Extension Methods and their Implications on Crop Yield in a Maize – Legume Conservation Agriculture Project in Zambia

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Introduction

- Conservation Agriculture (CA) is one of the sustainable intensification technologies that is increasingly promoted by various international research centres, international non-governmental organizations (NGOs), faith based organizations and governments of southern Africa among others
- The practice is promoted to overcome the problem of soil degradation, drought, low and unstable crop yields and high production costs
- The present paper discusses extension methods adopted and their implications on crop yield in the project sites in Zambia.

Objectives

- ❑ To build capacity of farmers, extension workers and other partners in implementing CA oriented technologies
- ❑ To develop and validate best CA practices that will reduce risk in smallholder farming systems through demonstrations

Methods

- Participatory Action Research (PAR) approach through consensus building meetings with farmers and key partner organizations
- Field demonstrations of crops; maize, cowpeas, groundnuts and soybeans
- 8 treatments set in RCBD replicated 3 times
- Treatments: Pigeon pea and maize with 200 kg/ha basal and urea fertilizer respectively; pigeon pea and maize with basal fertilizer only at 200kg/ha; pigeon pea and maize with 100 kg/ha basal and urea fertilizer respectively; cowpea and maize with 200kg/ha basal and urea fertilizer respectively; cowpea and maize with basal fertilizer only at 200kg/ha; cowpea and maize with 100kg/ha basal and urea fertilizer respectively; maize/cowpea rotation with 200 kg/ha basal and urea fertilizer respectively to the maize only and 200 kg/ha basal only to the cowpea and farmer practice with 200 kg/ha basal and urea fertilizer respectively to the maize only
- In other sites, cowpea was replaced by groundnut and soybean respectively.

Results

Table #1 **Maize yield results across sites (kg/ha) for 2014/15 season**

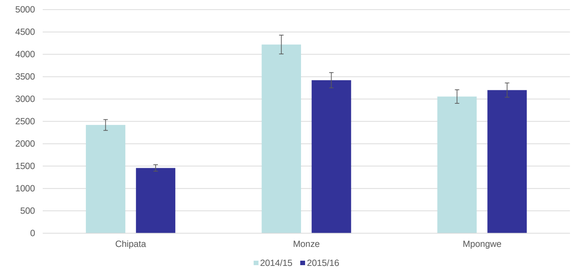
Treatments	Chipata	Monze	Mpongwe
(T1) PP + M + FRF	2811	4341	3619
(T2) PP + M + D Comp	1605	3665	2700
(T3) PP + M + HRF	2219	3480	2577
(T4) GN + M + FRF	3038	4469	3204
(T5) GN + M + D Comp	1643	4518	3191
(T6) GN + M + HRF	2102	4478	2399
(T7) M/GN ROT	2721	4264	3829
(T8) FP	3220	4533	2931
Mean	2420	4219	3056
C.V	39.3	29.3	29.5
LSD (0.05)	688.5	814.9	806.2
Fpr	<0.01	0.06	0.007

NB: PP – Pigeon pea; FRF – Full rate fertilizer; M – Maize; D Comp – D Compound; HRF – Half rate fertilizer; CP – Cowpea; GN – Groundnut; ROT – Rotation, SB – Soybeans

Table #2 **Maize yield results across sites (kg/ha) for 2014/15 season**

Treatments	Chipata	Monze	Mpongwe
(T1) PP + M + FRF	1609	3330	3487
(T2) PP + M + D Comp	1068	2937	2882
(T3) PP + M + HRF	1292	3110	3666
(T4) GN + M + FRF	1890	3897	3408
(T5) GN + M + D Comp	1199	3241	2383
(T6) GN + M + HRF	1450	3388	2996
(T7) M/GN ROT	1597	3812	3535
(T8) FP	1563	3662	3254
Mean	1459	3422	3201
C.V	30.6	26.3	35.5
LSD (0.05)	272.7	653.2	749.4
Fpr	<0.001	0.047	0.018

Figure # 1 **Comparison of mean maize yield results across sites (kg/ha) for two seasons; 2014/15 and 2015/16 based on extension delivery**



Conclusions

- Findings indicate that variations in yield of maize recorded in the project sites, is attributed to extension delivery systems resulting from delays in project managers in attending to the needs of the extension project staff on time, thereby compelling farmers to miss on technical advice at critical periods of crop growth
- To ensure effective extension service to the smallholder farmers, in any project under taking, there is need for planners to conduct regular knowledge and training skills in order to motivate to staff

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