Crop production in different landscape units of the drought prone south-east Zimbabwe

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Livelihood types of S.E. Zimbabwe

- Survey data 2008 (n=156)
- 12 % Cattle-based
- 41% Crop-Cattle based
- 47% Non-Farm

Complexity of rural livelihoods on edges of park

Figure 1 Output of the Drought, Border and Desire scenarios relative to baseline scenario. X-axis: number of iterations; Y-axis: value of Cash for cattle-based livelihoods (A) and cattle-crop based livelihoods (B), relative to current scenario.

Preliminary findings

▸ Crop-dependent households most sensitive

▸ Not much to sell during a drought

▸ Limited capacity to recover from drought – most complicated recovery path

▸ Unreliable and unpredictable informal marketing system makes many households insecure

▸ BUT THEY STILL CONTINUE CROPPING – Where does their resilience reside?

Gap

▸ Information on farming strategies by locals is lacking

▸ Practical performance of some research products on maize production in drier regions is not being made use of
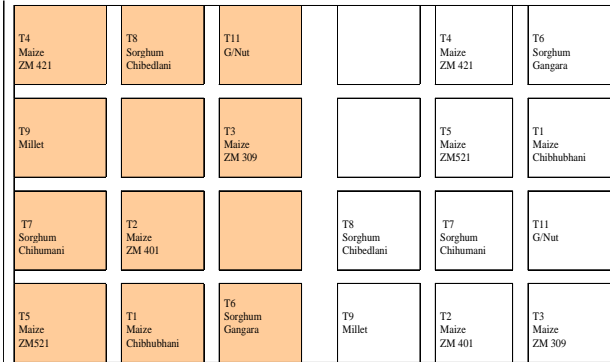
Objective

▸ To establish most the most appropriate use of different landscape units used in cropping by communal farmers in south-east Zimbabwe

Questions

▸ Is there any relationship between crop establishment and crop yield in the three cropped basic landscape units in south east Zimbabwe?

▸ Does yield output of crops differ in south-east Zimbabwe

Materials and Methods

David Simbi: Malipati (Ward 15) GPS *X*:………………*Y*:…………….. Lower Flood Plain. Planting Date: 1 Dec 2009

T4 Maize ZM 421	T8 Sorghum Chibedlani	T11 G/Nut		T4 Maize ZM 421	T6 Sorghum Gangara
T9 Millet		T3 Maize ZM 309		T5 Maize ZM521	T1 Maize Chibhubhani
T7 Sorghum Chihumani	T2 Maize ZM 401		T8 Sorghum Chibedlani	T7 Sorghum Chihumani	T11 G/Nut
T5 Maize ZM521	T1 Maize Chibhubhani	T6 Sorghum Gangara	T9 Millet	T2 Maize ZM 401	T3 Maize ZM 309

Sorghum results

Landscape differences

Table 1.5 Landscape type by % establishment or Yield ton/ha (86%DM) of sorghum in southeastern Zimbabwe: within column means with different superscripts are different ($P < 0.05$)

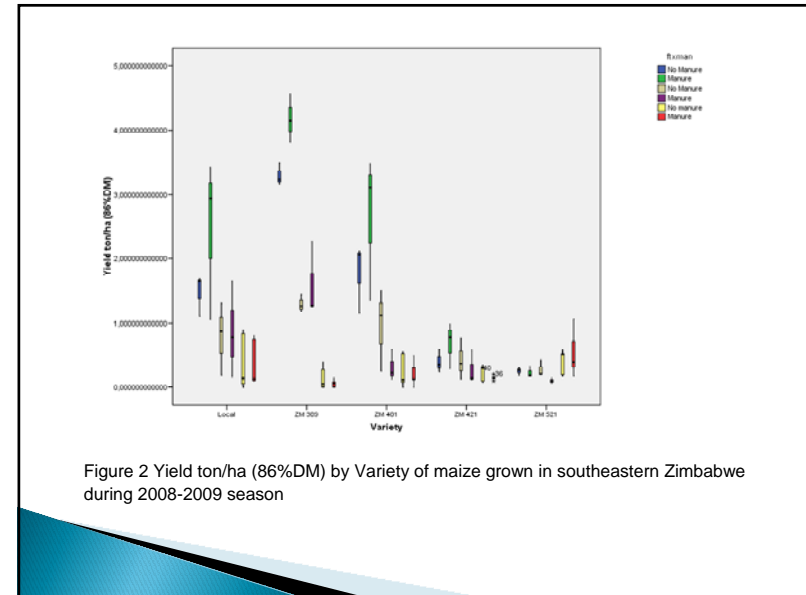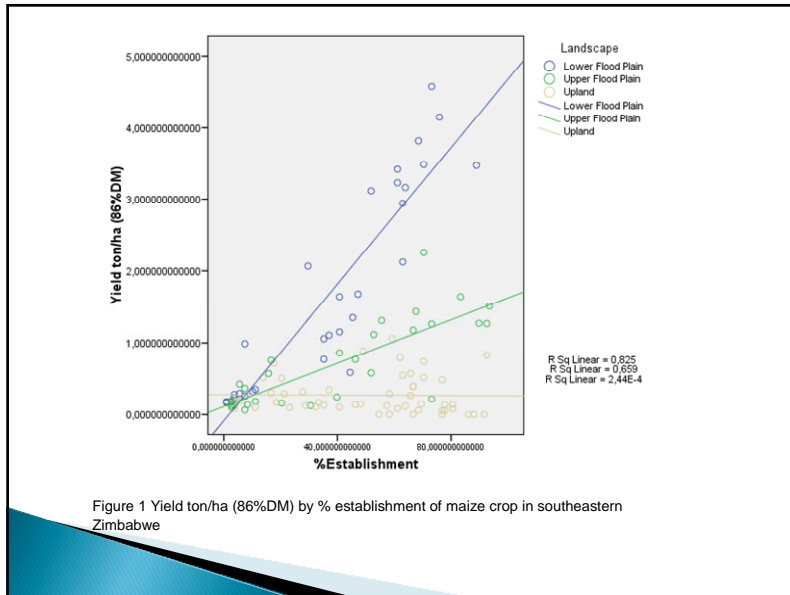| Landscape type	% establishment	Yield ton/ha (86%DM)
Lower flood plain	91.0[a]	2.1[a]
Upper flood plain	57.2[c]	1.1[b]
Upland	79.4[b]	2.3[a]
	$R^2 = 0.72$ cv = 17.3	$R^2 = 0.86$ cv = 28.8

Sorghum Results

Variety differences

Table 1 Variety by % establishment or Yield ton/ha (86%DM) of sorghum in southeastern Zimbabwe: within column means with different superscripts are different ($P < 0.05$)

Variety	% establishment	Yield ton/ha (86%DM)
Chibedlani	77.8[a]	1.6[a]
Gangara	76.6[a]	2.4[b]
Chihumani	75.1[a]	1.8[a]
	$R^2 = 0.72$ cv = 17.3	$R^2 = 0.86$ cv = 28.8

Effect of Manure

Table 2 Manure treatment by % establishment or Yield ton/ha (86%DM) of sorghum in southeastern Zimbabwe: within column means with different superscripts are different ($P < 0.05$)

Manure treatment	% establishment	Yield ton/ha (86% DM)
Planted with manure	77.3[a]	2.1[a]
Planted without manure	75.7[a]	1.7[b]
	$R^2 = 0.72$ cv = 17.3	$R^2 = 0.86$ cv = 28.8

Figure 1 Yield ton/ha (86%DM) by % establishment of maize crop in southeastern Zimbabwe

Figure 2 Yield ton/ha (86%DM) by Variety of maize grown in southeastern Zimbabwe during 2008-2009 season

Concluding Remarks

- It is best for farmers to put sorghum in upper flood plain and uplands and maize on lower flood plain
- For yield, Gangara variety does best
- For maize ZM309 yields best in lower flood plain, could be grown in combination with their local variety Chibhubhani, if ever maize is grown in uplands then their local variety and ZM521 are varieties of choice
- Manure increases sorghum yield but to be used with maize only in lower flood plain

Take home message

- Cropping close to rivers is a reality in south-east Zimbabwe, any attempts to stop this practice makes game products more appealing to locals than ever before! Better we start thinking of how to adapt river systems resilience to effects of expanding farming close to rivers before its late. This situation is unlikely to be halted because of increasing effects of global warming

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