DETERMINING FORAGE PRODUCTION

- Lance Smith
- 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

Cooperator: Date:

Conservationist:

A	B	C	D	E	F	G	H	I
Pasture # OR Species Name	Green Weight Pounds	Percent Dry Weight 1/	Percent Growth Ungrazed 1/	Percent Growth Completed 1/	Percent Of Normal Production 1/	Reconstruc-tion Factor C/D x E x F	Percent Useable Forage	Reconstructed Present Weight 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								

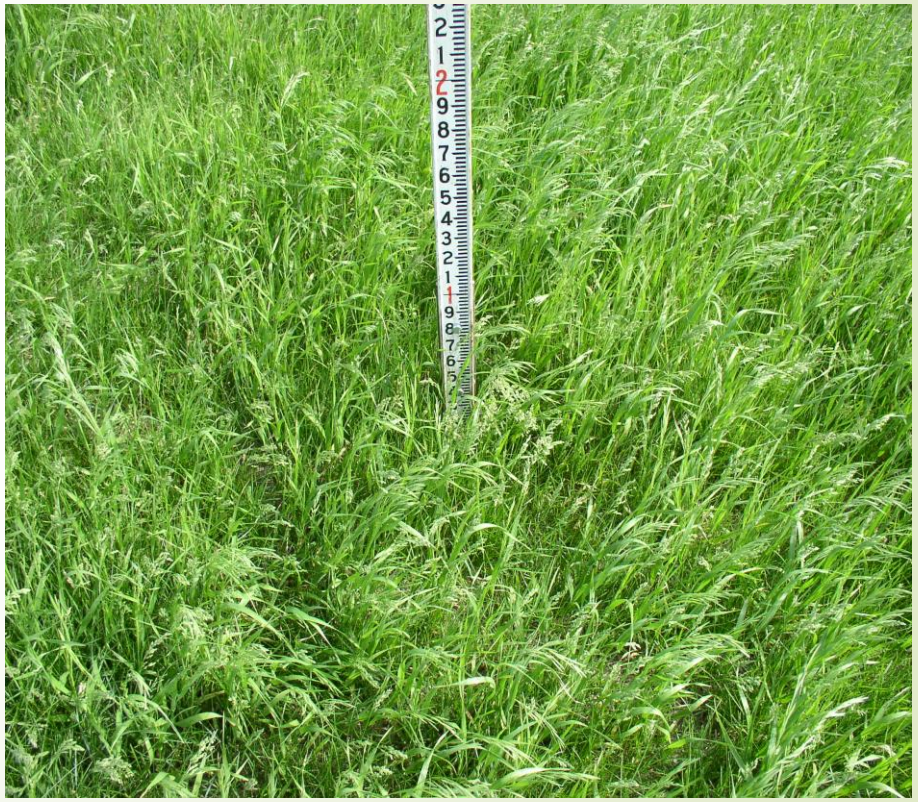
Comments:

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

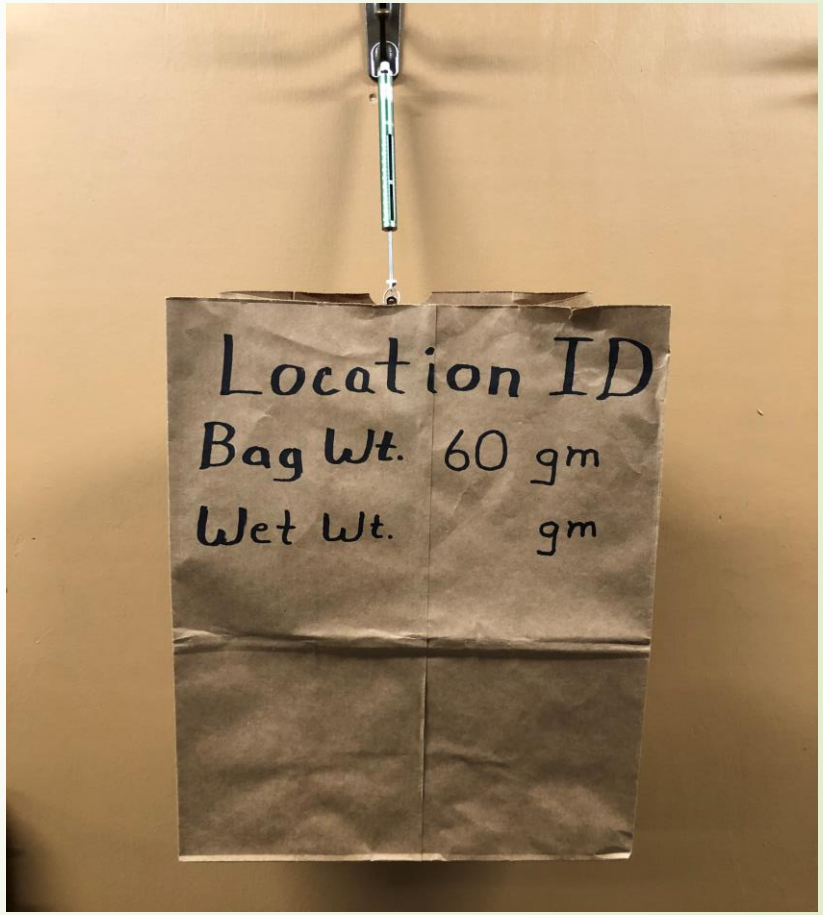
- OUT IS OUT

CLIPPING

- WHAT TO CLIP
- WHAT NOT TO CLIP
- CLIPPING OPTIONS
  - ALL FORAGE
  - LEAVE RESIDUAL

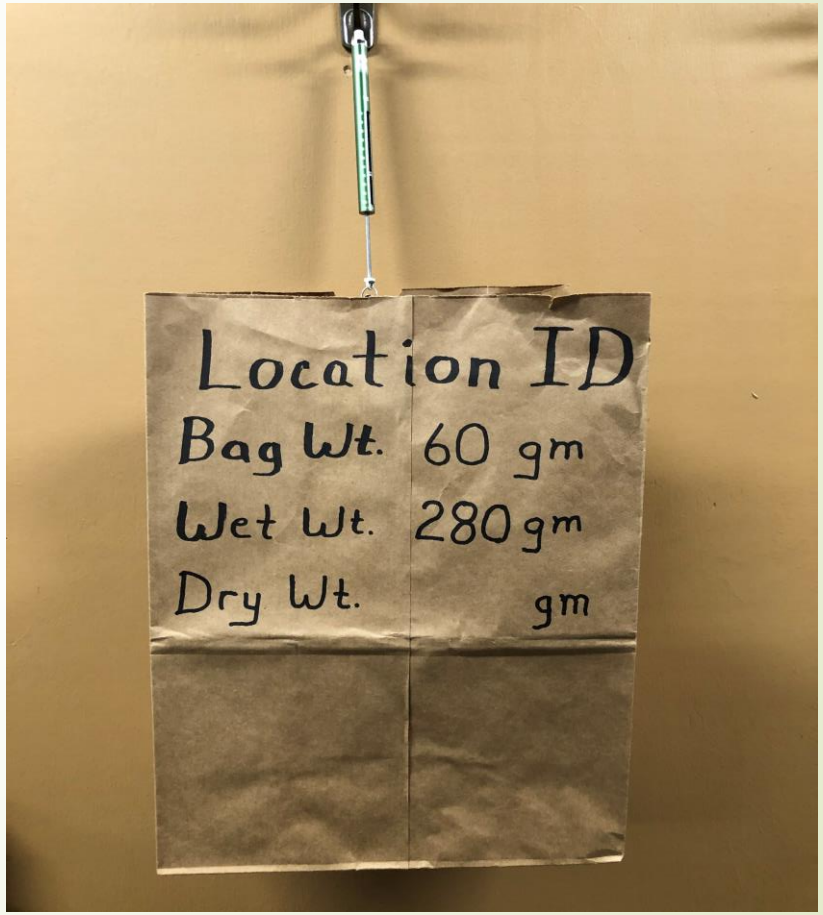
WEIGHING SAMPLE - FIELD

- RECORD BAG WEIGHT



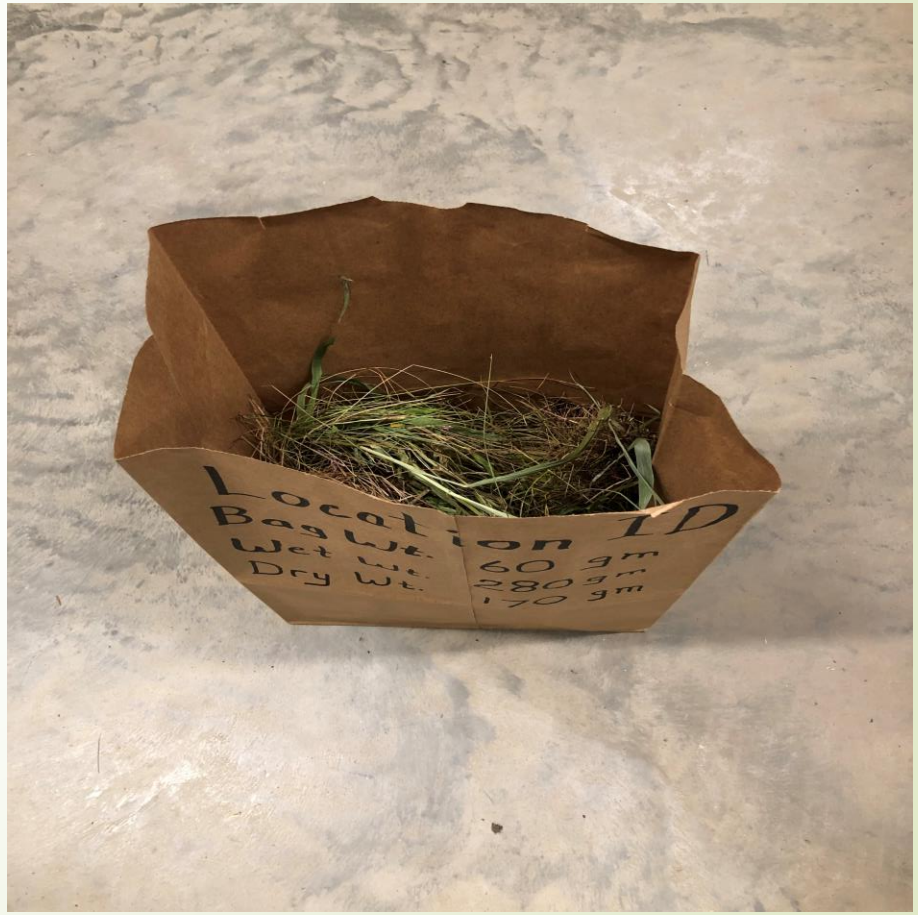
WEIGHING SAMPLE - FIELD

- RECORD WET WEIGHT



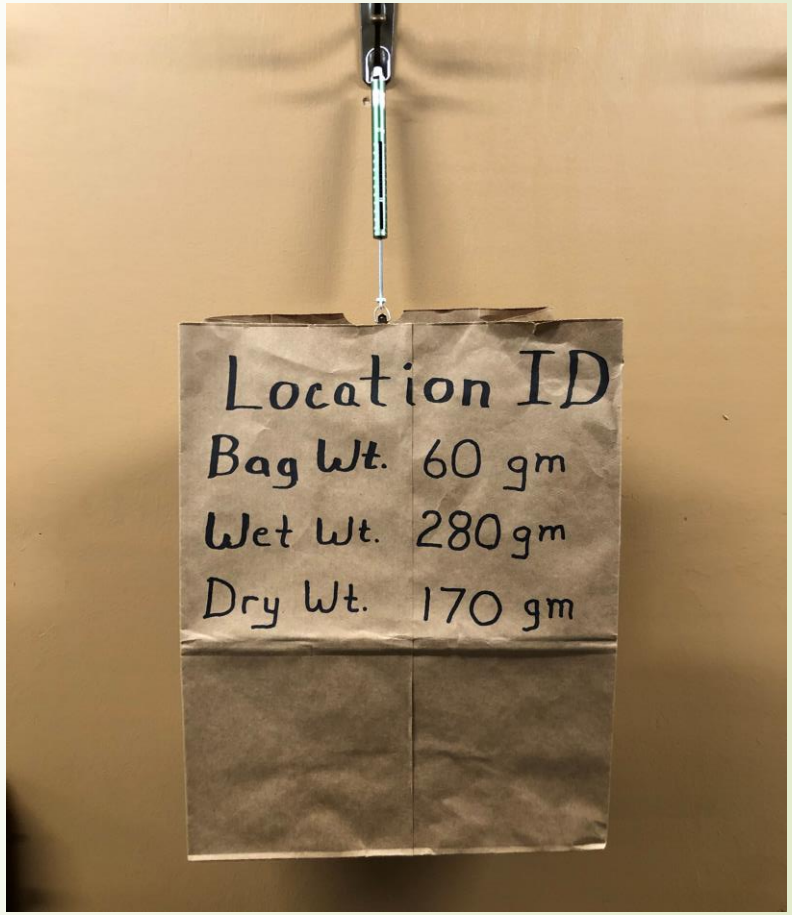
DRYING SAMPLE

- 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 AVAIABLE 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

CALCULATIONS

- % 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

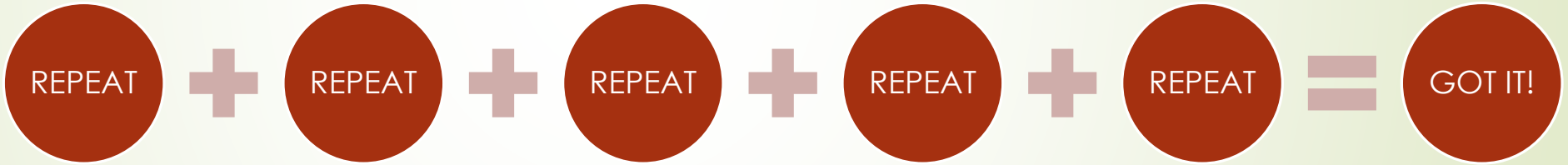
- 100% - % DM = % MOISTURE
- 100% - 50% = 50% MOISTURE

Grasses	Before heading; initial growth to boot stage (%)	Headed out; boot stage to flowering (%)	Seed ripe; leaf tips drying (%)	Leaves dry; stems partly dry (%)	Apparent dormancy (%)
Cool season	35	45	60	85	95
wheatgrasses					
perennial bromes					
bluegrasses					
prairie junegrass					
Warm season					
Tall grasses	30	45	60	85	95
bluestems					
indiangrass					
switchgrass					
Midgrasses	40	55	65	90	95
side-oats grama					
tobosa					
galleta					
Short grasses	45	60	80	90	95
blue grama					
buffalograss					
short three-awns					

ESTIMATED vs CALCULATED

- ADJUSTMENT UP?
- ADJUSTMENT DOWN?

REPEAT



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