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## MANAGING PASTURE SURPLUS AND SHORTAGE



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**If you do not monitor it you can not manage it.**


**Tools for monitoring pasture growth.**



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### Pasture Stick



- Forage height used to estimate forage mass
  - lbs / ac / in
- Cost – Low
- Accuracy – Good
  - Information on Stick gives a good estimate.
  - Can be improved if calibrated for your own pasture.
- Easy to use



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### Plate Meter



- Forage density
- Also called a rising plate meter, falling plate meter, disk meter.
- Cost – Moderate (\$50) to High (\$500)
- Accuracy – Good, if calibrated correctly.
- Different calibrations for season, forage type.

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### C-Dax Pasture Meter

- Measures forage height at 20 mm increments
  - 200 measurements per second at 12 mph
- Forage mass - kg DM / ha (calculated based on equations for different seasons and pasture mixes)
- Cost – High (\$\_\_\_\_\_)
- Forage height and GPS coordinates recorded
- Downloads directly to computer.
- Not readily available in US but used in NZ on commercial dairy farms.

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### Estimating Dry Matter Intake

- Forage height is a good indication of the amount of dry matter
- 1 inch = about 200 pounds DM/acre
  - Pre-grazing
  - Post-grazing
  - During grazing
    - 6 inches x 200 lbs. = 1200 lbs of DM intake
    - 2 acres x 1200 lbs = 2400 lbs
    - If you have 100 cows = 24 lbs DMI/cow

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### Estimating Dry Matter Intake

- 6 inches x 200 lbs. = 1200 lbs of DM intake
  - 2 acres x 1200 lbs = 2400 lbs
  - (If you have 100 cows = 24 lbs DMI/cow
- So if you have 100 of those 1000 lb. Jersey cows, how long can you leave them on this 2 acres before they need to be rotated?

Assuming they actually utilize 70% of those 2400 lbs. available – about 16 hours – ⅔ of a day!

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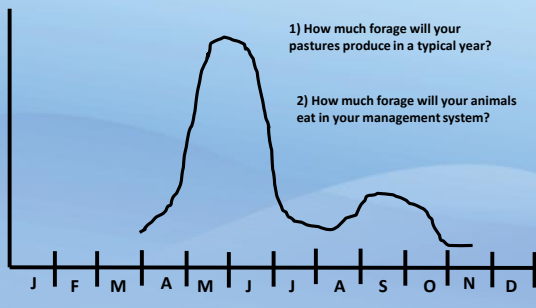
### Surplus or Shortage



- Surplus
  - Forage quality
- Shortage
  - Forage quantity

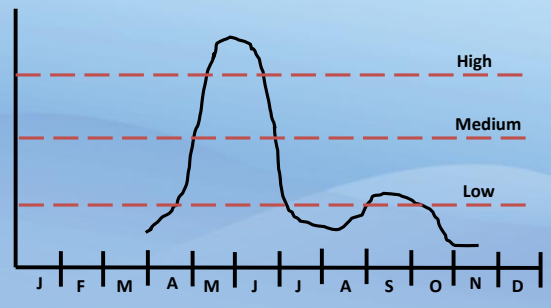
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### Where to set your stocking rate?



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### Where to set your stocking rate?



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### Managing Surplus

- Mechanical harvest
- Stockpile for later in season
- Flexible stocking rate
- Rotational grazing



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### Managing Surplus: Mechanical Harvest

- Designate a portion of pasture to be harvested for hay or haylage in the spring and grazed later in the year.
- Produces good quality forage for times of shortage
- Example:
  - 60 dairy cows
    - Spring: 40 acres pasture + 20 acres haylage
    - Summer / Fall: 60 acres pasture

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**Managing Surplus: Stockpile Grazing**

- Grazing forage that grew earlier in the season
  - Late summer growth grazed in Fall or Winter
- Some species stockpile better than others
  - Tall Fescue



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**Managing Surplus: Flexible stocking rate**

- Have ability to change stocking rate to make best use of available forage
  - Take land out of grazing rotation
    - Mechanical Harvest
    - Stockpile
  - Add animals
    - Works well if you are purchasing steers in spring and back grounding to sell to feedlot at end of grazing season
    - Does not work as well for dairy cows or beef cow-calf



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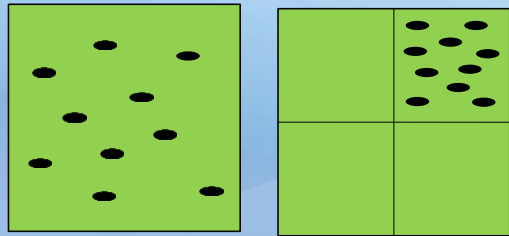
**Managing Surplus: Rotational Grazing**

- Higher stocking density, shorter time in paddock



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**Stocking Rate vs. Stocking Density**



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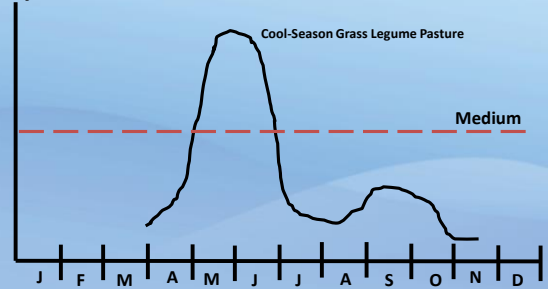
**Managing Shortage**

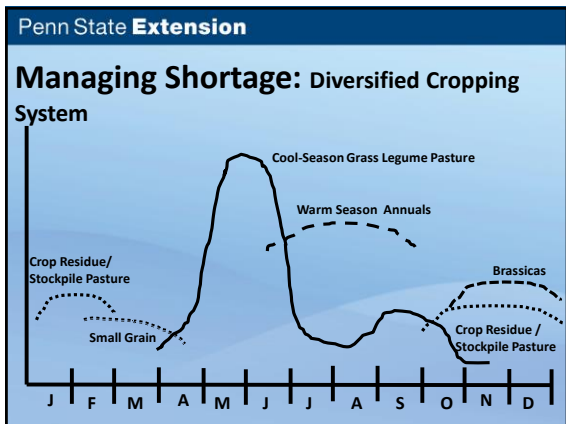
- Diversified cropping system
- Rotational Grazing
- Irrigation
- Supplemental Feed
- Flexible stocking rate



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**Managing Shortage: Diversified Cropping System**





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- ### Managing Shortage: rotational grazing
- Lower stocking density, longer time on paddock
  - Avoid overgrazing
    - Lose forage species and susceptible to weeds
    - Use sacrifice area and supplemental feed to minimize damage



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- ### Managing Shortage: Supplemental feed
- Utilize forages from periods of surplus
    - Hay/ Haylage, stockpiled forage, annual crops
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### Managing Shortage: Supplemental feed

	No Supplement	Concentrate Supplement
Supplement DMI, kg/d	0.8	8.6
Pasture DMI, kg/d	17.5	15.5
Total DMI, kg/d	18.3	24.1
Milk, kg/d	19.1	29.7
Milk Fat, %	3.82	3.29
Protein, %	2.98	3.08
MUN, mg/dl	13.9	11.6

Bargo et al., 2002

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### Managing Shortage: Supplemental feed

	No Supplement	Grass Silage	Corn Silage	Wheat Silage
Pasture DMI, kg/day	12.9	11.2	8.9	11.0
Supplement DMI, kg/day	0.0	3.0	6.3	3.6
Total DMI, kg/day	12.9	14.2	15.3	14.7
Milk, kg/d	17.1	18.4	19.8	18.0
Milk Fat, %	3.98	3.99	4.15	4.02
Milk Protein, %	3.21	3.14	3.28	3.17
MUN, mmol/kg	3.73	3.27	2.52	3.43

Morrison and Patterson, 2007

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## Managing Shortage: Flexible Stocking Rate

- Early weaning
  - Lowers forage intake of the mother
    - mothers will consume 25% less DM
  - Limits grass trampling by calf
- Culling/selling livestock
  - Didn't breed
  - Offspring is profit
  - Low milk production
  - Health issues



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