Feed the Future Innovation Lab for Livestock Systems:

The imperative to increase animal-source food (ASF) consumption

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Global prevalence of stunting (malnutrition)

Childhood malnutrition costs 20 to 30 $billion

Important quotes

• Stunting in the first 1000 days condemns children to a lifetime of underachievement and underperformance!!!
  - Roger Thurrow. Former Wall Street Journal Foreign Correspondent

• Stunting in the first 1000 days is associated with nearly irreversible brain damage!!!
  - Senior nutritionist, World Food Program.

• Some animal-source food consumption is needed for the growth and cognitive development in children and infants – Catherine Woteki, USDA Chief Scientist and Undersecretary for Agriculture
Protein quality of animal and plant-source foods

**Biological value of protein**

- Meat
- Milk
- Eggs
- Rice
- Beans
- Corn

**Protein digestibility-corrected amino acid scores**

- Meat
- Milk
- Egg
- Rice
- Beans
- Corn

http://www.food-info.net/uk/protein/bv.htm

(Michaelsen et al. 2009)
Vitamin concentrations in animal and plant-source foods

Vitamin A

- Milk: 30 μg RAE per 100g
- Eggs: 150 μg RAE per 100g
- Rice, Beans, Corn, Potato: Low

Vitamin B12

- Eggs: 0.8 μg per 100g
- Milk, Meat, Beans, Corn, Potato: Low

Source: Dror and Allen (2011) and Neumann et al. (2002) & USDA, ARS
Vitamin B12 in breast milk of women relative to that representing adequate Intake (AI) (Allen, 2016)

Recent Kenyan study (Williams et al. 2016)
- 286 women 1-6 months postpartum
- 89% had less breast milk B12 than recommended levels
Iodine concentrations of animal and plant-source foods

Pennington et al. Young et al., 1995;
Zinc and iron concentrations of animal and plant source foods

Many plant foods have higher zinc and iron levels but they are bound to phytate and fiber and therefore less available
Quantity of different foods that meet a woman’s recommended daily iron intake (18 mg)

(Gupta, 2012)

- Cooked beef liver, 300g
- Cooked beef, 625g
- Cooked lentils/chickpeas, 700g
- Cooked kidney beans, 810g
- Cooked peas, 1.2 kg
- Spinach, 2.4 kg

(Dominguez-Salas and Bruyn)
Maternal prenatal iron intake (purple) correlates with fetal brain tissue organization

Photo Credit: Bradley Peterson, MD,

(Monk et al., 2015; sciencedaily.com)
Role of Animal Source Foods to Improve Diet Quality and Growth and Development in Kenyan Schoolers

Principal Investigators

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Role of ASF in diets of Kenyan children

Adapted from Demment, 2013
ASF supplementation effects on children’s test scores

Adapted from Demment, 2013; Weldon 2016
Meat group

- Highest Raven scores
- Higher Vit. B12 status
- More physical activity
- More Arm muscle mass
- More leadership
- Higher test scores
- More playful

Milk group

- Improved growth
- Higher test scores
- Higher B12 status

**Compared to all other groups, the MEAT GROUP**

- Had greatest increase in % time spent in high activity levels, and least % time in low activity.
- Spent more % time in leadership and initiative.
- Were more talkative, playful – and “disruptive”

Adapted from Demment, 2013
Global meat consumption in 2005-7 vs. 2050

Data derived from WB, FAO, AU-IBAR, ILRI report, 2013
Feed the Future Innovation Lab for Livestock Systems

Dr. Gbola Adesogan
Vision

*To sustainably intensify animal-sourced food production in order to increase the incomes, livelihoods, nutrition and health of vulnerable people.*
FOCAL COUNTRIES

- West Africa – Burkina Faso and Niger
- East Africa – Ethiopia, Rwanda & Uganda
- South Asia – Nepal and Cambodia

Photo credit: International Livestock Research Institute
Stunting Levels per Country

- Bangladesh
- Brazil
- Burkina Faso
- Cambodia
- Ethiopia
- Haiti
- Nepal
- Niger
- Rwanda
- USA

http://www.who.int/nutgrowthdb/estimates2014/en/
Meat Consumption per Country 2013

Milk Consumption Per Country 2013

Country Innovation Platform workshops
Feed the future initiative

LIVESTOCK SYSTEMS INNOVATION LAB VISION
Sustainably intensify smallholder livestock systems to increase productivity and incomes and improve nutrition and food safety

1. Future Livestock Systems
   • Role of Gender in Livestock Systems Research
   • Human & Institutional Capacity Development
   • Human Health & Nutrition

2. ASF Production & Marketing
3. Livestock Disease Management & Food Safety
4. Enabling Policies for Livestock

USAID
FROM THE AMERICAN PEOPLE
Some LSIL-funded projects

• Improving the quantity, quality and preservation of animal feeds (Nepal and Ethiopia)
• Reducing mycotoxins in feeds and milk (Ethiopia and Rwanda)
• Behavior change messaging to increase ASF consumption (Rwanda)
• Creating evidence for enabling policies for ASF production (Ethiopia, Nepal)
• Apps to improve marketing of ASF and disease surveillance (Nepal)
• Increasing milk quality and safety (Nepal, Rwanda, Ethiopia)
• Reducing diseases and mortality of young livestock (Ethiopia, Nepal, Rwanda)
• Eradication of Peste de petits ruminant (Uganda)
Conclusions

- Infant malnutrition can cause long term growth, developmental and neurological problems
- Animal-source foods should be used to diversify the diets of infants and pregnant and lactating women in resource-poor countries
- Concerted and coordinated efforts are needed to increase access to, affordability and availability of ASF
- LSIL is working at sustainably intensifying ASF production and consumption to improve the nutrition and incomes of the poor
FEED THE FUTURE
The U.S. Government's Global Hunger & Food Security Initiative

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