

Agriculture in Tibet

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How did I get involved?

- RAID (Researchers in Agriculture for International Development)
- BA Science (Agriculture)
- AYAD- University of Adelaide + ACIAR project
- Honours



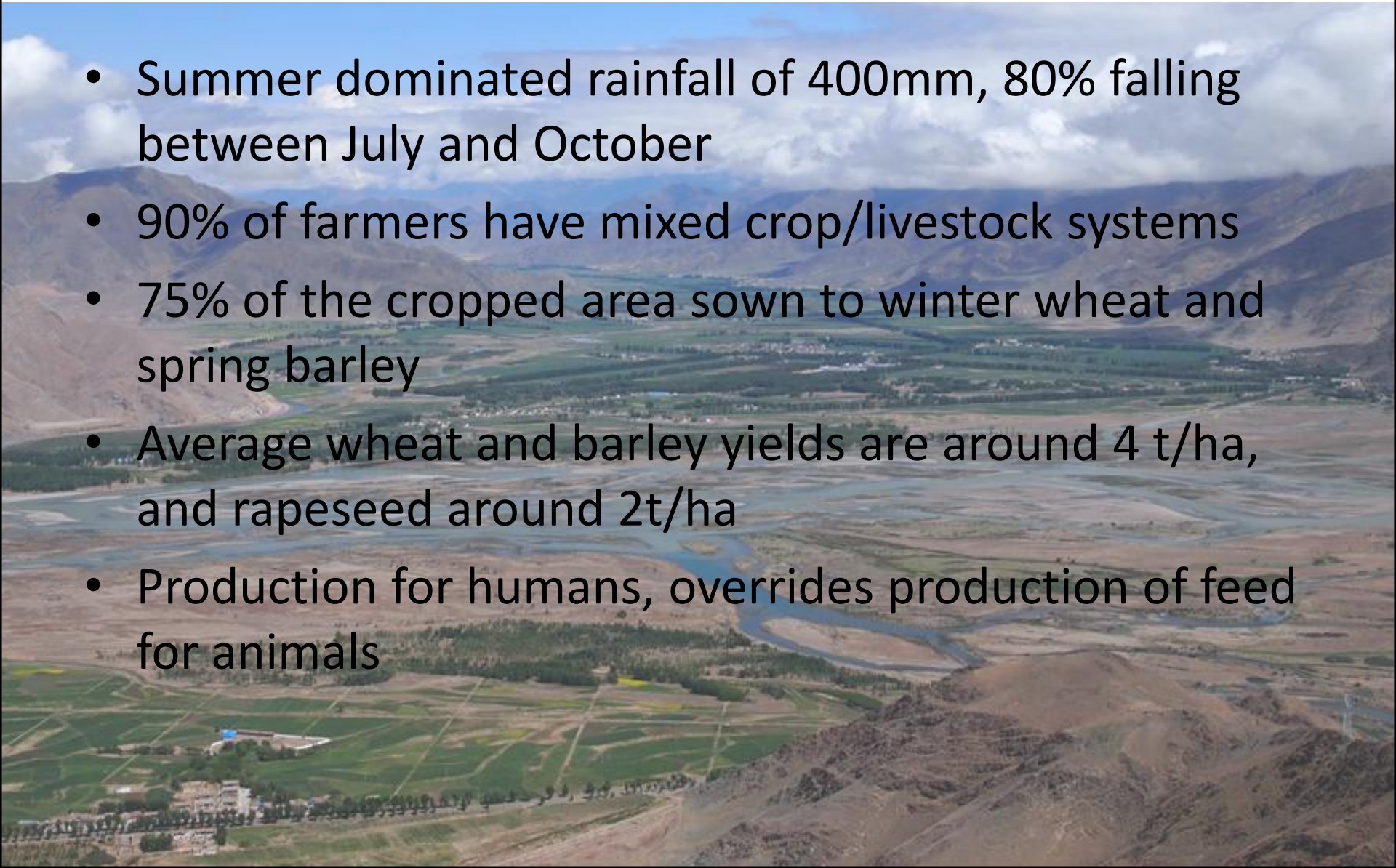
Agriculture in Tibet

- Average altitude of 4000 m a.s.l
- Rural house hold incomes are < US\$300/ year
- Average farm size is <1 ha
- irrigation —→ plough with mould-board plough
—→ field is levelled —→ planting and hand broad
casting of urea and DAP



Agriculture in Tibet

- Summer dominated rainfall of 400mm, 80% falling between July and October
- 90% of farmers have mixed crop/livestock systems
- 75% of the cropped area sown to winter wheat and spring barley
- Average wheat and barley yields are around 4 t/ha, and rapeseed around 2t/ha
- Production for humans, overrides production of feed for animals



Agriculture in Tibet

- Livestock

- Tibetan farmers have 5 large animals (cattle/yak/hybrids)
- Use: ploughing fields, milk production, butter for tsampa and eventually meat
- Feed: cut weeds/ fodder in summer and stubble grazing in autumn. Other :cereal straw with grain and roadside grazing

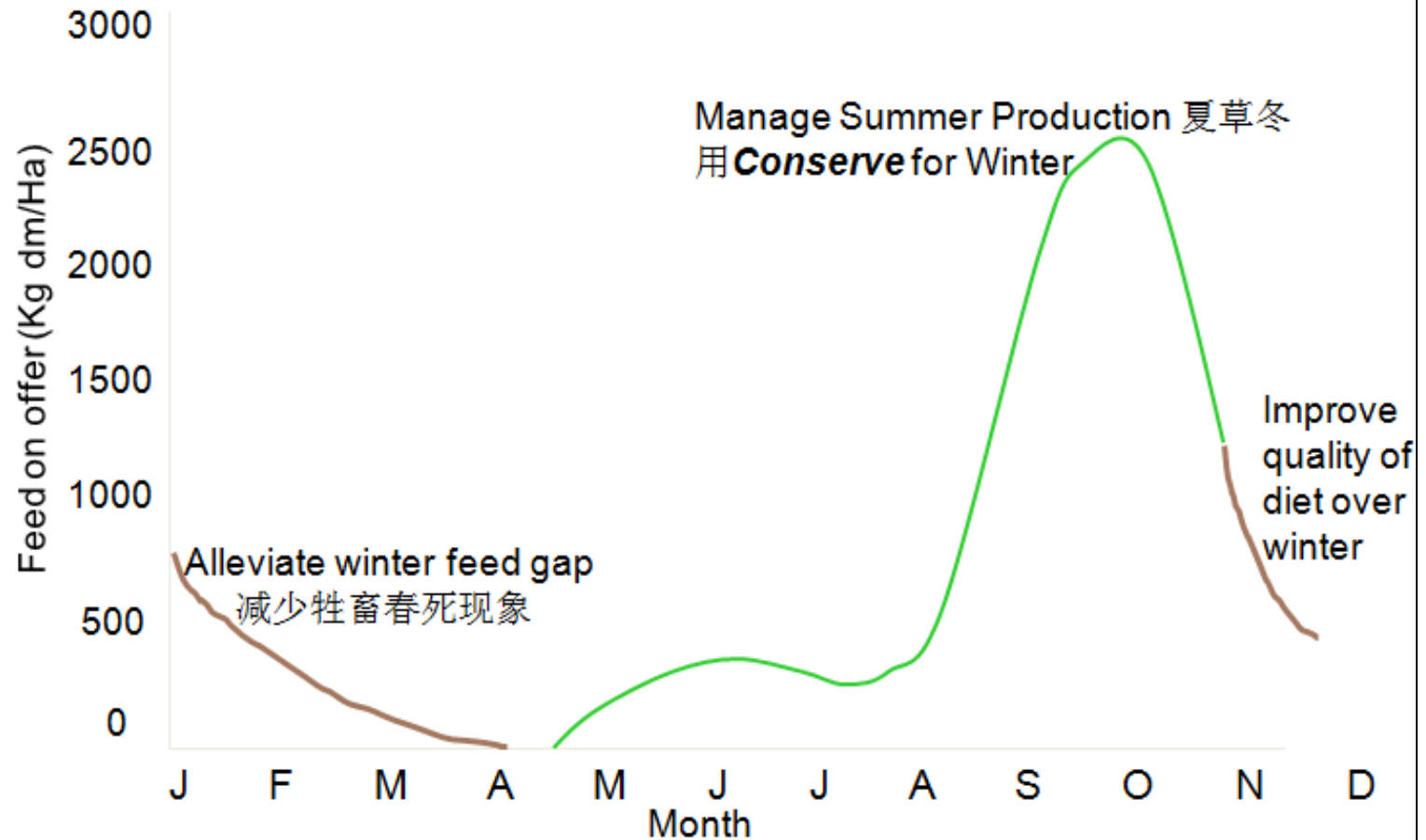
- Largest constraints to livestock production;

- foods for human consumption takes priority over fodder production for animals
- Poor animal nutrition and a lack of a high protein diet
- cows produce between 3-5 L/ day of milk and have low calve survival and slow growth rates

Managing a variable feed base

不同时期的饲草生产与管理

(The basis of agronomy work)



ANIMAL CONDITION: Winter: **Lose condition**, Spring: **Die**, Summer: **Gain weight**, Autumn: **Best condition**
西藏牲畜现状: 冬瘦 春死 夏肥 秋壮

Why grow dual-purpose crops in Tibet?

- Barley and wheat are the most widely grown crop in Tibet
- Tibetan agriculture requires fodder options that do not impact on current grain production operations
- Cutting cereal biomass is a potential forage option for livestock improving land use efficiency
- To improve animal nutrition, improving production during a feed gap without effect on grain production



Project

- Location: TAAAS, Lhasa
- 5 cereals: Spring wheat, spring barley, triticale, oats and oats/vetch
- 4 replications
- 3 treatments (i) zero cut (ii) single cut 5 leaf stage (iii) double cut prior first node

Key measurements

- Biomass production
- Forage quality
- Yield
- Height



- From first cut: 1.5 – 3 t DM/ ha produced (100-200 kg/ mu)

- barley > triticale > wheat > oats





- Graze no. 2: 14/06/2012
 - Biomass : 1.4-3.5 DM t/ha (93-234 kg/Mu)
- Triticale >oats>barley>wheat>oats/vetch





Lodging in zero cut barley
零刈割青稞地倒伏



Reduced height with cutting
刈割后降低作物高度

Key Findings

- Single graze most effective
- Grazing reduced height, reducing lodging, improving yield in barley
- 1 ha cereal biomass at first cut (as dry matter) could feed 2 large animals for 4 months of the harshest winter dry period















Where did it lead?

- Increased networks- ACIAR
- A PhD in Canberra
- **Key learnings from my experience;**
 - Go with the flow
 - Sometimes it's hard to know what's going on
 - International research= not all easy, lonely at times, illness, frustrating
 - Show interest ... and pursue it