

Fertilizer Sector Improvement (FSI+)

MAIZE CROP CUT SURVEY REPORT |
WET SEASON 2018

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Table of Contents

Introduction.....	1
Sample Size and Random Sampling of UDP-Adopting Direct Beneficiary Farmers	1
Sample Farmers' Crop Cut Survey	2
Cultivation Method of Sample Farmers' Crop Cuts	2
Maize Variety Use by Gender.....	2
Cropping Pattern of Sample Farmers' Crop Cut.....	2
Basal Fertilizer Use in Maize Production	3
Prilled Urea Use in Non-UDP Plots and UDP and Non-UDP Land.....	4
Mean Cost of Total Fertilizer in UDP and Non-UDP.....	5
Mechanization in Maize Production	6
Average Maize Land With and Without UDP and Different Farm Size Groups of Sample Farmers	7
Mean Yield of UDP and Non-UDP, Percentage Yield Increase, and Percentage of Total Production Sold.....	8
Mean Yield of UDP and Non-UDP and % Yield Increase by Different Kinds of Basal Fertilizer	8
Mean Seed, Labor, and Threshing Machine Costs and Total Cost of Production.....	9
Five Data Points and Gross Margin for Sample Farmers' Crop Cut by Gender	10
Five Data Points and Gross Margin for Sample Farmers' Crop Cuts by Different Types of Basal Fertilizer.....	11
Appendix 1. List of Direct Beneficiaries UDP Farmers for Maize Production (Wet Season 2018).....	13

Tables

Table 1.	Number of Surveyed Maize Sample Farmers in the 2018 Wet Season.....	2
Table 2.	Cropping Pattern of Sampled Farmers by Gender.....	3
Table 3.	Basal Fertilizer Use in UDP and Non-UDP by Gender.....	4
Table 4.	Type of Basal Fertilizer Used in UDP and Non-UDP by Gender	4
Table 5.	Prilled Urea (kg/ha) Use on UDP and Non-UDP Land.....	5
Table 6.	Mean Cost of Total Fertilizer in UDP and Non-UDP	5
Table 7.	Tractor Use in Land Preparation.....	6
Table 8.	Threshing Machine Use in Maize Harvesting	6
Table 9.	Average Maize Land (ha) With and Without UDP	7
Table 10.	Farm Size Groups by Gender	7
Table 11.	UDP and NUDP Yield, Percentage Yield Increase, and Percentage of Total Production Sold	8
Table 12.	UDP and Non-UDP Yield and Percentage Yield Increase With Various Types of Basal Fertilizer.....	9
Table 13.	Seed, Labor, and Threshing Machine Costs and Total Production Cost of UDP and Non-UDP	10
Table 14.	Five Data Points and Gross Margin for Sample Farmers' Crop Cuts by Gender.....	10
Table 15.	Five Data Points and Gross Margin for Maize Farmers by Type of Basal Fertilizer.....	12

Figures

Figure 1.	Gross Margin With and Without UDP by Gender in Wet Season 2018	11
Figure 2.	Gross Margin With UDP and -Non-UDP by Type of Basal Fertilizer.....	12

Photos

Photo 1.	Farmers Participate in Removing Husks from Maize Crop Cuts in Taw Yar Village, Lawksawk Township	21
Photo 2.	Field Day Participation in a Farmer's Maize Demonstration Plot in Eine Pu Village, Pindaya Township.....	21

Acronyms and Abbreviations

BU	Briquette Urea
EM	Effective Microorganism
FSI+	Fertilizer Sector Improvement
GM	Gross Margin
ha	hectare
IC	Input Cost
IFDC	International Fertilizer Development Center
kg	kilogram
m	meter
NPK	Nitrogen, Phosphorus, and Potassium
NUDP	Non-UDP
PU	Prilled Urea
QS	Quantity Sales
t	ton
TC	Total Cost
TP	Total Production
TSP	Triple Superphosphate
UDP	Urea Deep Placement
UP	Unit Area of Product
USAID	United States Agency for International Development
VS	Value Sales

Fertilizer Sector Improvement Project (FSI+)

Maize Crop Cut Survey Report | Wet Season 2018

Introduction

The Fertilizer Sector Improvement (FSI+) project, implemented by the International Fertilizer Development Center (IFDC), is funded by the United States Agency for International Development (USAID) for five years. Following the introduction of maize with urea deep placement (UDP) demonstrations conducted with Syngenta in 2016, farmers requested to learn more about the technology. The 2017 wet season was the first time FSI+ delivered farmer training and established demonstrations with the Shwe Danu Self Help Development Organization in Pindaya Township. Then, the Shwe Danu Self Help Development and Borderless Link organizations provided farmer training in Pindaya, Lawksawk, Kalaw, and Nyaunshwe townships in the 2018 wet season. A total of 295 maize farmers (236 males and 59 females) applied UDP in their maize crop in the 2018 wet season, and data were collected from a sample of 22 (16 males and six females) to assess the benefits derived from UDP. To measure the impact of the technology on maize yield, the project conducted crop cuts with a survey on a random sample of direct beneficiary maize farmers who used UDP in the wet season of 2018. A crop cut area (60 m²) was harvested from each field with UDP and without UDP, threshed, weighed, and moisture measured to calculate yield per hectare at 14% moisture.

Sample Size and Random Sampling of UDP-Adopting Direct Beneficiary Farmers

The list of direct beneficiary farmers¹ who applied UDP in maize was received from the FSI+ extension team. The UDP-adopting beneficiary farmers were sorted by gender, and then using a random integer generator (non-repeating), the random sample numbers were obtained (in ascending number order) by gender. In total, **16 male** and **six female** UDP-adopting farmers were randomly selected from a total of four townships for the crop cut survey (Table 1). The detailed list of direct beneficiary farmers by gender is presented in **Appendix 1**.

¹ Direct beneficiary farmers are those who attended training. Their names were recorded on attendance sheets.

Table 1. Number of Surveyed Maize Sample Farmers in the 2018 Wet Season

Sr. No.	Region	Project Township	UDP-Adopting Direct Beneficiary Farmers			Surveyed Sample (7% of Total UDP-Adopting Farmers)		
			Male	Female	Total	Male	Female	Total
1	Shan (South)	Pindaya	52	5	57	2	1	3
2	Shan (South)	Lawksawk	102	30	132	7	2	9
3	Shan (South)	Kalaw	26	14	40	3	2	5
4	Shan (South)	Nyaungshwe	56	10	66	4	1	5
Total			236	59	295	16	6	22

Sample Farmers' Crop Cut Survey

The crop cut survey was conducted during September 2018. The maize crop cut data were collected from 22 sample farmers out of 295 UDP-adopting farmers in Pindaya, Lawksawk, Kalaw, and Nyaungshwe townships (Table 1).

Cultivation Method of Sample Farmers' Crop Cuts

All UDP-adopting farmers used line sowing as the cultural practice. The spacing was 1 ft (0.3048 m) and row space was 2 ft (0.6096 m). None of the maize farmers used a row-intercropping system with pigeon pea in maize planting. Thus, all UDP-adopting maize farmers planted only maize in the 2018 wet season.

Maize Variety Use by Gender

All sample maize farmers, regardless of gender, used a hybrid maize variety. Two male farmers used seeds from Syngenta Co. Ltd., and the remaining farmers bought/used imported seeds from Thailand and China. The main source of seeds was purchasing from various agro-input companies.

Cropping Pattern of Sample Farmers' Crop Cuts

The sample maize farmers practiced “nine different cropping patterns” (Table 2). Thirty-one percent of male farmers and 17% of female farmers did not grow a crop after harvesting maize. The majority of female farmers (67% of total female farmers) practiced niger after

maize. Twelve percent of male farmers practiced those same crops (niger after maize). The remaining female farmers grew onion and niger after the maize crop.

Nineteen percent of male farmers grew onion after maize. One male farmer each planted either tomato; paddy; gram; garlic and gram; groundnut and wheat; or gram, mustard, sesame, and sunflower after maize.

Table 2. Cropping Pattern of Sampled Farmers by Gender

Gender	Cropping Pattern											Total
	Maize-Fallow	Maize-Tomato	Maize-Paddy	Maize-Niger	Maize-Gram	Maize-Onion	Maize-Garlic-Gram	Maize-Onion-Niger	Maize-Groundnut-Wheat	Maize-Gram-Mustard-Sesame-Sunflower		
Female	Count	1	0	0	4	0	0	0	1	0	0	6
	%	16.7%	.0%	.0%	66.7%	.0%	.0%	.0%	16.7%	.0%	.0%	100.0%
Male	Count	5	1	1	2	1	3	1	0	1	1	16
	%	31.2%	6.2%	6.2%	12.5%	6.2%	18.8%	6.2%	.0%	6.2%	6.2%	100.0%
Count		6	1	1	6	1	3	1	1	1	1	22
	%	27.3%	4.5%	4.5%	27.3%	4.5%	13.6%	4.5%	4.5%	4.5%	4.5%	100.0%

Basal Fertilizer Use in Maize Production

Table 3 indicates that all female and 94% of male farmers applied basal fertilizer for both UDP and non-UDP in the 2018 wet season maize. Only one male farmer did not use basal fertilizer. The majority of male and female farmers used “compound fertilizer” as a basal fertilizer. Thus, 80% of male and 67% of female farmers used compound fertilizer as a basal fertilizer (Table 4).

Only one female farmer used compound plus triple superphosphate (TSP) as a basal fertilizer. The rest of the female farmers used compound, TSP, and EM bokashi as a basal fertilizer. One male farmer each used “TSP plus EM bokashi,” “compound plus prilled urea,” and “compound plus TSP and EM bokashi” as a basal fertilizer.

Table 3. Basal Fertilizer Use in UDP and Non-UDP by Gender

			Basal Used		Total
			Yes	No	
Gender	Female	Count	6	0	6
		%	100%	0%	100.0%
	Male	Count	15	1	16
		%	93.8%	6.2%	100.0%
Total		Count	21	1	22
		%	95.5%	4.5%	100.0%

Table 4. Type of Basal Fertilizer Used in UDP and Non-UDP by Gender

			Type of Basal Fertilizer					Total
			NPK	NPK+PU	NPK+TSP	NPK+Bokashi+TSP	TSP+Bokashi	
Gender	Female	Count	4	0	1	1	0	6
		%	66.7%	.0%	16.7%	16.7%	.0%	100.0%
	Male	Count	12	1	0	1	1	15
		%	80.0%	6.7%	.0%	6.7%	6.7%	100.0%
Total		Count	16	1	1	2	1	21
		%	76.2%	4.8%	4.8%	9.5%	4.8%	100.0%

Prilled Urea Use in Non-UDP Plots and UDP and Non-UDP Land

Regardless of gender, all farmers used prilled urea when they earthed up the non-UDP plots in the 2018 wet season. The female sample farmers used a higher rate of prilled urea (154 kg/ha) than male sample farmers (135 kg/ha) (Table 5).

Both UDP and non-UDP land areas of male farmers are larger than the land size of female farmers. For example, the non-UDP land of male farmers is nearly double of the land size of female farmers (Table 5).

Table 5. Prilled Urea (kg/ha) Use on UDP and Non-UDP Land

			PU (kg/ha)	PU Price (\$/kg)	NUDP (ha)	UDP (ha)
Gender	Female	Mean	154.3750	0.3467	2.29283	0.069
		N	6	6	6	6
	Male	Mean	135.0781	0.3556	4.22438	0.09
		N	16	16	16	16
Total		Mean	140.3409	0.3532	3.69759	0.084
		N	22	22	22	22

Mean Cost of Total Fertilizer in UDP and Non-UDP

On average, the maize sample farmers used 143 kg of urea briquettes per hectare and 140 kg of prilled urea per hectare in the 2018 wet season. Some farmers used other fertilizers in non-UDP to improve productivity. The average total fertilizer cost (basal + PU + other fertilizers) for non-UDP (\$106.70/ha) was a little higher than the fertilizer cost for UDP (\$100.50/ha for basal and urea briquettes) (Table 6). Both male and female farmers had the same cost for fertilizer in UDP, but female farmers had a higher cost for fertilizer in non-UDP (female \$109.90 vs. male \$105).

Table 6. Mean Cost of Total Fertilizer in UDP and Non-UDP

		Total Fertilizer Cost in UDP (\$/h)	Total Fertilizer Cost in NUDP (\$/h)
Female	Mean	100.5267	109.9483
	N	6	6
	Std. Deviation	41.55778	38.77210
Male	Mean	100.5719	105.5975
	N	16	16
	Std. Deviation	39.46865	42.36974
Total	Mean	100.5595	106.7841
	N	22	22
	Std. Deviation	39.03714	40.54797

Mechanization in Maize Production

All male and female sample farmers used tractors for land preparation. All female farmers hired a tractor for land preparation, but only 81% of male farmers hired a tractor (Table 7). Thus, 19% of male farmers used their own tractor.

Table 7. Tractor Use in Land Preparation

			Tractor Use in Land Preparation		Total
			Use Own Tractor	Use Hired Tractor	
Gender	Female	Count	0	6	6
		% within female=1	.0%	100.0%	100.0%
	Male	Count	3	13	16
		% within female=1	18.8%	81.2%	100.0%
Total		Count	3	19	22
		% within female=1	13.6%	86.4%	100.0%

No farmer used a harvesting machine in Shan State. All female farmers used a threshing machine with charges (Table 8). Only one male farmer did not use a threshing machine, while the rest used a threshing machine during maize harvesting.

Table 8. Threshing Machine Use in Maize Harvesting

			Thresher Use		Total
			Yes	No	
Gender	Female	Count	0	6	6
		% within female=1	.0%	100.0%	100.0%
	Male	Count	1	15	16
		% within female=1	6.2%	93.8%	100.0%
Total		Count	1	21	22
		% within female=1	4.5%	95.5%	100.0%

Average Maize Land With and Without UDP and Different Farm Size Groups of Sample Farmers

The average farm size of male and female farmers was 4.31 ha and 2.36 ha, respectively (Table 9). The average UDP land size was higher for male farmers (0.09 ha) than UDP land of female farmers (0.07 ha). The non-UDP farm size of male farmers (4.22 ha) was also greater than the non-UDP farm size of female farmers (2.29 ha).

Table 9. Average Maize Land (ha) With and Without UDP

		UDP Land (ha)	NUDP (ha)	Total Land (ha)
Female	Mean	.06900	2.29283	2.36150
	N	6	6	6
Male	Mean	.09000	4.22438	4.31425
	N	16	16	16
Total	Mean	.08427	3.69759	3.78168
	N	22	22	22

The majority of both male and female farmers were small land holders (half of female farmers and 44% of male farmers) (Table 10). Only one female farmer was a marginal land holder. A higher percentage of male farmers owned medium- and large-sized land than female farmers. One female farmer was a medium land holder, and one female farmer was a large land holder.

Table 10. Farm Size Groups by Gender

			Farm Size Group				Total
			Marginal	Small	Medium	Large	
Gender	Female	Count	1	3	1	1	6
		%	16.7%	50.0%	16.7%	16.7%	100.0%
	Male	Count	0	7	4	5	16
		%	.0%	43.8%	25.0%	31.2%	100.0%
Total		Count	1	10	5	6	22
		%	4.5%	45.5%	22.7%	27.3%	100.0%

Marginal = 0.04-0.81 ha, Small = 0.82-2.02 ha, Medium = 2.03-4.05 ha, Large = above 4.05 ha.

Mean Yield of UDP and Non-UDP, Percentage Yield Increase, and Percentage of Total Production Sold

The mean UDP yield of male and female farmers was nearly the same (female 6.61 t/ha vs. male 6.55 t/ha) in the 2018 wet season. But male farmers received a higher yield for non-UDP (male 5.75 t/ha vs. female 5.1 t/ha) than female farmers in wet season maize (Table 11).

With application of UDP, maize yield increased by 40% for female farmers and 16% for male farmers. Overall, maize yield increased by 22.9% due to application of UDP (Table 11).

The sample female farmers sold 88% of their total maize production, while sample male farmers sold 79% of their total production (Table 11).

Table 11. UDP and NUDP Yield, Percentage Yield Increase, and Percentage of Total Production Sold

Gender		UDP Yield	NUDP Yield	% Yield Increase	% TP Sold
Female	Mean	6.6150	5.1050	40.1517	88.1150
	N	6	6	6	6
Male	Mean	6.5519	5.7588	16.4625	79.2469
	N	16	16	16	16
Total	Mean	6.5691	5.5805	22.9232	81.6655
	N	22	22	22	22

Mean Yield of UDP and Non-UDP and % Yield Increase by Different Kinds of Basal Fertilizer

The majority of maize farmers, regardless of gender, used compound fertilizer as a basal in the 2018 wet season. The maize yield improved by 21.9% for those farmers who used compound as a basal fertilizer (Table 12).

The mean yields for both UDP (6.43 t/ha) and non-UDP (5.43 t/ha) were higher for the sample farmers who used compound basal fertilizer than those who used other types of basal fertilizer (except yields received by a farmer who used basal TSP and EM bokashi). That farmer received the highest UDP (10.5 t/ha) and non-UDP (9.7 t/ha) yields (Table 12).

A sample farmer who used compound fertilizer and prilled urea as a basal received the negative yield increment (-3.9%).

Table 12. UDP and Non-UDP Yield and Percentage Yield Increase With Various Types of Basal Fertilizer

Kind of Basal		UDP Yield	NUDP Yield	% Yield Increase
NPK	Mean	6.4306	5.4356	21.9019
	N	16	16	16
NPK+PU	Mean	4.5700	4.7600	-3.9900
	N	1	1	1
NPK+TSP	Mean	4.8500	2.3600	105.5100
	N	1	1	1
NPK+EM Bokashi+TSP	Mean	5.7500	5.0400	14.6600
	N	2	2	2
TSP+EM Bokashi	Mean	10.4800	9.7300	7.7100
	N	1	1	1
Total	Mean	6.3948	5.4238	23.2848
	N	21	21	21

Mean Seed, Labor, and Threshing Machine Costs and Total Cost of Production

The female sample farmers had higher seed and labor costs than the sample male farmers (Table 13). For example, the mean labor cost for female and male farmers was \$107/ha and \$89/ha, respectively.

The male sample farmers paid a slightly higher cost for threshing machines. The average total production cost for both UDP and non-UDP was higher for the female sample farmers. For example, the mean total production cost for UDP was \$345/ha for female farmers and \$310/ha for male farmers. The mean total production cost for non-UDP was \$355/ha and \$315/ha for female and male farmers, respectively (Table 13).

Table 13. Seed, Labor, and Threshing Machine Costs and Total Production Cost of UDP and Non-UDP

Gender		Seed Cost (\$/ha)	Labor Cost (\$/ha)	Threshing Machine Cost (\$/ha)	Total Production Cost in UDP (\$/ha)	Total Production Cost in Non-UDP (\$/ha)
Female	Mean	48.1733	107.3600	20.4400	345.7767	355.1983
	N	6	6	6	6	6
Male	Mean	45.2869	89.7456	21.5000	310.0538	315.0812
	N	16	16	16	16	16
Total	Mean	46.0741	94.5495	21.2109	319.7964	326.0223
	N	22	22	22	22	22

Main Finding: The female sample farmers had higher production costs in both UDP and non-UDP than male farmers. They received a higher yield in UDP but not in non-UDP. The male sample farmers received a higher non-UDP yield in the 2018 wet season.

Five Data Points and Gross Margin for Sample Farmers' Crop Cut by Gender

The Gross Margin (GM) for female farmers was higher than for male farmers in UDP (female \$697/ha vs. male \$639/ha) (Table 14). For non-UDP, the male sample farmers received a higher GM (\$557/ha) than the female sample farmers (\$547/ha). Due to application of UDP technology, the GM for maize production increased by 27% for female farmers and 15% for male farmers in the 2018 wet season.

Table 14. Five Data Points and Gross Margin for Sample Farmers' Crop Cuts by Gender

	Gender	UP	TP	QS	VS	IC	GM \$/ha	% GM Increase
UDP	Male(16)	1.44	8.89	7.34	1,131.89	451.14	639	14.7
	Female(6)	0.41	2.73	2.29	361.81	142.79	697	27.4
	Combined(22)	1.85	11.62	9.63	1,493.70	593.93	653	17.9
NUDP	Male(16)	67.59	381.18	305.45	46,463.50	20,301.30	557	
	Female(6)	13.76	74.38	46.08	7,489.13	4,562.70	547	
	Combined(22)	81.35	455.56	351.53	53,952.63	24,864.00	554	
Whole	Male(16)	69.03	390.07	312.79	47,595.39	20,752.44	559	
	Female(6)	14.17	77.11	48.37	7,850.94	4,705.49	551	
	Combined(22)	83.20	467.18	361.16	55,446.33	25,457.93	556	

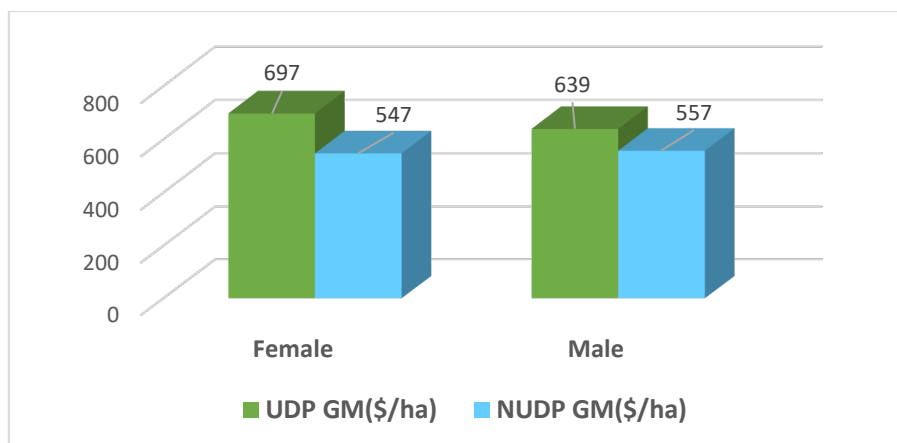


Figure 1. Gross Margin With and Without UDP by Gender in Wet Season 2018

Five Data Points and Gross Margin for Sample Farmers' Crop Cuts by Different Types of Basal Fertilizer

Only one male farmer did not use basal fertilizer in maize production, but his GMs for both UDP and non-UDP were higher than the GMs of all types of basal fertilizer users (Table 15). The non-user farmer received a higher GM both with and without UDP (\$1,313/ha and \$1,068/ha) in the 2018 wet season. He applied prilled urea (247 kg/ha) and cow dung.

Among the basal fertilizer users, the GM with and without UDP (\$1,121/ha and \$964/ha) for sample farmers who used “TSP and EM bokashi” as a basal was higher than GMs of those who used other types of basal fertilizer (Table 16). The farmers who used compound fertilizer as a basal received the second highest GM with and without UDP (\$649/ha and \$570/ha).

Because of the lower non-UDP yield (2.36 t/ha) received by a farmer who used compound and TSP as a basal, his GM for non-UDP was negative (-\$5/ha).

The GM increase with UDP application was 23% for non-user farmers and 14.4% for basal user farmers in the 2018 wet season.

Table 15. Five Data Points and Gross Margin for Maize Farmers by Type of Basal Fertilizer

	Basal	UP	TP	QS	VS	IC	GM \$/ha	% GM Increase
UDP	NPK(16)	1.437	8.75	7.02	1,101.04	439.27	649	13.9
	NPK+PU(1)	0.069	0.31	0.31	47.19	21.92	367	-13.0
	NPK+TSP(1)	0.069	0.33	0.33	50.08	25.05	364	7,380.0
	NPK+TSP+BK(2)	0.140	0.79	0.54	81.55	61.36	417	29.1
	TSP+BK(1)	0.069	0.72	0.72	108.22	31.07	1,121	16.3
	Combined(21)	1.78	10.90	8.92	1,388.08	578.67	626	14.4
	NUDP	NPK(16)	67.59	377.10	282.25	43,557.70	19,653.17	570
NPK+PU(1)		2.77	13.16	13.16	1,974.83	808.06	422	
NPK+TSP(1)		3.17	7.48	7.48	1,122.48	1138.40	-5	
NPK+TSP+BK(2)		3.51	16.81	7.63	1,145.00	1390.37	323	
TSP+BK(1)		3.17	30.84	30.84	4,627.83	1572.56	964	
Combined(21)		80.21	445.39	341.36	52,427.84	24,562.56	547	
Whole		NPK(16)	69.03	385.85	289.27	44,658.74	20,092.44	572
	NPK+PU(1)	2.83	13.47	13.47	2,022.02	829.98	421	
	NPK+TSP(1)	3.24	7.81	7.81	1,172.56	1,163.45	2.8	
	NPK+TSP+BK(2)	3.65	17.60	8.17	1,226.55	1,451.73	326	
	TSP+BK(1)	3.24	31.56	31.56	4,736.05	1,603.63	967	
	Combined(21)	81.99	456.29	350.28	53,815.92	25,141.23	548	
	UDP	Without basal(1)	0.069	0.7	0.7	105.64	15.26	1,313
NUDP	Without basal(1)	1.146	10.16	10.16	1,524.8	301.43	1,068	
Whole	Without basal(1)	1.215	10.86	10.86	1,630.44	316.69	1,081	

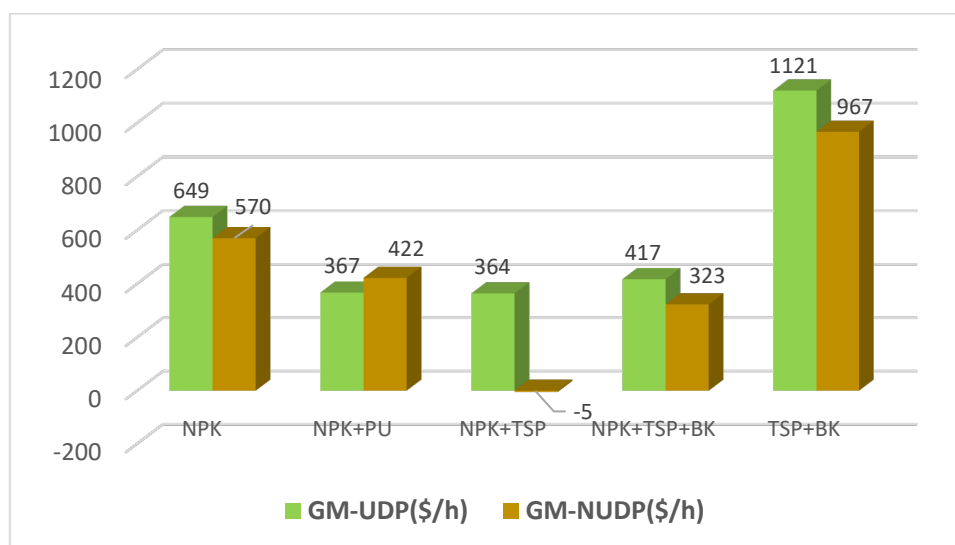


Figure 2. Gross Margin With UDP and -Non-UDP by Type of Basal Fertilizer

Appendix 1. List of Direct Beneficiaries UDP Farmers for Maize Production (Wet Season 2018)

Table 1. Direct Beneficiary UDP Male and Female Farmers in Pindaya Township

Sr. No.	Farmer	Village Tract	Village
1	U Aung Moe Oo	Inn Nge	Shwe Pa Htoe (North)
2	U Poe Kyaw	Inn Nge	Shwe Pa Htoe (North)
3	U Aung Poe Htwe	Inn Nge	Pyin Thar
4	U Zaw Myo	Inn Nge	Shwe Pa Htoe (North)
5	U Chit Hlaing	Inn Nge	Shwe Pa Htoe (North)
6	U Thaug Tun	Inn Nge	Shwe Pa Htoe (North)
7	U Nyo Phyoe	Inn Nge	Shwe Pa Htoe (North)
8	U Nyo Lwin Thant	Inn Nge	Shwe Pa Htoe (North)
9	U Myo Min Kyi	Inn Nge	Shwe Pa Htoe (North)
10	U Kyaw Toe	Inn Nge	Shwe Pa Htoe (North)
11	U Myo Thant	Inn Nge	Shwe Pa Htoe (North)
12	U Kan Hla (F-U Kyaw)	Inn Nge	Shwe Pa Htoe (North)
13	U Aung San	Inn Nge	Shwe Pa Htoe (North)
14	U Soe Naung Htay	Inn Nge	Shwe Pa Htoe (North)
15	U Mg Kyi	Inn Nge	Shwe Pa Htoe (North)
16	U Aung Kyaw Kha	Inn Nge	Shwe Pa Htoe (North)
17	U San Toe	Inn Nge	Shwe Pa Htoe (North)
18	U Kan Hla (Yay Phyu)	Inn Nge	Shwe Pa Htoe (North)
19	U Ye Min Phyo	Inn Nge	Shwe Pa Htoe (North)
20	U Thet Zaw Tun	Inn Nge	Shwe Pa Htoe (North)
21	U Thein Shwe	Inn Nge	Shwe Pa Htoe (North)
22	U Win Naung	Inn Nge	Pyin Thar
23	U Win Nyunt	Inn Nge	Pyin Thar
24	U Kyin Aung	Inn Nge	Shwe Pa Htoe (North)
25	U Mg	Inn Nge	Shwe Pa Htoe (North)
26	U Mg Win	Inn Nge	Inn Nge
27	U San Yu Mg	Inn Nge	Inn Nge
28	U Hla Soe	Inn Nge	Inn Nge
29	U Mg Thin	Inn Nge	Inn Nge
30	U Paw	Inn Nge	Inn Nge
31	U Mg Ko	Inn Nge	Inn Nge
32	U Myint Soe	Inn Nge	Inn Nge
33	U Yan Aung	Inn Nge	Inn Nge
34	U San Shwe	Inn Nge	Inn Nge
35	U Myo Thin	Inn Nge	Inn Nge
36	U Aung Bo	Inn Nge	Inn Nge
37	U Thar Ye	Inn Nge	Inn Nge
38	U Mg Win Nge	Inn Nge	Inn Nge
39	U Soe Lwin	Inn Nge	Inn Nge

Sr. No.	Farmer	Village Tract	Village
40	U Kyaw Htwe	Inn Nge	Inn Nge
41	U Win Cho	Inn Nge	Inn Nge
42	U Aung Tun	Inn Nge	Inn Nge
43	U Khun Than Tun	Inn Nge	Inn Nge
44	U Nyein Mg	Inn Nge	Inn Nge
45	U Ohm Kyaw	Inn Nge	Inn Nge
46	U Myo Thu	Inn Nge	Inn Nge
47	U Kyaw Oo	Inn Nge	Inn Nge
48	U Tun Shwe	Inn Nge	Inn Nge
49	U Aung Hmwe	Shar Pyar	Shar Pyar
50	U Myo Thant	Shar Pyar	Shar Pyar
51	U Chit Htay	Shar Pyar	Shar Pyar
52	U Nyunt Win	Shar Pyar	Shar Pyar
1	Daw Kyi Swe	Inn Nge	Shwe Pa Htoe (North)
2	Daw Tue	Inn Nge	Shwe Pa Htoe (North)
3	Daw Khin Myo Tun	Inn Nge	Shwe Pa Htoe (North)
4	Daw Khin Htwe	Inn Nge	Inn Nge
5	Daw Phyu	Shar Pyar	Shar Pyar

Table 2. Direct Beneficiary UDP Male and Female Farmers in Lawksawk Township

Sr. No.	Farmer	Village Tract	Village
1	U Tint Phae	Ma Gyi Kone	Yae Aye
2	U Myo Kyaw	Ma Gyi Kone	Yae Aye
3	U Myint Thaug	Ma Gyi Kone	Yae Aye
4	U Zaw Win Tun	Ma Gyi Kone	Yae Aye
5	U Aye Mg	Ma Gyi Kone	Yae Aye
6	U Myo Min	Ma Gyi Kone	Yae Aye
7	U Poe Hlaing	Ma Gyi Kone	Yae Aye
8	U Hla Phae	Ma Gyi Kone	Yae Aye
9	U San Thein	Ma Gyi Kone	Yae Aye
10	U Mg Win	Ma Gyi Kone	Yae Aye
11	U Phyo Mg Mg	Ma Gyi Kone	Yae Aye
12	U Wai Yan Tun	Ma Gyi Kone	Yae Aye
13	U Kyaw Tint	Ma Gyi Kone	Yae Aye
14	U Hmone	Ma Gyi Kone	Myaung Daw
15	U Toe Ye	Ma Gyi Kone	Myaung Daw
16	U Aung Pwint	Ma Gyi Kone	Myaung Daw
17	U San Tin	Ma Gyi Kone	Myaung Daw
18	U Win Phae	Ma Gyi Kone	Myaung Daw
19	U Zaw Win	Ma Gyi Kone	Myaung Daw
20	U Thar Aye	Ma Gyi Kone	Myaung Daw
21	U Aung Thein	Ma Gyi Kone	Myaung Daw
22	U Yan Aung	Ma Gyi Kone	Myaung Daw
23	U Ba Kyi	Ma Gyi Kone	Wun So
24	U Aung Pyae	Ma Gyi Kone	Wun So
25	U Chit Swe	Ma Gyi Kone	Wun So
26	U Mg Cho	Ma Gyi Kone	Wun So
27	U Tun Chae	Ma Gyi Kone	Wun So
28	U Ba Thae	Ma Gyi Kone	Wun So
29	U Phae Thin	Ma Gyi Kone	Wun So
30	U Myint Lwin	Ma Gyi Kone	Wun So
31	U Tin Myint	Ma Gyi Kone	Wun So
32	U Saing Thiha	Ma Gyi Kone	Wun So
33	U Hlaing Win Aung	Ma Gyi Kone	Wun So
34	U Kyaw Zin Wai	Ma Gyi Kone	Wun So
35	U Myint Soe	Ma Gyi Kone	Wun So
36	U Nyi Nyi Lwin	Ma Gyi Kone	Wun So
37	U Hmat	Ma Gyi Kone	Wun So
38	U Zaw	Ma Gyi Kone	Wun So
39	U Tun Ye	Ma Gyi Kone	Wun So
40	U Khin Mg Lwin	Ma Gyi Kone	Wun So
41	U Aung Ni	Ma Gyi Kone	Wun So
42	U Than Zaw	Ma Gyi Kone	Wun So
43	U Soe Naing	Ma Gyi Kone	Wun So
44	U Pyae Aye	Ma Gyi Kone	Wun So

Sr. No.	Farmer	Village Tract	Village
45	U Tun Hmwe	Ma Gyi Kone	Wun So
46	U Htein Win Aung	Ma Gyi Kone	Wun So
47	U Mg Pu	Ma Gyi Kone	Wun So
48	U Myint Wai	Ma Gyi Kone	Wun So
49	U Nay Lin Tun	Ma Gyi Kone	Wun So
50	U Than Phae	Ma Gyi Kone	Wun So
51	U Mg Shwe	Ma Gyi Kone	Wun So
52	U Zaw Win Naing	Ma Gyi Kone	Wun So
53	U Poe Cho	Ah Lel Chaung	Ah Lel Chaung
54	U Myint Naing Soe	Ah Lel Chaung	Ah Lel Chaung
55	U Aung Myint Thein	Ah Lel Chaung	Ah Lel Chaung
56	U Tet Tun	Ah Lel Chaung	Taw Yar
57	U Poe Toe	Ah Lel Chaung	Ah Lel Chaung
58	U Kyaw Si	Ah Lel Chaung	Ah Lel Chaung
59	U Mg Pu	Ah Lel Chaung	Ah Lel Chaung
60	U Soe Myint Lwin	Ah Lel Chaung	Ah Lel Chaung
61	U Nyunt Win Hlaing	Ah Lel Chaung	Taung Kway
62	Ko Mg Lay	Ah Lel Chaung	Taung Kway
63	U Myint Naing	Ah Lel Chaung	Ah Lel Chaung
64	U Kyaw May	Ah Lel Chaung	Ah Lel Chaung
65	U Mg Ni	Ah Lel Chaung	Ah Lel Chaung
66	U Myat Zaw Htoo	Ah Lel Chaung	Ah Lel Chaung
67	U Poe Zaw Wine	Ah Lel Chaung	Ah Lel Chaung
68	U Mg Hme	Ah Lel Chaung	Ah Lel Chaung
69	U Ko Tun	Ah Lel Chaung	Ah Lel Chaung
70	U Myo Tint	Ah Lel Chaung	Ah Lel Chaung
71	U Myint Soe	Ah Lel Chaung	Ah Lel Chaung
72	U Kyaw Ngwe	Ah Lel Chaung	Ah Lel Chaung
73	U Zaw Lin	Ah Lel Chaung	Ah Lel Chaung
74	U Tin Zaw	Ah Lel Chaung	Taw Yar
75	U Win Cho Tun	Ah Lel Chaung	Ah Lel Chaung
76	U Hla Myo Zaw	Ah Lel Chaung	Ah Lel Chaung
77	U Mg Gyi	Ah Lel Chaung	Taw Yar
78	U Nyi Nyi Zaw	Ah Lel Chaung	Ah Lel Chaung
79	U Kyaw Phae	Ah Lel Chaung	Taw Yar
80	U San Htein	Ah Lel Chaung	Taw Yar
81	U Ko Ko	Ah Lel Chaung	Taw Yar
82	U Kyaw Tun	Ah Lel Chaung	Ah Lel Chaung
83	U Ko Naing	Ah Lel Chaung	Ah Lel Chaung
84	U Myint Soe	Ah Lel Chaung	Ah Lel Chaung
85	U Mya Mg	Ah Lel Chaung	Ah Lel Chaung
86	U Nyi Nyi Soe	Ah Lel Chaung	Ah Lel Chaung
87	U Khin Mg	Ah Lel Chaung	Ah Lel Chaung
88	U Tun Win Aung	Ah Lel Chaung	Ah Lel Chaung
89	U Poe Htaung	Ah Lel Chaung	Ah Lel Chaung
90	U Bo Ti	Ah Lel Chaung	Ah Lel Chaung

Sr. No.	Farmer	Village Tract	Village
91	U Myint Wai	Ah Lel Chaung	Ah Lel Chaung
92	U Win Tint	Ah Lel Chaung	Ah Lel Chaung
93	U Lone Tin	Ah Lel Chaung	Ah Lel Chaung
94	U Kyaw Oo	Ah Lel Chaung	Ah Lel Chaung
95	U Kyaw Thin	Ah Lel Chaung	Ah Lel Chaung
96	U Nyi Htwe	Ah Lel Chaung	Ah Lel Chaung
97	U Soe Than	Ah Lel Chaung	Ah Lel Chaung
98	U Yan Win Naing	Ah Lel Chaung	Ah Lel Chaung
99	U Kyaw Aye Tun	Ah Lel Chaung	Ah Lel Chaung
100	U Thein Lwin	Ah Lel Chaung	Ah Lel Chaung
101	U Kyin Aung	Ah Lel Chaung	Ah Lel Chaung
102	U Poe Kyaw	Ah Lel Chaung	Ah Lel Chaung
1	Daw Chaw Nge	Ma Gyi Kone	Wun So
2	Daw Thuzar Win	Ma Gyi Kone	Wun So
3	Daw Naw Zar Win	Ma Gyi Kone	Wun So
4	Daw Nyo	Ma Gyi Kone	Wun So
5	Daw Khing	Ma Gyi Kone	Wun So
6	Daw Moe Moe Win	Ma Gyi Kone	Wun So
7	Daw Sandar Aye	Ma Gyi Kone	Wun So
8	Daw Thandar Aung	Ma Gyi Kone	Wun So
9	Daw War war	Ma Gyi Kone	Wun So
10	Daw Win Shwe	Ma Gyi Kone	Wun So
11	Ma Myo Myo Than	Ah Lel Chaung	Ah Lel Chaung
12	Daw Khin Htwe	Ah Lel Chaung	Ah Lel Chaung
13	Daw San Nwet	Ah Lel Chaung	Ah Lel Chaung
14	Daw San Myine	Ah Lel Chaung	Ah Lel Chaung
15	Daw Khin Mar Hinn	Ah Lel Chaung	Taw Yar
16	Daw Aye Pu	Ah Lel Chaung	Taw Yar
17	Daw Aye Thandar Tun	Ah Lel Chaung	Taw Yar
18	Daw Ye Ye Soe	Ah Lel Chaung	Taw Yar
19	Daw Aye Po	Ah Lel Chaung	Ah Lel Chaung
20	Daw Sandar Soe	Ah Lel Chaung	Ah Lel Chaung
21	Daw Than Than Htay	Ah Lel Chaung	Ah Lel Chaung
22	Daw Sandar Aye	Ah Lel Chaung	Ah Lel Chaung
23	Daw Khin Mar Kyue	Ah Lel Chaung	Ah Lel Chaung
24	Daw Sandar Htwe	Ah Lel Chaung	Ah Lel Chaung
25	Daw Khin NweOo	Ah Lel Chaung	Ah Lel Chaung
26	Daw Nwet Mon	Ah Lel Chaung	Ah Lel Chaung
27	Daw Cho Lwin San	Ah Lel Chaung	Ah Lel Chaung
28	Daw Khin Mar Aye	Ah Lel Chaung	Ah Lel Chaung
29	Daw Tin Nan	Ah Lel Chaung	Ah Lel Chaung
30	Daw Phyu Phyu San	Ah Lel Chaung	Ah Lel Chaung

Table 3. Direct Beneficiary UDP Male and Female Farmers in Kalaw Township

Sr. No.	Farmer	Village Tract	Village
1	U Kyaw Min	Kyauk Htat	Nawng Loi
2	U Poe Thaug	Kyauk Htat	Nawng Loi
3	U Zaw Win	Kyauk Htat	Nawng Loi
4	U Aung Maung	Kyauk Htat	Nawng Loi
5	U Soe Khaung	Kyauk Htat	Nawng Loi
6	U Tun Win Aye	Kyauk Htat	Nawng Loi
7	U Kyaw Lun	Kyauk Htat	Nawng Loi
8	U Win Aung	Kyauk Htat	Nawng Loi
9	U Ba Shwe	Kyauk Htat	Nawng Loi
10	U Ba Hmwe	Kyauk Htat	Nawng Loi
11	U Mg Htay	Kyauk Htat	Nawng Loi
12	U Tin Oo	Kyauk Htat	Nawng Loi
13	U Nyunt Win	Kyauk Htat	Nawng Loi
14	U Mg Tun	Baw Hseng	Thae Kone
15	U Aung Mae	Baw Hseng	Thae Kone
16	U Soe Win	Baw Hseng	Baw Sone
17	U Aye Mg	Baw Hseng	Baw Sone
18	U Aung Hmwe	Baw Hseng	Baw Sone
19	U Kyin Mg	Baw Hseng	Baw Sone
20	U San Ti	Baw Hseng	Baw Sone
21	U Chit Min	Baw Hseng	Baw Sone
22	U Myint Mg	Baw Hseng	Thae Kone
23	U Tin Than	Baw Hseng	Thae Kone
24	U Yan	Baw Hseng	Thae Kone
25	U Poe Htaw	Baw Hseng	Thae Kone
26	U Toe Phae	Baw Hseng	Baw Sone
1	Daw Aye	Kyauk Htat	Nawng Loi
2	Daw Hla Ooe	Kyauk Htat	Nawng Loi
3	Daw Thuzar Aye	Kyauk Htat	Nawng Loi
4	Daw Tin Mar	Kyauk Htat	Nawng Loi
5	Daw Ye	Kyauk Htat	Nawng Loi
6	Daw Than Kyi	Kyauk Htat	Nawng Loi
7	Daw Than Aye	Baw Hseng	Thae Kone
8	Daw Than May	Baw Hseng	Thae Kone
9	Daw Nan Ohm	Baw Hseng	Thae Kone
10	Daw Hla Thi	Baw Hseng	Thae Kone
11	Daw Khin Nyo	Baw Hseng	Baw Sone
12	Daw Ohm May	Baw Hseng	Thae Kone
13	Daw Nan Ngwe	Baw Hseng	Thae Kone
14	Daw Than May (U Poe Kying)	Baw Hseng	Thae Kone

Table 4. Direct Beneficiary UDP Male and Female Farmers in Nyaungshwe Township

Sr. No.	Farmer	Village Tract	Village
1	Ko Moe So	Inn Tan	Yae Cho
2	Ko Aung Moe	Inn Tan	Yae Cho
3	Ko Phyu	Inn Tan	Yae Cho
4	U Tun Mg	Inn Tan	Yae Cho
5	U Hla Phae	Inn Tan	Yae Cho
6	U Ko Oo	Inn Tan	Yae Cho
7	U Tet La	Inn Tan	Yae Cho
8	U San Tun	Inn Tan	Yae Cho
9	U Zaw Pyan	Inn Tan	Yae Cho
10	U Thee Mar	Inn Tan	Yae Cho
11	U Htoo	Inn Tan	Yae Cho
12	U Thee	Inn Tan	Yae Cho
13	U Thee Pae	Inn Tan	Yae Cho
14	U Tin	Inn Tan	Yae Cho
15	U Pan Sein	Inn Tan	Yae Cho
16	U Tung Aung	Naung Taw	Kun Long
17	U Ba Thein	Naung Taw	Kun Long
18	U Khun Myint Htoo	Naung Taw	Kun Long
19	U Tin Aye	Naung Taw	Kun Long
20	U Kyaw Sein / U Kyaw Thein	Naung Taw	Kun Long
21	U Win Aung	Naung Taw	Kun Long
22	U San Nyein	Naung Taw	Kun Long
23	Ko Phoe Shwe	Naung Taw	Kun Long
24	Ko Nay Lin	Naung Taw	Kun Long
25	U Mg Gyi	Naung Taw	Kun Long
26	U Aung	Naung Taw	Kun Long
27	Ko Thein Phae	Naung Taw	Kun Long
28	U Phawe	Naung Taw	Kun Long
29	U Myo Naing Win	Naung Taw	Kun Long
30	U Myo	Naung Taw	Kun Long
31	U Ohm Shwe	Naung Taw	Kun Long
32	U Tin Mg Win	Naung Taw	Kun Long
33	U Aung Khing	Naung Taw	Kun Long
34	U Aung Ba	Naung Taw	Kun Long
35	U Kyaw Than	Naung Taw	Yae Cho
36	U Zaw Lwin	Naung Taw	Bant Pyin
37	U Khin Mg	Naung Taw	Kun Long (Tadar Oo)
38	U Than Phae	Naung Taw	Ga Naing Gyi
39	U Kham Mg	Naung Taw	Ga Naing Gyi
40	U Hla	Naung Taw	Ga Naing Gyi
41	U Than Aung	Naung Taw	Kun Long
42	U Tun Shwe	Naung Taw	Yae Cho

Sr. No.	Farmer	Village Tract	Village
43	U Hla Kyaw	Naung Taw	Tat Gyi
44	U Daung Nyo	Naung Taw	Yae Cho
45	U Naing	Naung Taw	Kun Long
46	U Soe Naing	Naung Taw	Kun Long
47	U Ba Thein	Naung Taw	Tat Gyi
48	U Myo Min Swe	Naung Taw	Yae Cho
49	U Kyaw Lwin	Naung Taw	Kun Long
50	U Kauk	Naung Taw	Kun Long
51	U Phu	Naung Taw	Yae Cho
52	U Tun Shwe / U Aung Than	Naung Taw	Kun Long
53	U Aung Myat Thin	Naung Taw	Kun Long (Naung Kin)
54	U Tue	Naung Taw	Kun Long (Naung Kin)
55	Ko Kyaw Zayar	Naung Taw	Kun Long
56	U Ba Thein	Naung Taw	Kun Long
1	Ma Aye Thandar	Inn Tan	Yae Cho
2	Ma Win Kyi	Inn Tan	Yae Cho
3	Daw Kyone	Inn Tan	Yae Cho
4	Daw Sein Pan	Inn Tan	Yae Cho
5	Ma Su Mon	Inn Tan	Yae Cho
6	Daw Nge ^၀	Inn Tan	Yae Cho
7	Ma Sein Mya	Inn Tan	Yae Cho
8	Ma Pyone	Inn Tan	Yae Cho
9	Daw Hla Ye Than	Inn Tan	Yae Cho
10	Daw Than May	Naung Taw	Kun Long



Photo 1. Farmers Participate in Removing Husks from Maize Crop Cuts in Taw Yar Village, Lawksawk Township



Photo 2. Field Day Participation in a Farmer's Maize Demonstration Plot in Eine Pu Village, Pindaya Township