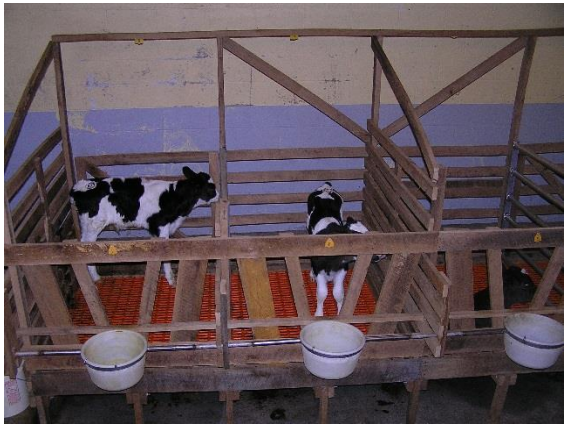
Hydrolyzed Wheat Gluten Protein

Dave Wood, Animix



Hydrolyzed Wheat's Physical properties

Solubilized (hydrolyzed) wheat gluten protein

- Neutral color and taste
- Very low ash
- No anti-nutritional factors
- Soluble/dispersible. No sediment
- 83 – 87% C.P., requires synthetic lysine
- Typical use rate 5%, ~20% replacement
- AAFCO definition "hydrolyzed wheat gluten"

Nutrior hydrolyzed (solubilized) wheat gluten protein

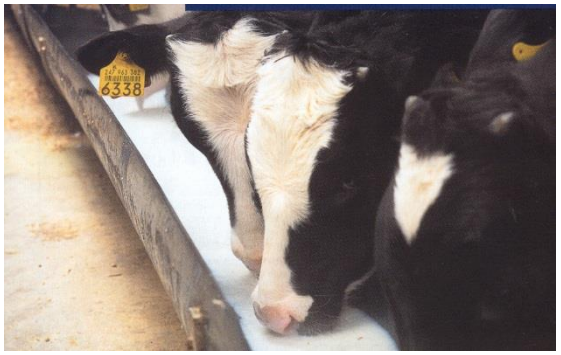
84% C.P.

Judging Hydrolyzed Wheat

- Benefits
  - Cost Effective protein
- Proof
  - 3 published calf trials
  - 12 non-published calf trials
  - Well proven in the field
- Payback
  - Saves $ in formulation

The E.U. veal industry surpasses America's by 20 fold in volume, and their milk replacer (herd replacement/dairy beef) industry is 3x-4x ours. Adaptation rate of wheat and/or soy is 100% in veal and 80 – 90% in CMR

9 Wheat Studies



Showing favorable results: saves money, equal ADG

- Digestibility on par w/Skim milk in veal, 94% (SOLPRO)
- Performed on par with all milk in veal
  - INRA France, 52 – 63% of CP from wheat (SOLPRO)
  - Vitek, Wisc., 15% of CP wheat, day 3 – 52 (MGP)
  - Vitek, 16.5 and 32% of CP wheat, day 0 – 41 (MGP)
- Performed on par with all milk in dairy beef –
  - **K-State – Morrill: 30 – 50% of CP from wheat (MGP)**
  - CMR Co.: 20 – 30% of CP from wheat (SOLPRO)
  - MSC: 50% of CP from wheat (MGP & SOLPRO)
  - Vigortone: 50% of CP from wheat
- Performed comparable to all milk in full-growth pot.

3 Wheat Studies

Perform poorer, relative to all-milk

- Performance less than all-milk
  - **Prof. An. Sci. Raeth, 2016.** U of MN, Waseca. Tested 30% or 50% C.P. from wheat vs. all-milk. ~15% reduction in ADG. High performing calves in general
  - **Prof. An. Sci. Hill, 2008.** Tested 15% or 50% C.P. from wheat vs. all-milk. ~14% reduction
  - Provimi, Ohio. Tested 18% of C.P. from wheat vs. all-milk, 9% reduction in ADG. 9% of C.P. Wheat + 9% C.P. plasma, 14% reduction in ADG. 18% each, 16% reduction in ADG.

4 wheat/plasma combo.

- Animix, 2007. 6% wheat + 5% plasma vs. All-milk
  - 58 lbs 22:20 fed over 42 days. NT + Deccox
  - No difference in ADG vs. all milk
  - Wheat/plasma ↓ADG d 1-15; ↑ ADG d 29 – 43
  - Fewer 6 wk treatments in all milk
  - But, fewer starter grain refusals in wheat/plasma group. More early (4) bloat incidence wheat/plasma
  - Large, 120 calf, dairy beef calf trial
- U of MN Waseca/Milk Products, 2009
  - Wheat/plasma performed on par with all-milk
- U of MN Waseca/Milk Products, 2014
  - Wheat/plasma performed on par with all-milk
  - Fewer loose stools in wheat/plasma

4 wheat/plasma combo., cont.

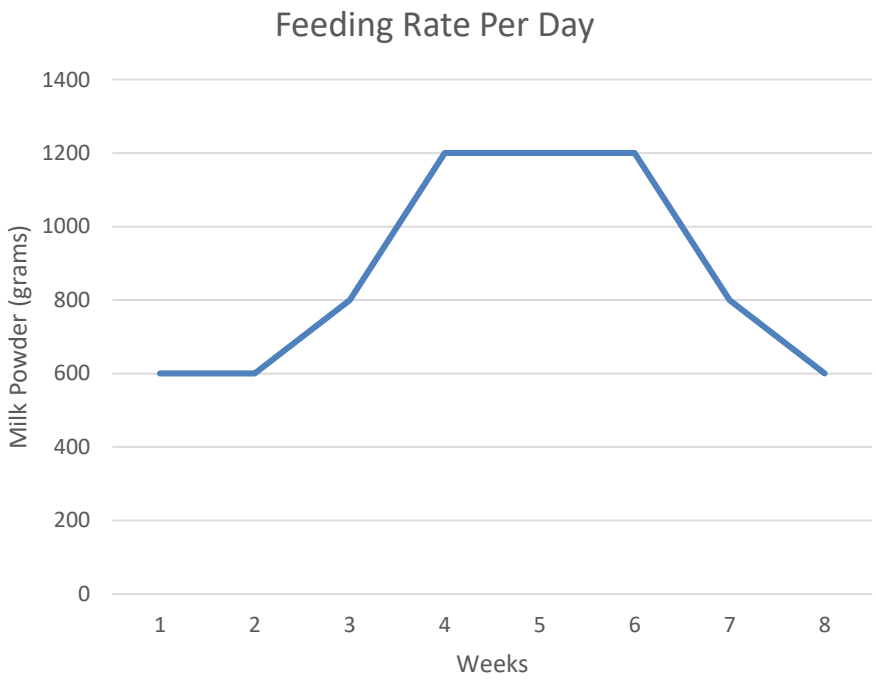
- Provimi, Ohio. 2013.
  - 9% of C.P. Wheat + 9% C.P. plasma, 14% reduction in ADG vs. all-milk.
  - 18% of C.P. wheat + 18% of C.P. plasma, 16% reduction in ADG vs. all-milk

Wheat in Full Potential Diets

- Milk replacers were formulated to contain 28.5% CP, 2.6% lysine, and 15% fat
- All diets contained ~36% skim milk protein
  - Hydrolyzed wheat protein (Nutrior, Chamtor) replaced whey proteins from whey protein concentrate
  - Addition of wheat at 4.5% and 9.0% of formula (plus AA) replaced ~21% and 42% of milk protein
- Fat was provided from tallow and lard

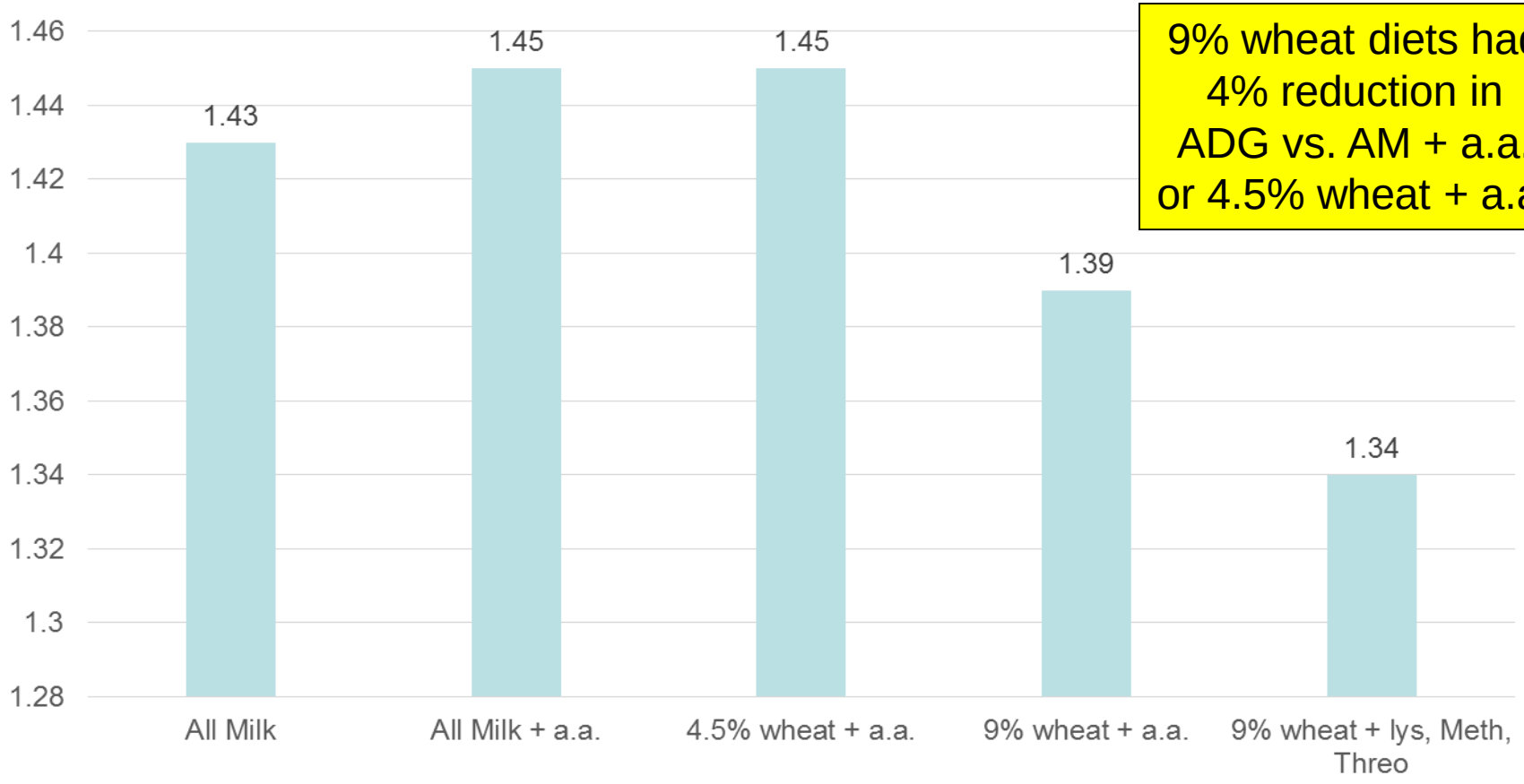
Wheat in Full Potential Diets

- Amount of milk replacer powder fed per day:
  - Wk 1-2: 1.32 lbs./d
  - Wk 3: 1.76 lbs./d
  - Wk 4-6: 2.64 lbs./d
  - Wk 7: 1.76 lbs./d
  - Wk 8: 1.32 lbs./d



107.8 lbs / calf total

ADG (lbs.) Week 1 - 8



9% wheat diets had 4% reduction in ADG vs. AM + a.a. or 4.5% wheat + a.a.

No Significant Difference between any treatment group