1,741,000, 200 ac = $3,103,000

Kirpy

Investment: Harv.: $23,000  Fld. Str: $900/ac.
25 acres = $45,500, 50 Acres = $68,000

GCH ‘Gold Standard’

Investment:
Harv.: $379,000  Frame: $808 ea., Cover $100 ea
100 Acres = $1,741,000, 200 ac = $3,103,000

MarCo

Investment: Harv.: $27,000  Fld. Str: $900/ac.
25 Acres = $49,500, 50 Acres = $72,000

Notch-Cut, Prices Unknown
Barn types, estimated costs...
3-4 Tier, 3 driveway, 40, 48 ft...
2-3 Tier, 3 driveway, 40, 48 ft...
2-3 tier partially enclosed...
Cost comparisons (Estimates)...

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<th>Item</th>
<th>Invest.</th>
<th>Life, yr</th>
<th>Ac/ Yr</th>
<th>$/Ac/ Yr</th>
<th>$/Lb/ Yr</th>
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<td>Conv. 4-5 T.Bn</td>
<td>$65,400</td>
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<td>10</td>
<td>$425.10</td>
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<td>$65,200</td>
<td>40</td>
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<td>$423.80</td>
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<td>$221.00</td>
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<td>$187.86</td>
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Curing: Various Vent Doors/Panels…

Hinged Vent Doors

Track Doors

Swing-out Vent Panel
TOO Enclosed??

Vent openings ONLY AT Top and Bottom (Open or hinged panels at bottom).

How much air through Tobacco?? NOT ENOUGH!!
Good Burley Curing:

Approx. 70-75% Average Daily Relative Humidity, 65-85°F temp.

Let weather prevail or

Manage Vent openings to control RH (???)

Cool weather, low humidity (<55-60°F for 3-5 days)
= greenish color leaf

Dry weather (<50-60% daily RH for 3-5 days)
= Variegated,’piebald’

Humid weather (>80-85% RH 3-5 days)
= ‘Houseburn’

Biggest Barn Problem frequently:
Crowding tobacco, Inadequate ventilation
Field Structures...

Traditional w/Sticks...

Two rail wide wooden, TYPAR cover

Post-Row Cantilever, Plastic cover

High tensile wire, plastic cover
Field Structures…

Newer Wire types…
(CAUTION on Strength??)

Cables, posts & woven wire, Pl. cover

Posts, H.T. wire, Pl. cover
CAUTIONS....

Potential post, structure & wire failures
Wire structure types & anchoring…

OK

No No!!!

See Pull Slot
Wire structure types & anchoring...

See separate pub: Design & Construction Guidelines for High Tensile Wire Tobacco Curing Structures
Bulking/Stripping Ideas??

Carts & Pallets for bulking, handling tobacco
Stripping Innovations…

- Stripping Wheel
- Dual-Chain Stick Conveyor
- Gathering Belt Stalk Conveyor ( & stalk chopping)
- Stripping Bench & Stalk Chopping
Stripping Innovations…

‘Mechanical’ Stripping Machine…
Developed by Carolina Tob. Services
Stalk choppers

Avoid This!!!
Observations/Recommendations on Stripping Efficiencies…

1. Minimize multiple handling of tobacco… in all phases
   (Barn > Bulk-Transport > Stripping  Wkrs > Bale)

2. Minimize carrying of tobacco, wagon direct to wkrs…
   use pallets, carts…

3. Wkrs strip w/o interruptions… (OK breaks)

4. Quick Leaf collection, direct to Sm. Bale,
   or Container, Big Bale

5. Bale storage nearby, easily accessible…

6. Stalk disposal, vehicle close by or chop-convey…

7. Bale Load out… (access, equipment…)
Sample Stripping Layouts..

21 shown on web site: www.bae.uky.edu/ext/tobacco
Sample Stripping Layouts..
Sample Stripping Layouts..
Basics of Efficient Stripping Facility…
How ‘wet’ is tobacco???

How to measure tobacco moisture?

- Meters??
- ‘TobaccoChek’ only made/calibrated for small bales
- ‘Microwave’ unit a few years ago… Core sample, weight, microwave 90 sec., re-weight, read M.C.
  
  2-3 min/sample, $3000

- Can weigh sample, oven dry, re-weigh, calculate…. Slow

- How about a ‘leaf size’ measurement? 1 minute, $200 +- ??
- Experimental work done but accuracy not acceptable..
The End