DETERMINING FORAGE PRODUCTION

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- MN State Rangeland Management Specialist
NEEDED EQUIPMENT
DETERMINING A REPRESENTATIVE AREA

- % DESIREABLE SPECIES
- % UNDESIREABLE SPECIES
- % TOXIC SPECIES
- SPECIES MATURITY
REPRESENTATIVE NUMBER OF SAMPLES

- LANDSCAPE POSITIONS
- SPECIES COMPOSITION
VISUAL ESTIMATION

- SPECIES COMPOSITION LIST
- A LIST OF PLANT SPECIES WILL HELP DETERMINE THE CURRENT DESIREABILITY OF THE PLANTS WITH THE LIVESTOCK SPECIES OF CONCERN
- IT WILL ALSO GIVE A BASELINE FOR DETERMINING FORAGE PLANT COMPOSITION TREND (+ OR -) IN THE FUTURE
- #/ACRE OF 100% DRY MATTER-DM
- SPECIES COMPOSITION AS A % OF THE TOTAL
## Total Annual Forage Production Worksheet

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pasture #</td>
<td>Green</td>
<td>Percent</td>
<td>Percent</td>
<td>Percent</td>
<td>Percent</td>
<td>Reconstructed</td>
<td>Percent</td>
<td>Reconstructed</td>
</tr>
<tr>
<td>CR Species</td>
<td>Weight</td>
<td>Dry</td>
<td>Growth</td>
<td>Growth</td>
<td>Of Normal</td>
<td>Ion Factor</td>
<td>Useable</td>
<td>Present Weight</td>
</tr>
<tr>
<td>Species Name</td>
<td>Pounds</td>
<td>Weight 1/</td>
<td>Ungrazed 1/</td>
<td>Completed 1/</td>
<td>Production 1/</td>
<td>C/D x E x F</td>
<td>Forage</td>
<td>B x G x H</td>
</tr>
</tbody>
</table>

**EXAMPLE #1**

Existing CRP - Native Warm

| 4600 | 75 | 100 | 100 | 100 | .75 | 50 | 1725 |

**EXAMPLE #2**

Previous Year Mgt. - Mixed Grass

| 2400 | 20 | 100 | 40 | 100 | .5 | 90 | 1080 |

Total present reconstructed weight

**Comments:**

```markdown
- Total Annual Forage Production Worksheet
- Cooperator:         Date:
- Conservationist:                
- A B C D E F G H I
- Pasture # Green Percent Percent Percent Percent Reconstructed Percent Reconstructed
- CR Species Weight Dry Growth Growth Of Normal Ion Factor Useable Present Weight
- Species Name Pounds Weight 1/ Ungrazed 1/ Completed 1/ Production 1/ C/D x E x F Forage B x G x H
- EXAMPLE #1
- Existing CRP - Native Warm 4600 75 100 100 100 .75 50 1725
- EXAMPLE #2
- Previous Year Mgt. - Mixed Grass 2400 20 100 40 100 .5 90 1080
- Total present reconstructed weight
- Comments:
```
VISUAL ESTIMATION

- FORAGE HEIGHT
  - LOOK OUT
  - TAKE PHOTO
VISUAL ESTIMATION

- STAND DENSITY
  - LOOK DOWN
  - TAKE PHOTO
VISUAL ESTIMATION

- HOW MANY #/ACRE OF 100% DM DO YOU ESTIMATE?
HOOP, SCALE AND FIELD MATH

- **HOOP SIZES**
  - 0.96 FT/SQ = 41.68” CIRCUMFERENCE
  - 1.92 FT/SQ = 58.94” CIRCUMFERENCE

- **GRAM SCALES**
  - 100 GM SPRING SCALE
  - 600 GM SPRING SCALE

- **FIELD MATH**
  - (0.96) GM X 100 = #/ACRE
  - (1.92) GM X 50 = #/ACRE
POSITIONING THE HOOP

IN IS IN
POSITIONING THE HOOP

OUT IS OUT
CLIPPING

- WHAT TO CLIP
- WHAT NOT TO CLIP
- CLIPPING OPTIONS
  - ALL FORAGE
  - LEAVE RESIDUAL
WEIGHING SAMPLE - FIELD

- RECORD BAG WEIGHT
WEIGHING SAMPLE - FIELD

- RECORD WET WEIGHT
DRYING SAMPLE

- BROWN PAPER BAG
- OPEN TOP
- MIX DAILY
- AIR DRY 3-5 DAYS
  - UNTIL CRUNCHY
  - MICROWAVE OPTION
- 100% DM
WEIGHING SAMPLE - OFFICE

- RECORD DRY WEIGHT
CALCULATIONS

- TOTAL (100% DM) #/ACRE
- TOTAL DRY WEIGHT – BAG WEIGHT = NET WEIGHT
- NET WEIGHT X CONVERSION FACTOR (50 OR 100) = TOTAL #/ACRE 100% DM
- TOTAL #/ACRE – PLANNED RESIDUAL #/ACRE = #/ACRE AVAILABLE FORAGE
- % MOISTURE
- NET WEIGHT DRY / NET WEIGHT WET = % DM
- 100% - % DM = % MOISTURE
CALCULATIONS

- TOTAL (100% DM) #/ACRE

- TOTAL DRY WEIGHT – BAG WEIGHT = NET WEIGHT
  - 170 gm – 60 gm = 110 gm

- NET WEIGHT X CONVERSION FACTOR (50 OR 100) = TOTAL #/ACRE 100% DM
  - 110 gm X 50 = 5,500 #DM/ACRE
CALCULATIONS

- % MOISTURE

- NET WEIGHT DRY / NET WEIGHT WET = % DM
- 170 gm – 60 gm = 110 gm
- 280 gm – 60 gm = 220 gm
- 110 gm / 220 gm = 50% DM

- 100% - % DM = % MOISTURE
- 100% - 50% = 50% MOISTURE
% MOISTURE

NET WEIGHT DRY / NET WEIGHT WET = % DM
- 170 gm – 60 gm = 110 gm X 50 = 5,500#
- 280 gm – 60 gm = 220 gm X 50 = 11,000#
- 5,500# / 11,000# = 50% DM

100% - % DM = % MOISTURE
- 100% - 50% = 50% MOISTURE
<table>
<thead>
<tr>
<th>Grasses</th>
<th>Before heading; initial growth to boot stage (%)</th>
<th>Headed out; boot stage to flowering (%)</th>
<th>Seed ripe; leaf tips drying (%)</th>
<th>Leaves dry; stems partly dry (%)</th>
<th>Apparent dormancy (%)</th>
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</thead>
<tbody>
<tr>
<td><strong>Cool season</strong></td>
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<td><strong>Warm season</strong></td>
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<td>Tall grasses</td>
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</tbody>
</table>
ESTIMATED vs CALCULATED

- ADJUSTMENT UP?
- ADJUSTMENT DOWN?
REPEAT

+ + + + + = GOT IT!
FORAGE UTILIZATION

- THIS IS THE EASY PART

- TOTAL HERD WEIGHT X 4% = TOTAL POUNDS FORAGE REQUIRED/DAY

- TOTAL POUNDS FORAGE/DAY X # OF DAYS = TOTAL POUNDS REQUIRED
  - GRAZING SEASON
  - GRAZING PERIOD

- TOTAL HERD WEIGHT X 2% = TOTAL GALLONS OF WATER REQUIRED/DAY