



Agriculture Interventions

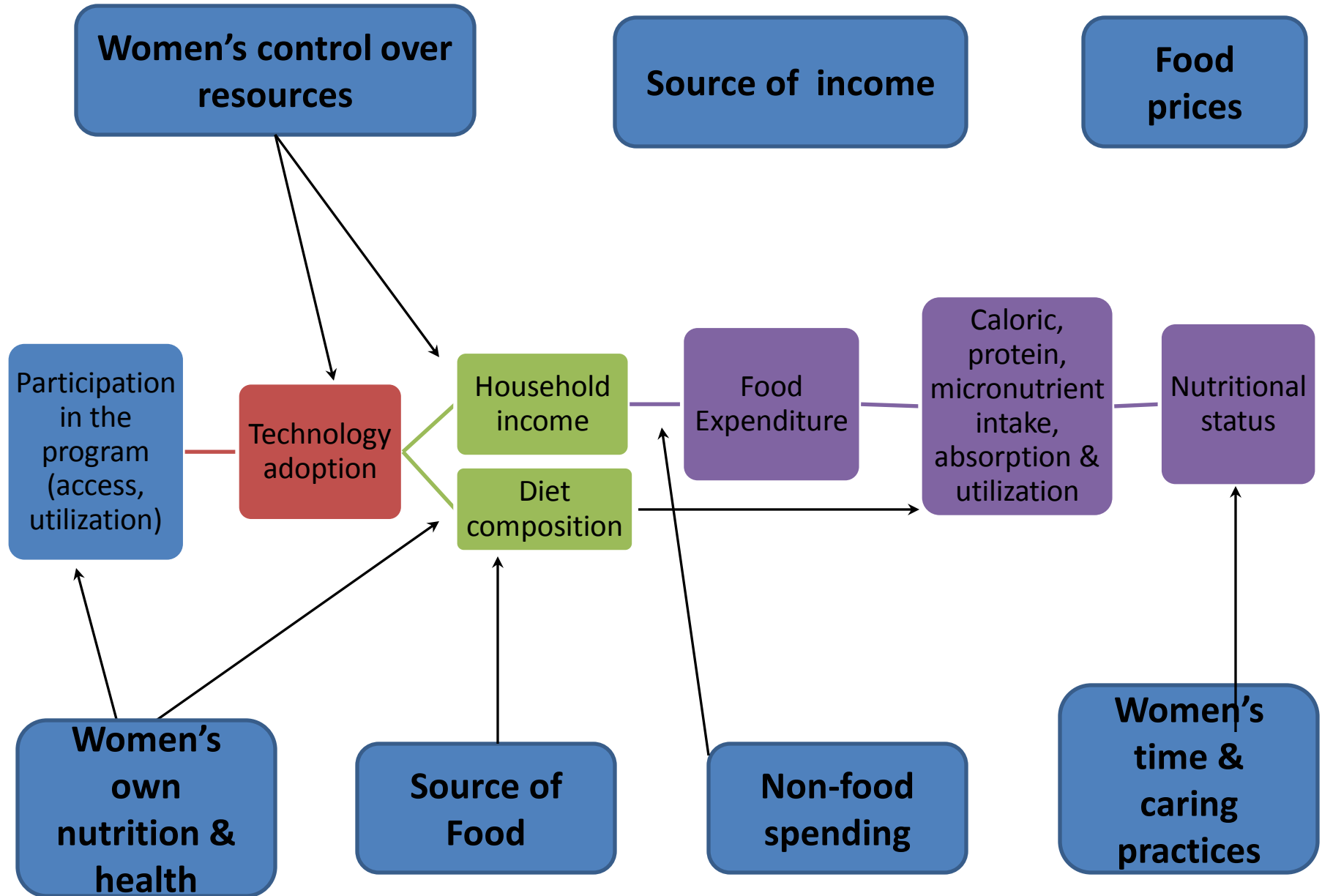
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Framework of Agriculture Interventions



Anemia: Can agriculture do more?

- **Agriculture-Associated Diseases: Adapting Agriculture to Improve Human Health**
- **Addressing the Links among Agriculture, Malaria, and development**
- **Biofortification: Leveraging Agriculture to Reduce Hidden Hunger**

Can plant foods provide the iron?

- Biofortified pearl millet (*P. glaucum*)
- Biofortified beans (*P. vulgaris*)
- Biofortified rice (*O. max*)

**Male & female children
6-12 years old living in
20 boarding schools-Oaxaca**

High Iron – 263 subjects

Control – 305 subjects

Randomization by school

18% anemia

11% iron deficiency



**Mealtime with
black beans
Mexico**





Bean Buffet Rwanda

Adult female university students

18-27 years old

Living on campus of NUR

High Iron – 116 subjects

Control – 118 subjects

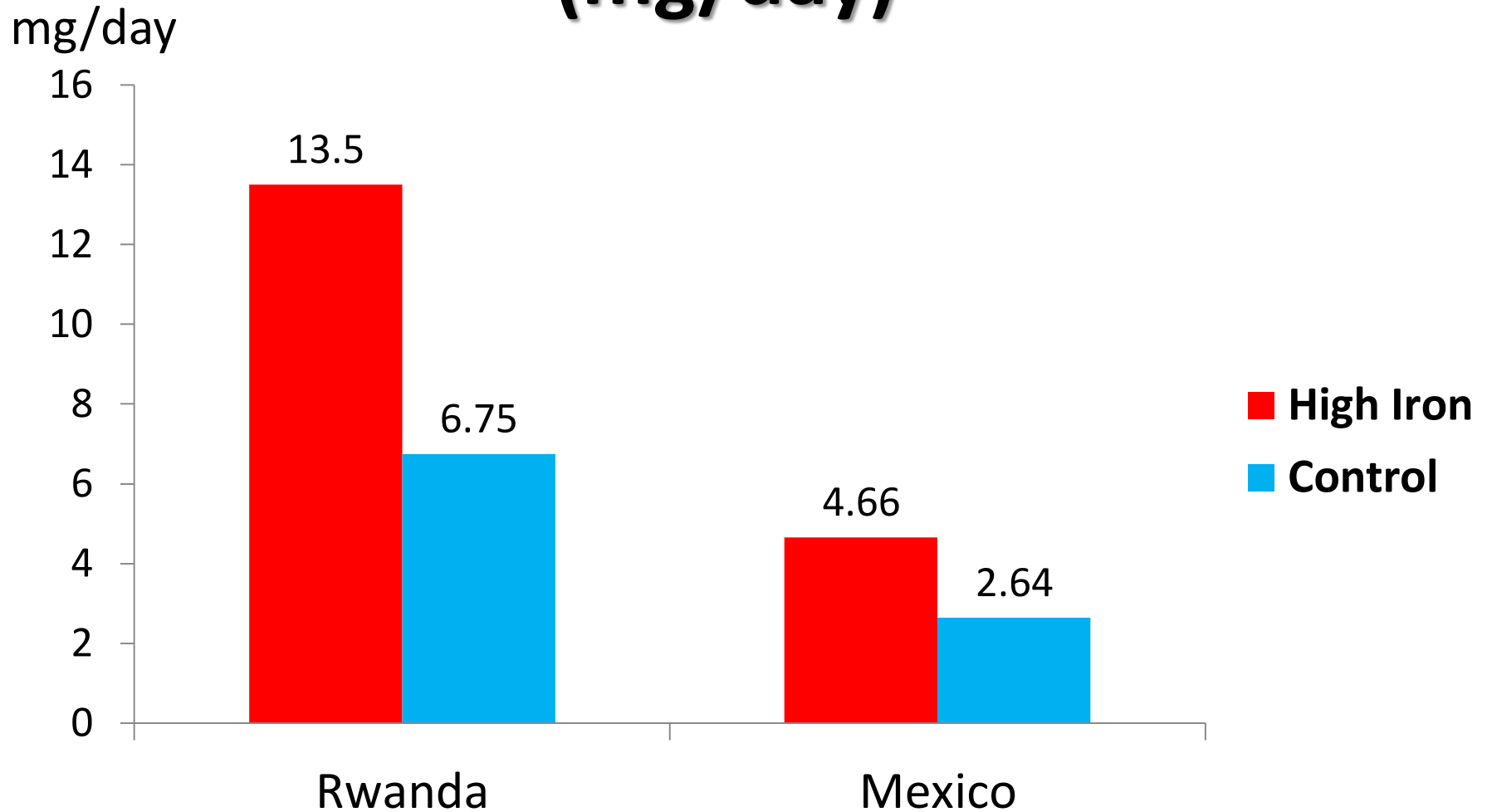
Randomization by individual

44% anemia

71% iron deficiency

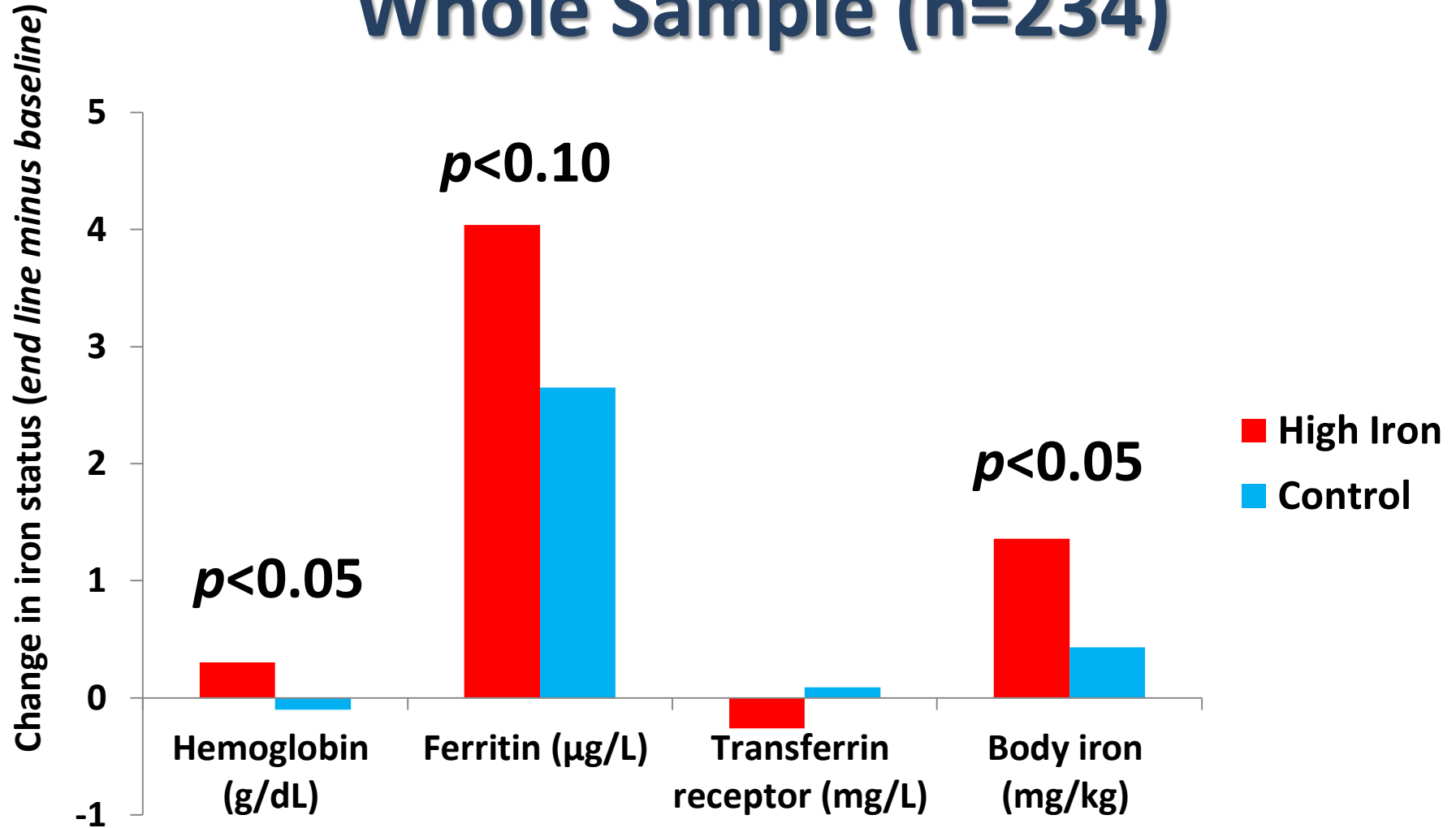


Iron Intake from Beans Consumed (mg/day)



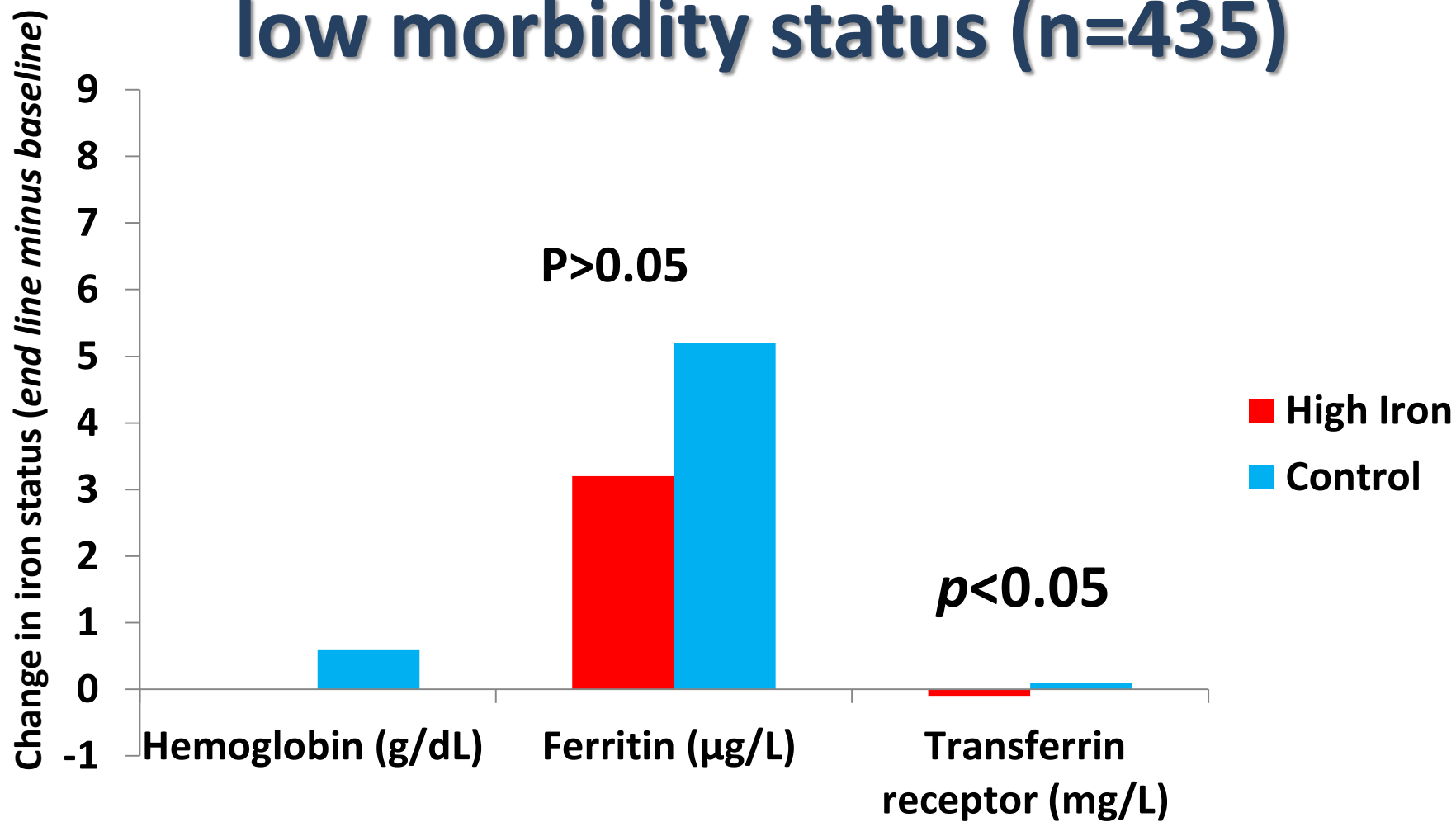
Results from the Rwanda Bean Trial

Whole Sample (n=234)



Results from the Mexico Bean Trial

Selected schools based on low morbidity status (n=435)



Recap

- Agriculture: plants (non heme) and livestock (heme iron & enhancers)
- Evidence of the efficacy & effectiveness of targeted agricultural programs on maternal and child nutrition, with the exception of vitamin A, is limited
- Agriculture sector can do more to tackle
- Biofortification, an efficacious alternative

“Acceleration of progress in nutrition will require effective, large-scale nutrition-sensitive programmes that address key underlying determinants of nutrition and enhance the coverage and effectiveness of nutrition-specific interventions.”

Marie Ruel & Harold Halderman . The Lancet. Published **Online** June 6, 2013
[http://dx.doi.org/10.1016/S0140-6736\(13\)60843-0](http://dx.doi.org/10.1016/S0140-6736(13)60843-0)

Biofortification of staple food crops is efficacious intervention to improve iron status.

Thank you