

### Phase 1 (proof of concept, ME328) Knowledge Gaps:

- What is farming like in Uganda?
- What are the project criteria for Uganda and for Phase 1 (ME328 work: proof of concept)
- **What is the motor performance for the Phase 1 motor?**
- **What force is required to pull a plow in the Phase 1 test facility?**
- Does gear-ratio theory apply sufficiently well for Phase 1 design work. In other words, we need to develop confidence in  $w_{in} / w_{out} = T_{out} / T_{in}$  – **will it work sufficiently well for different gear ratios?**
- What are common types of transmissions and which would be best for the Uganda project? (Lulay will provide more details later in the semester – assume this will take 2 weeks)
- Through analysis, which gear ratio would work best for the yet-to-be-determined requirements for Phase 1 testing?
- **Will the gear ratio we select through analysis work as well as expected?**

### Phase 2 (scale-up, ME328) Knowledge Gaps:

We will be going one step beyond proof of concept development in ME328. Phase 2 will be small demonstration of ability to scale-up from Phase 1. After completing Phase 1, you will design and construct a mid-sized prototype using parts and materials made available later this semester. You will answer the following two knowledge gaps:

- Based on analysis, what is the optimal gear ratio for achieving a specific goal using a given (and already characterized) motor.
- **Did the analysis provide a good answer?**

**BOLD** items indicate physical testing is required.

Each of these KG's will require a DID to be completed – some have already been completed. The due dates are up to each team to establish, but it is highly recommended that they be submitted weekly.