



United States
Department of
Agriculture

Collecting Forage Production Data

Field methods for Conservation Planners working with livestock
operators

The Double Sampling Method

What you will need:

- Forms
- Pencil
- 10 hoops
- Knife/clippers
- Marker
- Paper Bags
- Scales
- A large bag- preferable mesh (to carry small bags)
- 10 Pin Flags

The Double Sampling Method

- Choose a representative area to sample.
- Make a comprehensive species list.
- Lay out 10 hoops. Pick a direction and walk it, tossing a hoop every 5-6 paces or so.
- At each hoop, ensure everything rooted in the hoop is in, and everything rooted out of the hoop is out.
- Estimate the grams of each species in the hoop. Repeat this for all 10 hoops.

The Double Sampling Method

- Once all estimates have been made, choose two examples of each significant species (4 grams or more) and clip them out of the determined plot (you want the high estimates). Circle the chosen estimates on the data sheet.
- Put the samples into individual paper bags, weigh them, and mark on the bags the following:
 - Transect number and plot number
 - Species
 - Date
 - Est. weight
 - Clipped “wet” weight (show the calculation and subtraction of the bag weight on the bag)



TRANSECT 02KS007 STOP 01

SONNEN, TEEVIN, ELLWOOD

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Production Data

plant name/notes	SYMBOL	STRATUM	PLOTSIZE	NPLOTS	UNIT	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	ESTWT1	CLIPWT1	DRYWT1	PCTIVE1	ESTWT2	CLIPWT2	DRYWT2	PCTIVE2
<i>Empetrum nigrum</i>	EMNI	FD	2	10	gr	150	120	130	100	170			110	140	60	17.5	4.7	1.0	100	170	193.5	58	100
<i>Cochlearia officinalis</i>	COGR6	FM				1										1	1	0.2	100				
<i>Lupinus nontkatensis</i>	LUNO	FT				t	(6)								(150)	6	3.5	.6	100	150	308.5	34.8	100
<i>Rubus chamaemorus</i>	RUCH	FD						1					6			6	6	1.5	100				
<i>Pedicularis verticillata</i>	PEVE	FD													2	2	2	0.3	100				
<i>Angelica lucida</i>	ANLU	EM				t			10	8	(55)	(80)	12	55	45	55	59.5	9.2	100	80	138.5	16.3	100
* <i>Saxifraga sp.</i>	SANEI	FD													4	4	4	0.6	100				
* <i>Artemisia arctica</i>	ARAR9	FD				1										1	1	0.3	100				
* <i>Gnaphalium leucophaea</i>	CEBEZ	FD					t				2				2	2	2	0.4	100				
* <i>Redistis hyperboreus</i>	PEFRN	FM								(40)	(25)	15				40	97.5	12.5	100	25	40.5	1.0	100
* <i>Epilobium hermannii</i>	EPHOB	FD								(15)	(28)				4	15	16	2.9	100	28	47.5	8.4	100
* <i>Coniseknum alpinum</i>	COCH2	FM								(35)					(10)	35	20.5	2.8	100	10	8	1.2	100
<i>Vida langsdorfi</i>	VILAG	FD				1										1	1	0.2	100				
<i>Poa arctica</i>	POAR2	GM							t	3			4	(17)	(8)	17	11	3.7	100	8	4.5	1.5	100
<i>Arctostaphylos latifolia</i>	ARLAA5	GM				4	(20)	5								20	38.5	9.5	100				
<i>Phleum commutatum</i>	PHAL2	GM								(30)	(25)				15	30	67.5	16.6	100	25	45.5	11.0	100
* <i>Cetraria cucullata</i>	FLCU	L1				t		t															
<i>Cladonia arbuscula</i>	CLAR60	L1																					
<i>Thamnolia subuliformis</i>	THSU60	L1						5	t														
<i>Cladonia rangiferina</i>	CLAR60	L1																					
<i>Chrysanthemum arcticum</i>	DEARA	FD				1										1	1	0.2					
* <i>Dryopteris dilatata</i>	DREX2	FM				1										1	1	0.2	100				
<i>Trisetalia eurna</i>	TREUA	FD				1										1	1	0.2	100				
<i>Cornus suecica</i>	COSU4	FD				1										1	1	0.2	100				

At each hoop, ensure everything rooted in the hoop is in, and everything rooted out of the hoop is out.



Estimate the grams of each species in the hoop. Repeat this for all 10 hoops.



Once all estimates have been made, choose two examples of each significant species (4 grams or more) and clip them out of the determined plot (you want the high estimates).

You want to capture all above-ground, current year's growth. Circle the chosen estimates on the data sheet.





Put them in individual paper bags, weigh them, and mark on the bags the following:

- Transect number and plot number
- Species
- Date
- Est. weight
- Clipped “wet” weight (show the calculation and subtraction of the bag weight on the bag)



Record Wet weights on the bag and the data sheet.

Take the bags back to the office and let them air dry, opened, for 2 weeks.

Weigh them again and calculate the % dry weight.

After the field work

- Take bags of clipped plants to the office
- Open bags and allow them to air dry for 2 weeks
- Re-weigh them, label bags with dry weights and enter on data sheet
- Calculate Percent Correction Factor (PCF) for your estimations by species

After the field work

- Calculate dry weight correction factor
- Average the weights for each species for all 10 plots
- Apply correction factor to the averages
- Calculate your pounds per acre by species



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* <i>Saxifraga sp. punctata</i>	SANEI	FD													4	4	4	0.6	100				
* <i>Artemisia arctica</i>	ARAR9	FD				1										1	1	0.3	100				
* <i>Gnastium betulinum</i>	CEBE2	FD					t				2				2	2	2	0.4	100				
* <i>Redistis hyperboreus</i>	PEFRN	FM								(40)	(25)	15				40	97.5	12.5	100	25	40.5	1.0	100
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Alaska Soil Survey Field Database, Access97 Version 1.1 USDA Natural Resources Conservation Service

Ⓢ HAD PROBLEMS SAMPLING THIS PLOT - DO NOT USE CLIPPED WT. - ONLY USE P.5 FOR CLIPPING Ⓢ



NRCS																			
Transect	Species	Plot1	Plot2	Plot3	Plot4	Plot5	Est1	Clip1	Dry1	Est2	Clip2	Dry2	PCF	DWCF	Avgwet	avgdry	g/meter2	kg/ha	lbs/acre
1	LEDE	7	5	7	7	7	7	7	11	5.7	5	7	3.5	1.5	0.509091	9.9	5.04	50.4	225.036
1	CACA4	15	15	5	7	30	15	17	6.4	15	17	6.4	1.1333	0.376471	16.32	6.144			274.3296

- Correct for your estimating,
- Correct for the dry vs wet weight,
- Calculate the lbs./acre (if using the NRCS – provided 2.1 sq. ft. hoop, you multiply the dry grams by 44.59 to get pounds per acre)

However...

That is the intensive way to complete production sampling. But a busy Conservation Planner may not have time for all that.

So, let's try this instead...

Toss a couple hoops in the pasture. Set the hoop so anything rooted inside will be clipped and any vegetation rooted out will not be clipped.

Clip the entire plot and place it in a bag. Again, you want all current year's above ground growth.

Weigh it, and mark the bag as described previously: The date, the place, the sample number, wet weight with bag subtracted (Show your work).



Take the bag back to the office and let it dry for two weeks. Re-weigh it and subtract the bag weight.

If using the NRCS provided hoop of 2.1 sq. ft., multiply that dry weight by 44.59 to get your pounds per acre. If you used a different sample size, you'll have to do some math.

Take 25% of the average pound per acre calculations and that is your available forage for your pasture. Multiply it by the number of acres in your pasture.

