

# What is the status of agri-mechanisation in Bangladesh *(and what can we do to catalyze it)?*

Dr. Brendan Brown  
CIMMYT

With Pragya Timsina, Akiriti Sharma, Mizanur Rahman, and Masoud Rana

Agricultural Mechanization in Bangladesh- The Future



**USAID**  
আমেরিকার জনগণের পক্ষ থেকে



**CIMMYT**  
International Maize and Wheat Improvement Center

**iDE**

**GT** Georgia  
Tech.



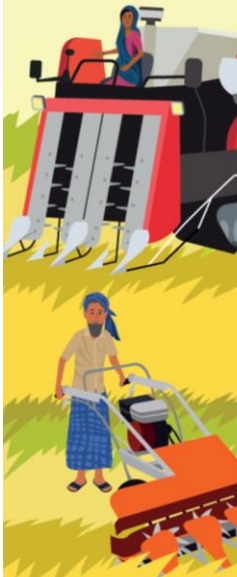
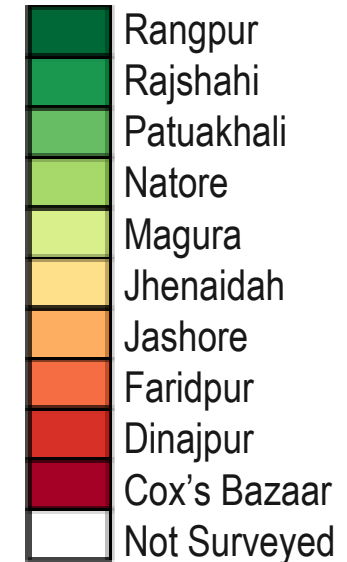
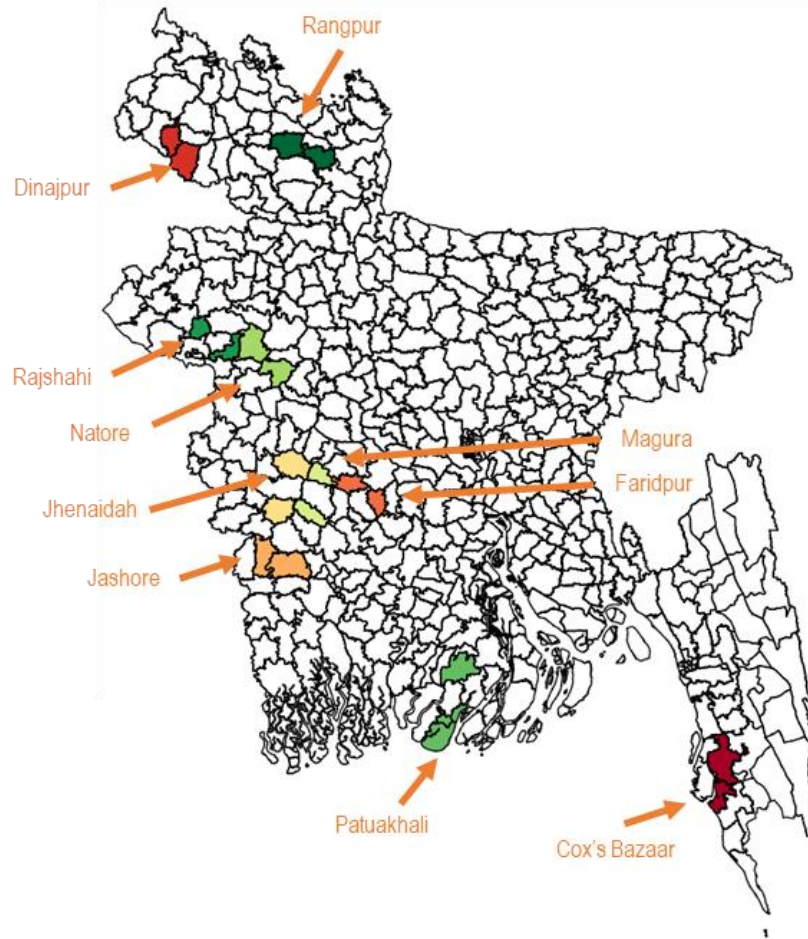


## Research approach – Who?

1,000 randomly selected farmers

6 Divisions  
10 Districts (100 per District)  
20 Upazila (50 per Upazila)

Division	District	Upazila
Barishal	Patuakhali	Kalapara
		Patuakhali Sadar
Chattogram	Cox's Bazar	Chakaria
		Cox'S Bazar Sadar
Dhaka	Faridpur	Madhukhali
		Saltha
Khulna	Jashore	Jhikargachha
		Manirampur
	Jhenaidah	Kaliganj
		Shailkupa
	Magura	Shalikhha
		Sreepur
Rajshahi	Natore	Baraigram
		Natore Sadar
	Rajshahi	Mohanpur
		Puthia
Rangpur	Dinajpur	Biral
		Bochaganj
	Rangpur	Pirgachha
		Rangpur Sadar

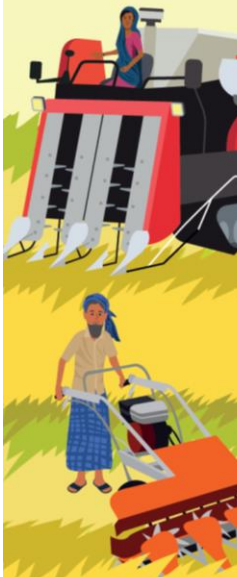




## Research approach – What?

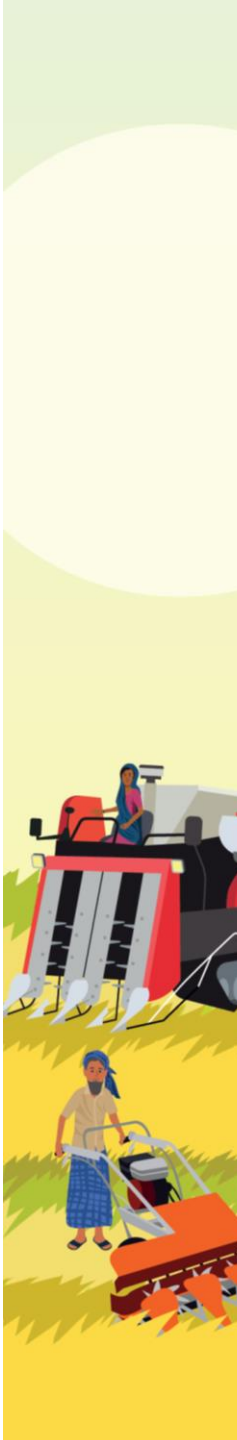
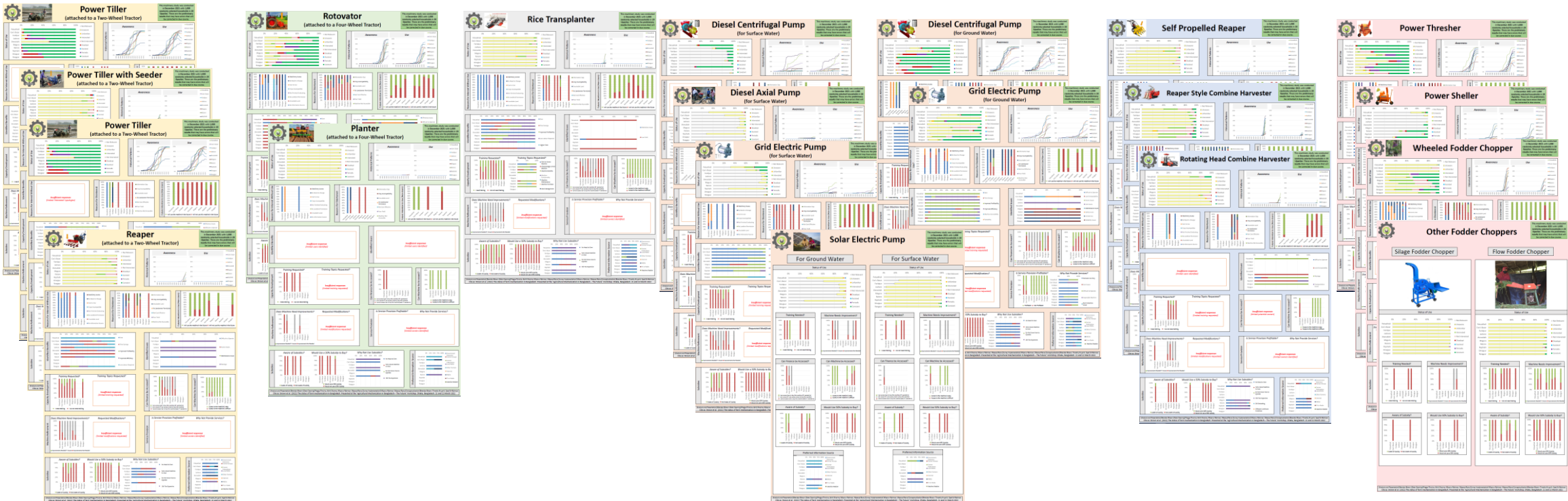
### 26 agri-machinery (22 presented today)

Preparation				Planting				
Power Tiller (Two Wheel Tractor)	Rotovator (Two Wheel tractor)	Rotovator (Four Wheel tractor)		Power Tiller Operated Seeder (2 Wheel Tractor)	Planter (Four Wheel Tractor)	Rice Transplanter		
Irrigation Pumps								
Surface Water				Groundwater				
Diesel Centrifugal Pump	Diesel Axial Pump	Grid Electric Pump	Solar Electric Pump	Diesel Centrifugal Pump	Grid Electric Pump	Solar Electric Pump		
Harvest				Postharvest				
Reaper (Two Wheel Tractor)	Self propelled Reaper	Combine Harvester (Reaper Style)	Combine Harvester (Rotating Header)	Power Thresher	Power Sheller	Wheeled Fodder Chopper	Flow Fodder Chopper	Silage Fodder Chopper

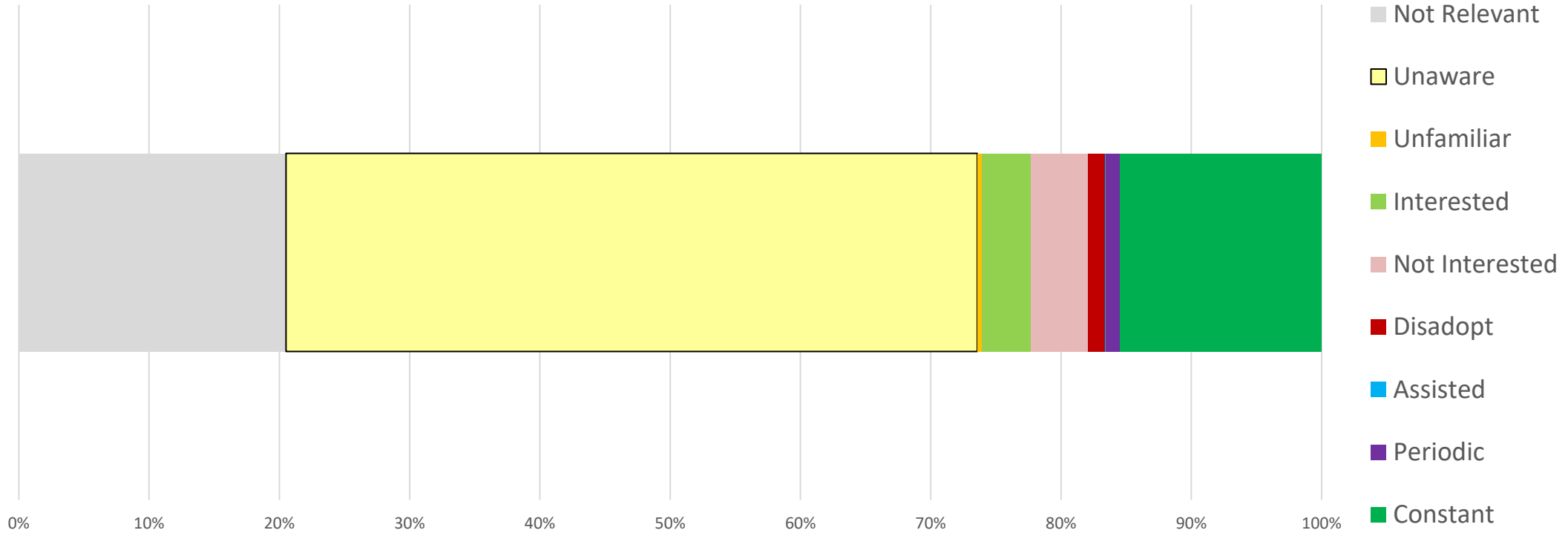




# Individualised results















# 22,000 machinery status typologies





# FEED THE FUTURE

The U.S. Government's Global Hunger & Food Security Initiative

Preparation		Planting		Power Tiller Operated Seeder	Surface Water Irrigation		Ground Water Irrigation		Harvest		Post Harvest	
rotovator (attached to a Two Wheel Tractor)		Seed box used with a Power Tiller (attached to a Two Wheel Tractor)			iesel Axial Pump		Diesel Centrifugal Pump		2 Wheel Tractor Reaper Attachment		Combine Harvester (Reaper Style)	
Power Tiller (attached to a Two Wheel Tractor)		Planter (attached to a Four Wheel Tractor)		Diesel Centrifugal Pump		Grid Electric Pump		Self propelled Reaper		Combine Harvester (Rotating Header)		
Rotovator (attached to a Four Wheel Tractor)		Rice Transplanter		Grid Electric Pump		Solar Electric Pump		Combine Harvester (Reaper Style)		Power Thresher		
				Solar Electric Pump				Combine Harvester (Rotating Header)		Power Sheller		
										Wheeled Fodder Chopper		
										Flow Fodder Chopper		
										Silage Fodder Chopper		

## Aggregated by activity



# USAID

আমেরিকার জনগণের পক্ষ থেকে



# CIMMYT

International Maize and Wheat Improvement Center

# iDE



# Georgia Tech









## Index A:

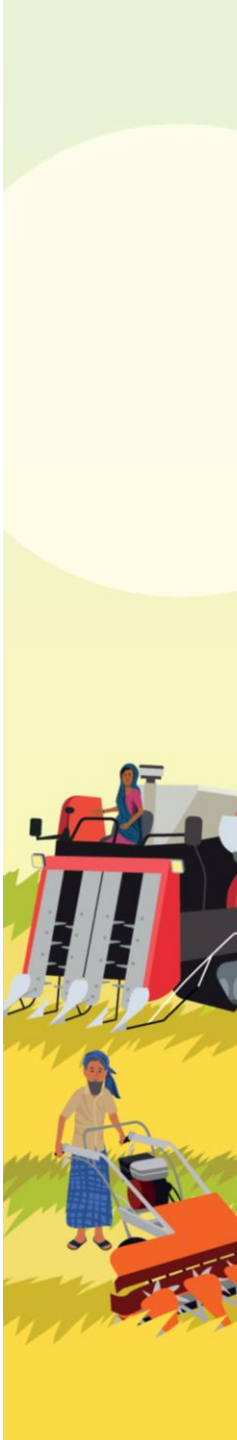
# The current status of mechanisation

[per activity]

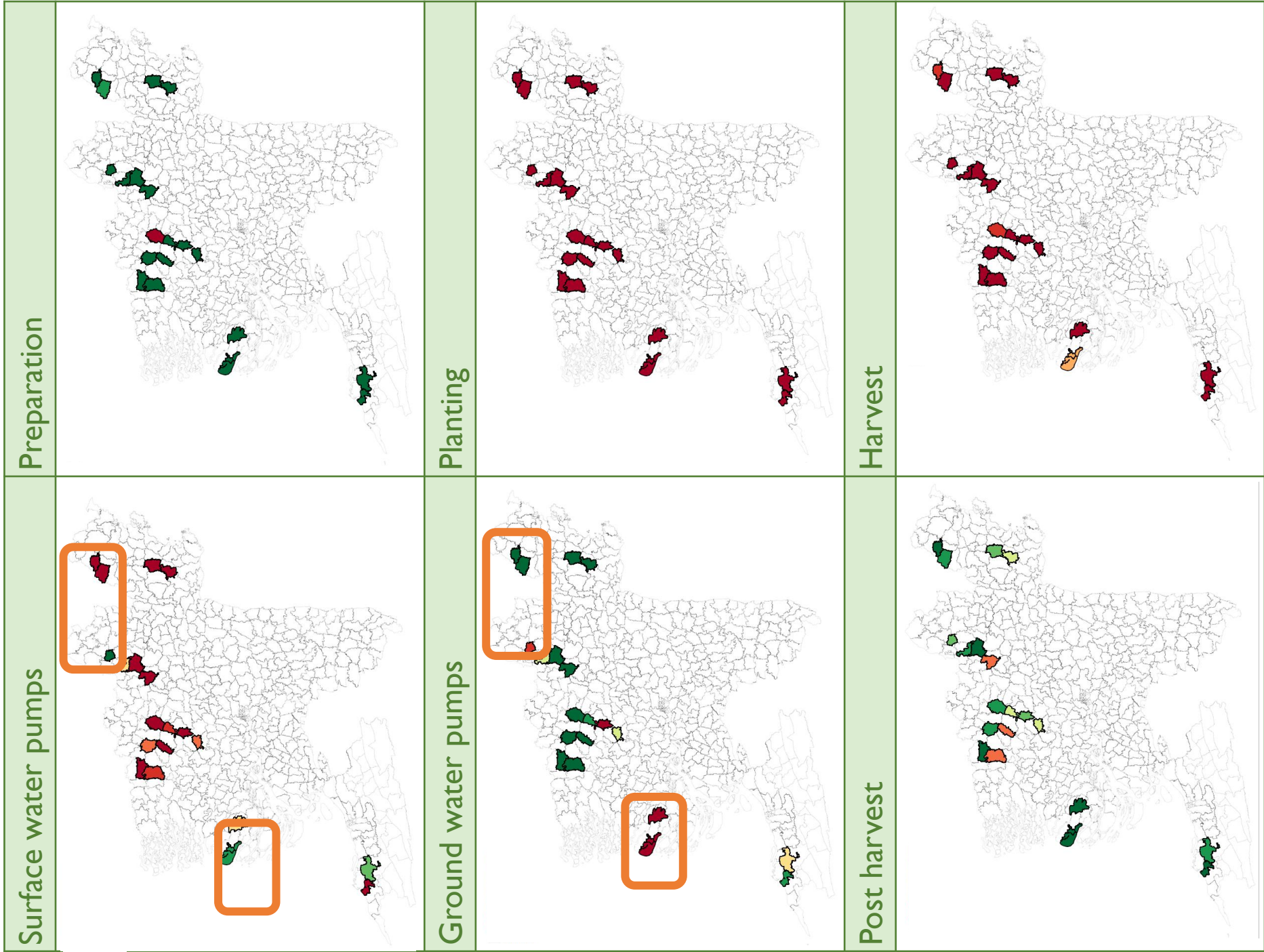
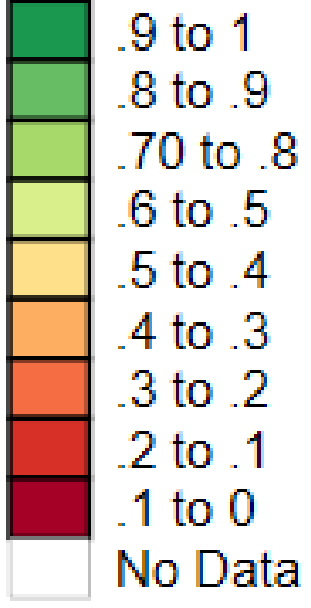
Current Use within set = 1 point  
No Use within set = 0 points

Preparation		
Power Tiller (Two Wheel Tractor)	Rotovator (Two Wheel tractor)	Rotovator (Four Wheel tractor)
		
		

= 1 point









## Maximum score of 4

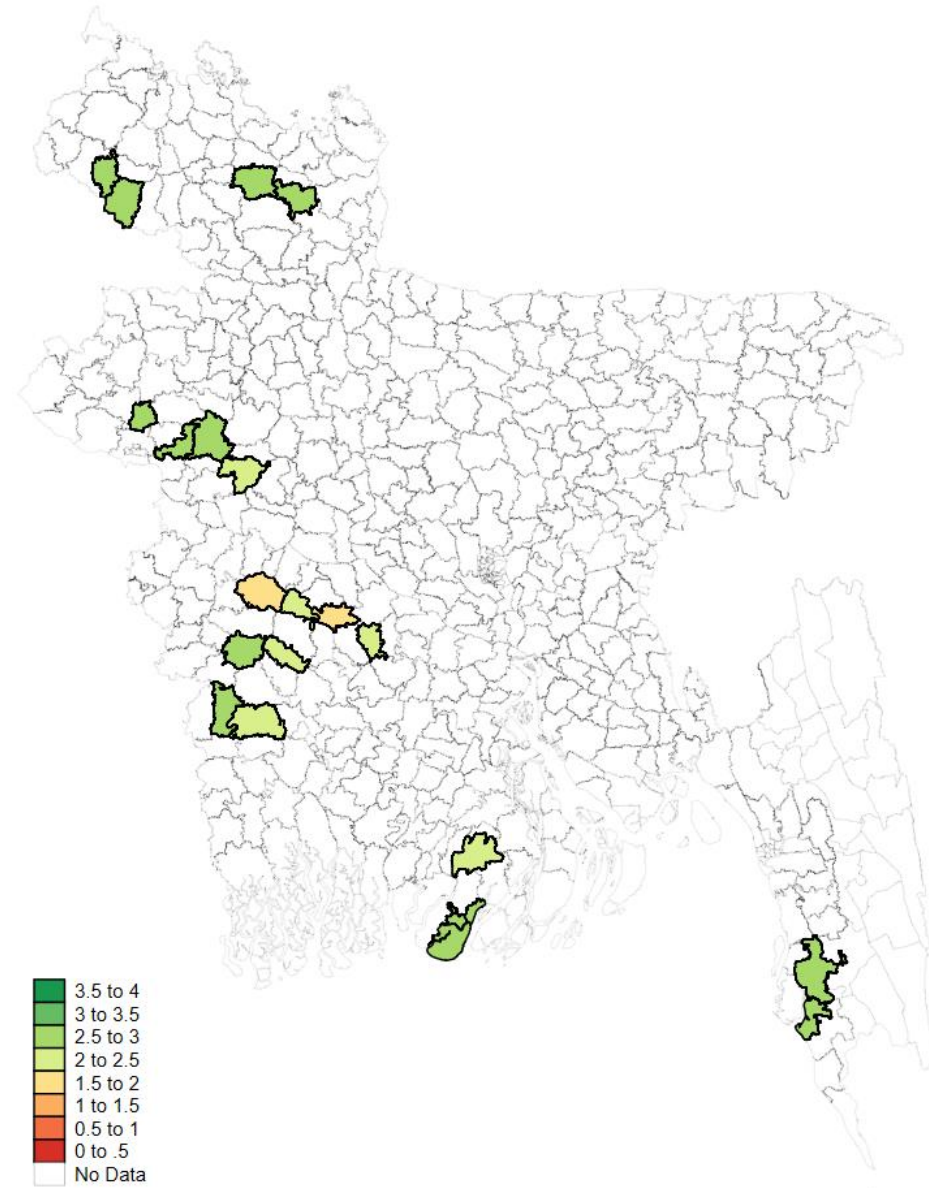
1 per activity:

[a] Preparation

[b] Planting

[c] Irrigation (surface and ground)

[d] Harvest and post harvest









## Index B:

# Historical diversity of machinery use

[per machine]

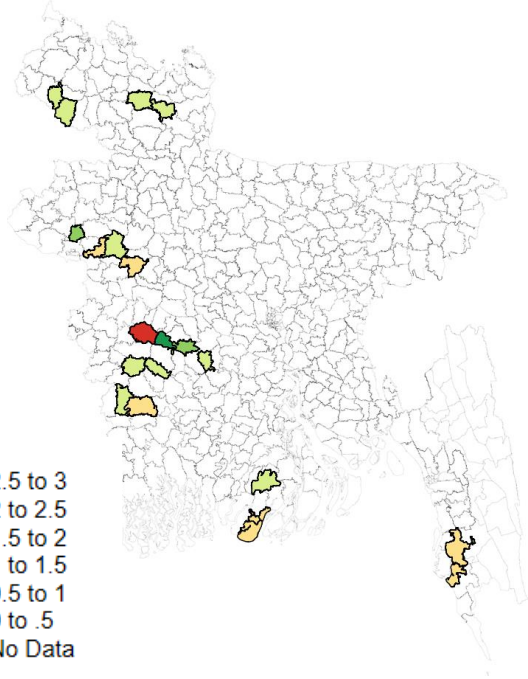
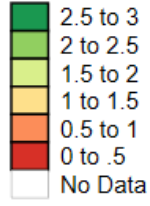
Ever used a machine = 1 point  
Never used a machine = 0 points

Preparation		
Power Tiller (Two Wheel Tractor)	Rotovator (Two Wheel tractor)	Rotovator (Four Wheel tractor)
		
		

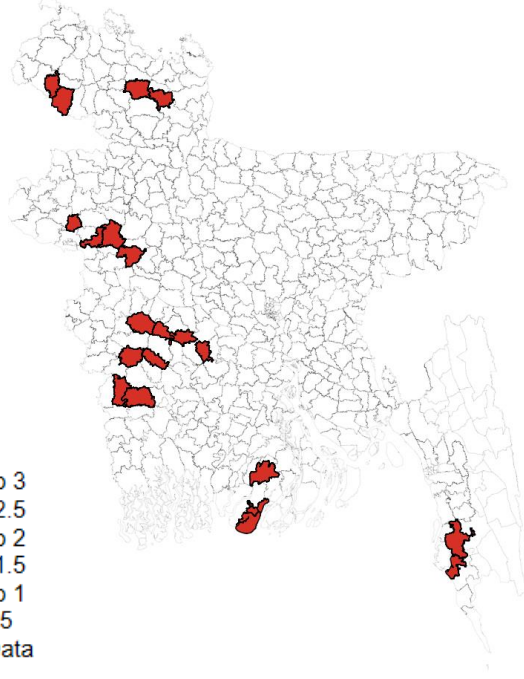
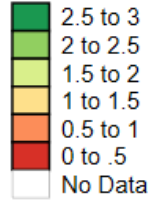
= 3 points



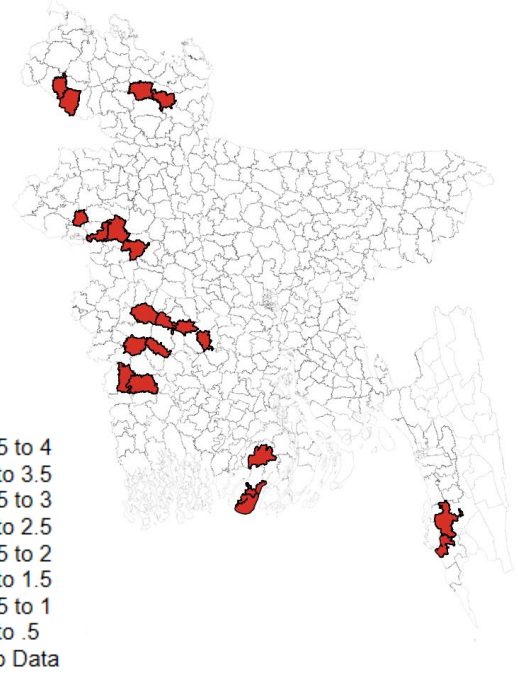
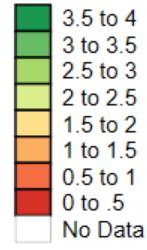
Preparation (max = 3)



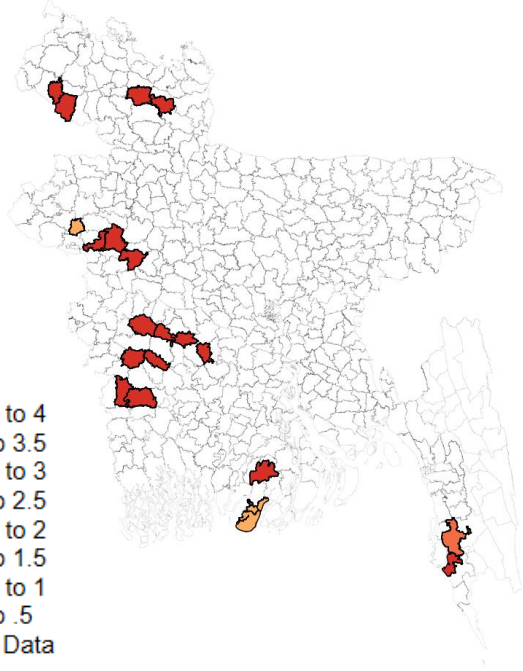
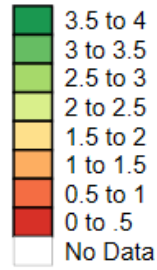
Planting (max = 3)



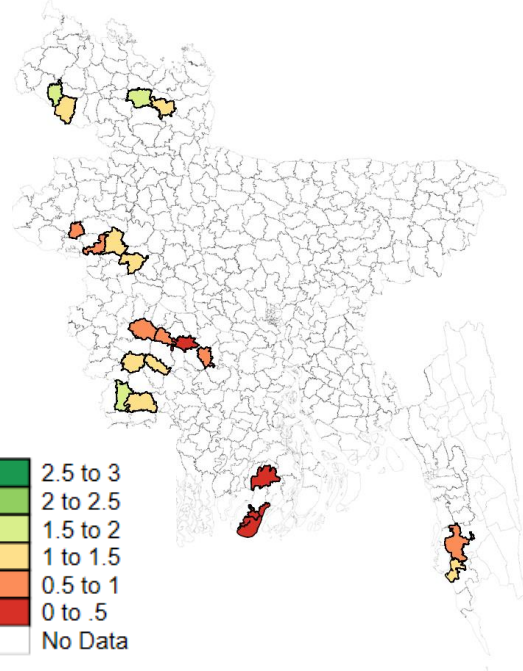
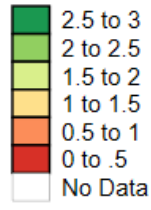
Harvest (max = 4)



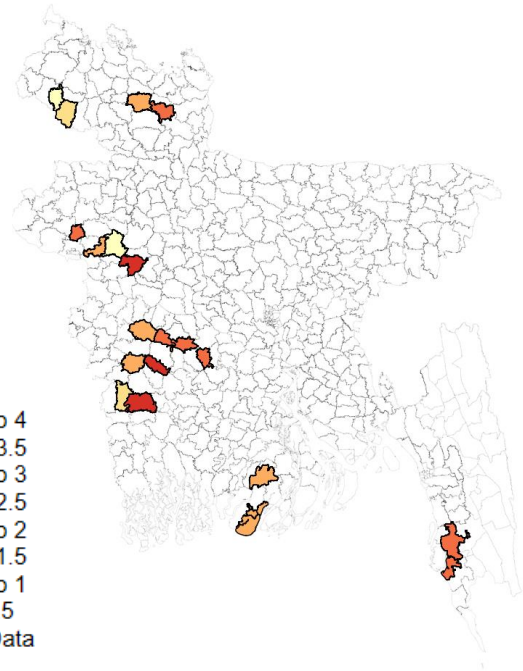
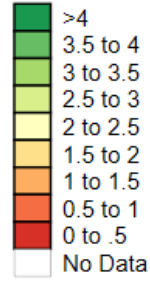
Surface water pumps (max = 4)



Ground water pumps (max = 3)

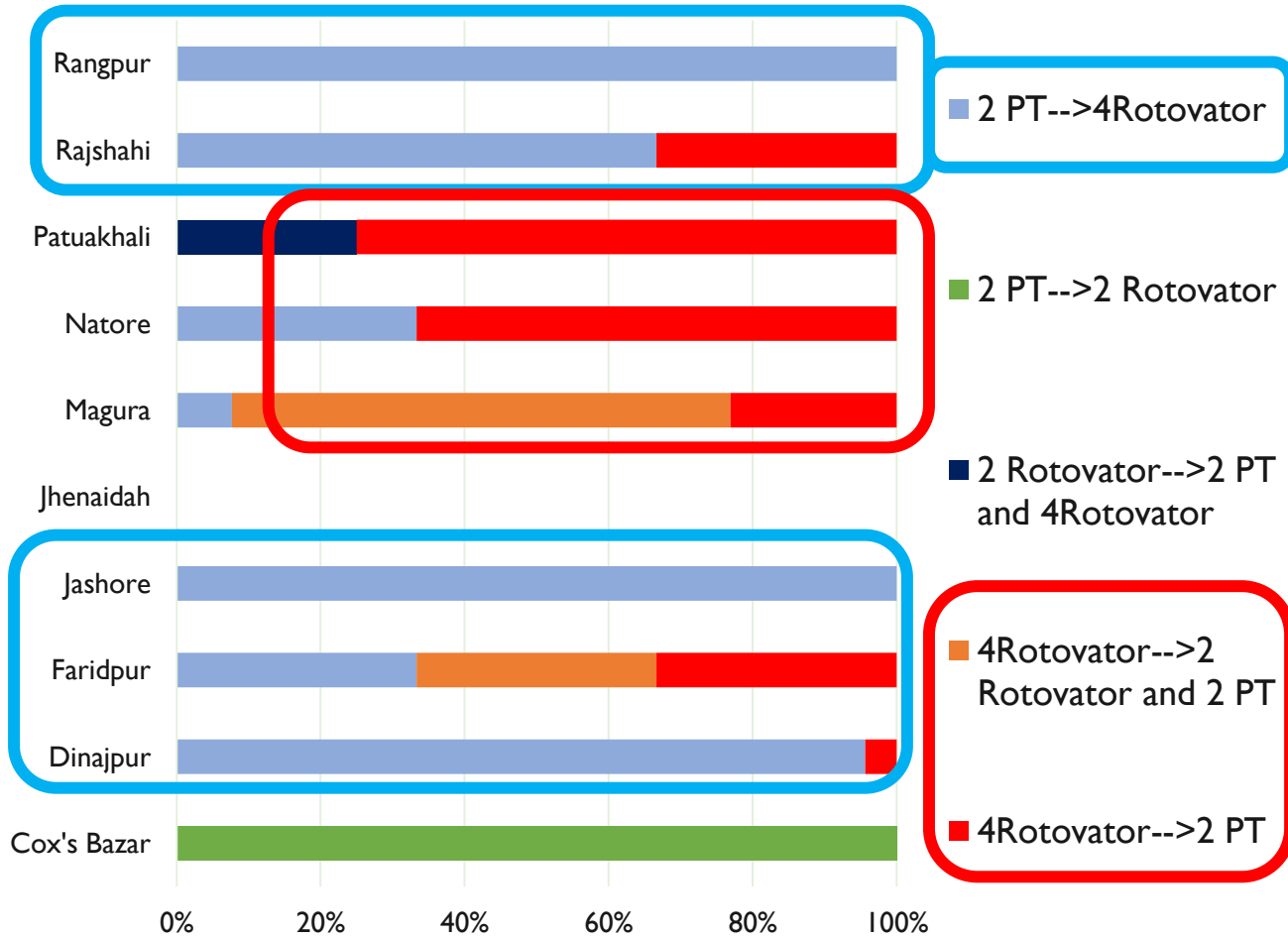
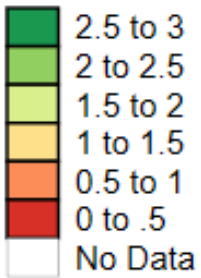
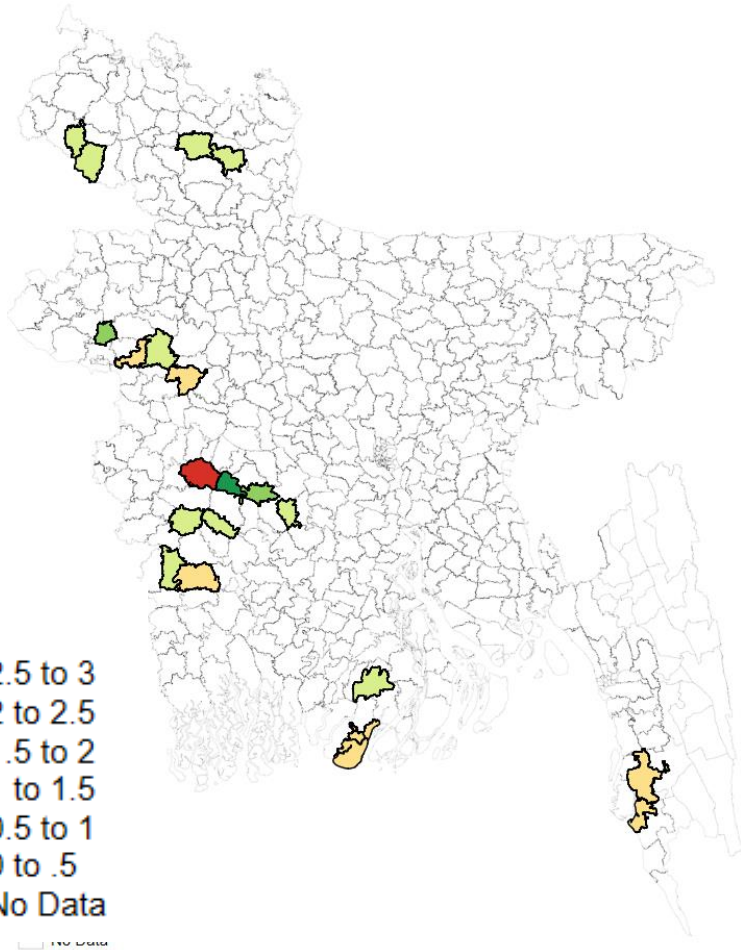


Post harvest (max = 7)



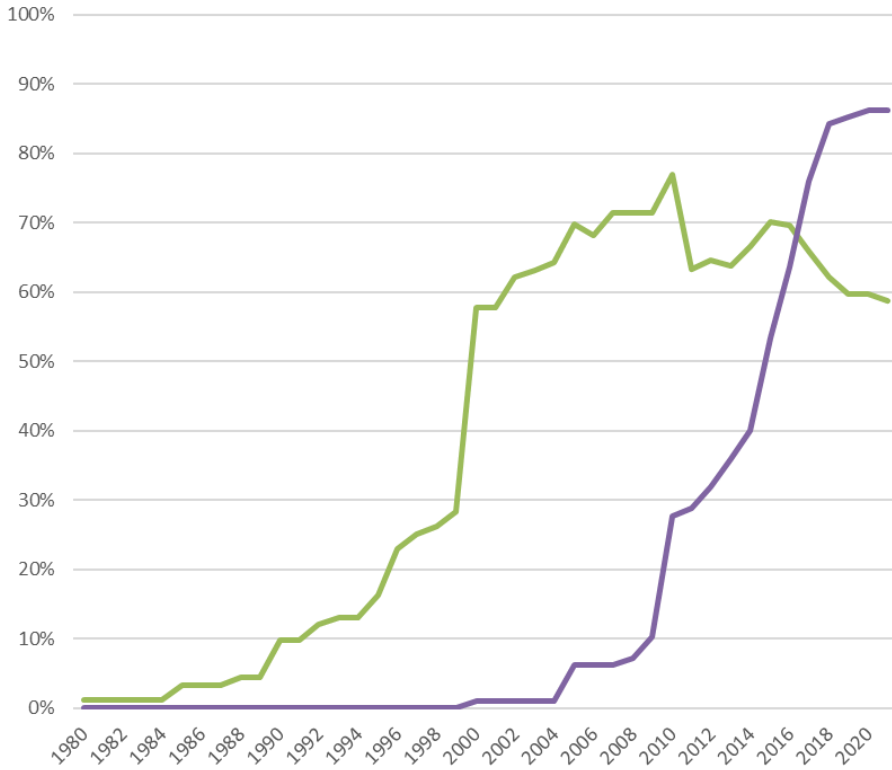


## Planting – Machinery Substitution (*disadopt one, adopt another*)

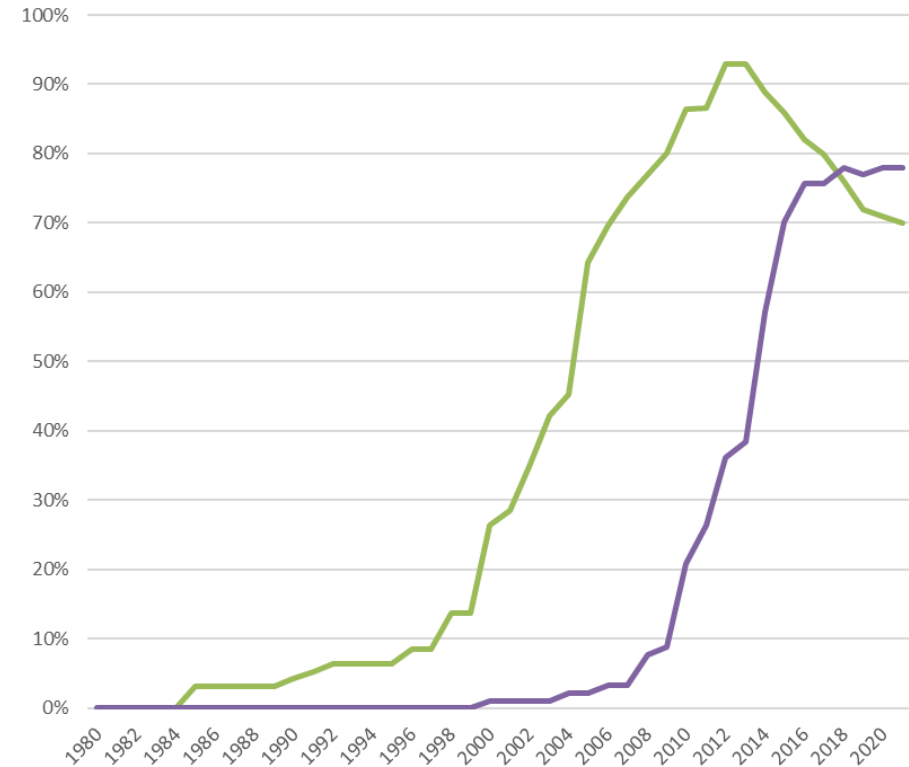


# Transition from two to four-wheel tractors

Rangpur



Dinajpur

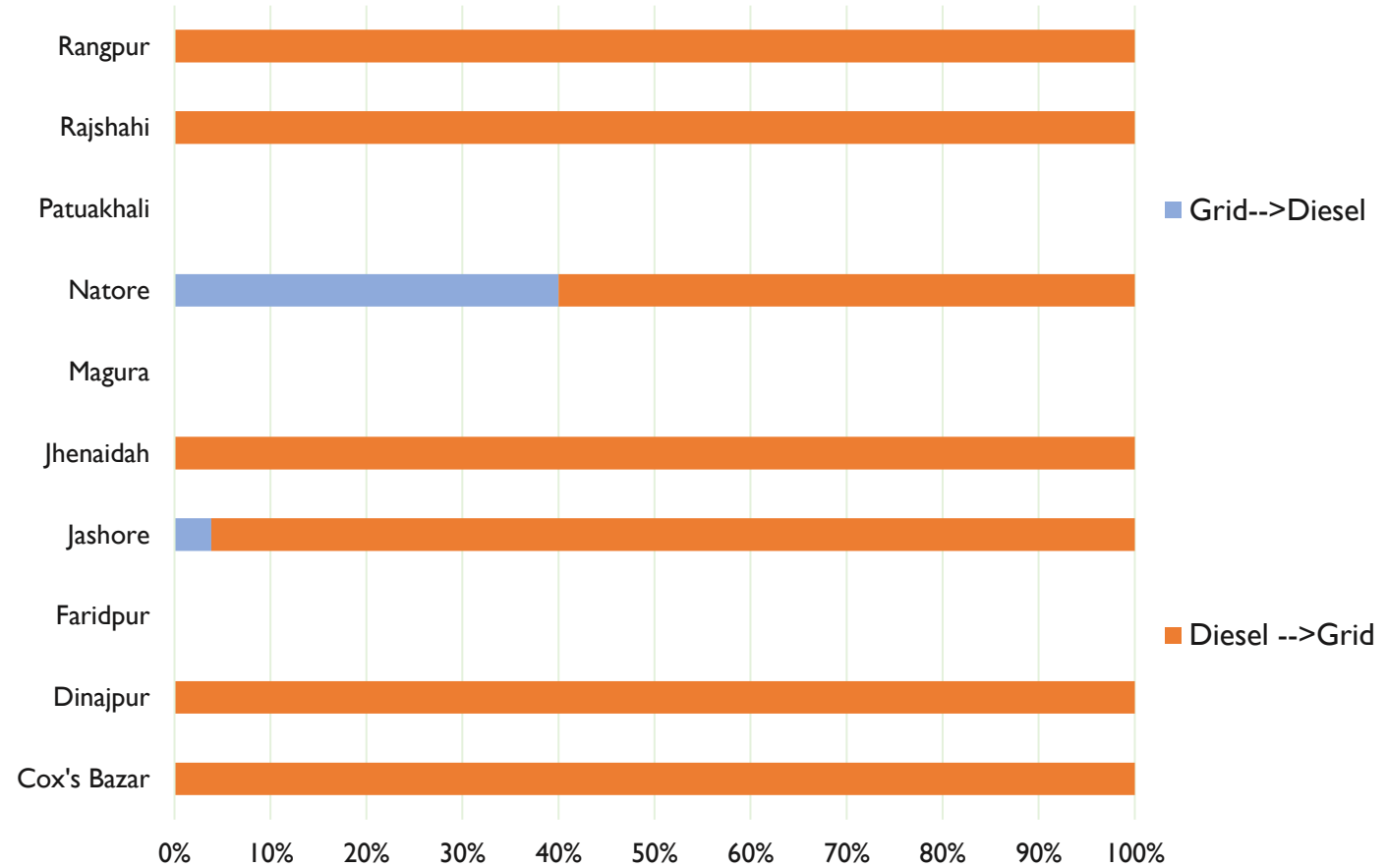
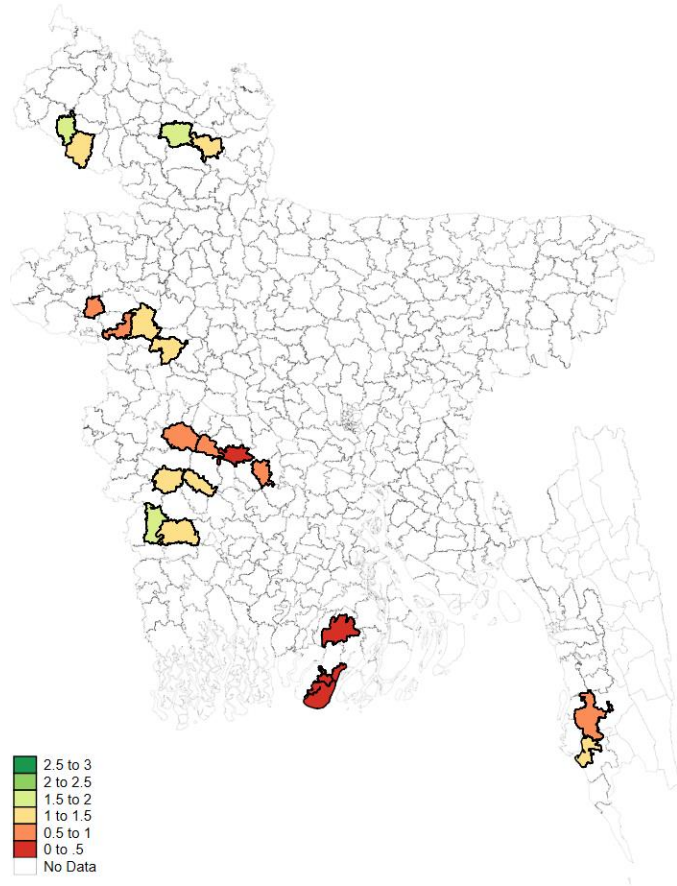


Two-wheel  
power tiller usage

Four-wheel  
rotovator usage



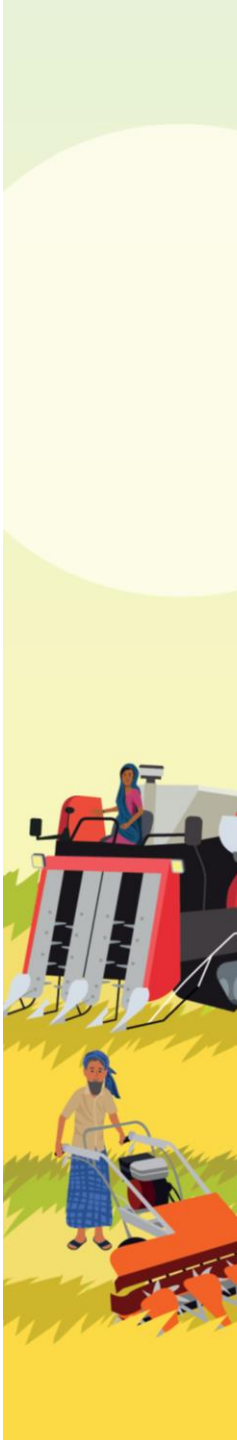
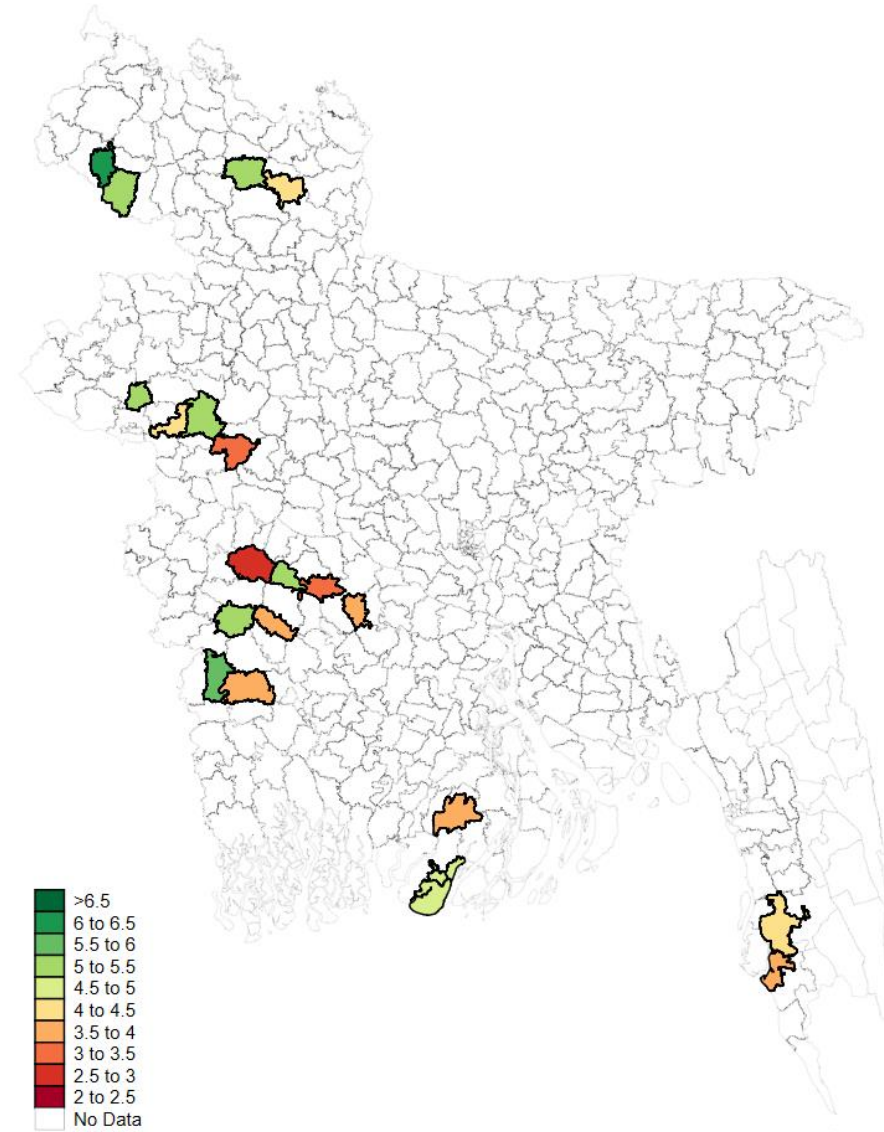
## Groundwater Pumps – Machinery Substitution (*disadopt one, adopt another*)





Max score of **22**

One point for each machine ever used



**Bangladesh is at  
the start of the  
mechanisation  
journey...**

**... what can we do  
to catalyse farmer  
change?**



**USAID**  
আমেরিকার জনগণের পক্ষ থেকে



**CIMMYT**  
International Maize and Wheat Improvement Center

**iDE**

**GT** Georgia  
Tech.

Is  
**access to information**  
a constraint to mechanisation in Bangladesh?



**USAID**  
আমেরিকার জনগণের পক্ষ থেকে



**CIMMYT**  
International Maize and Wheat Improvement Center

**iDE**

**GT** Georgia Tech.

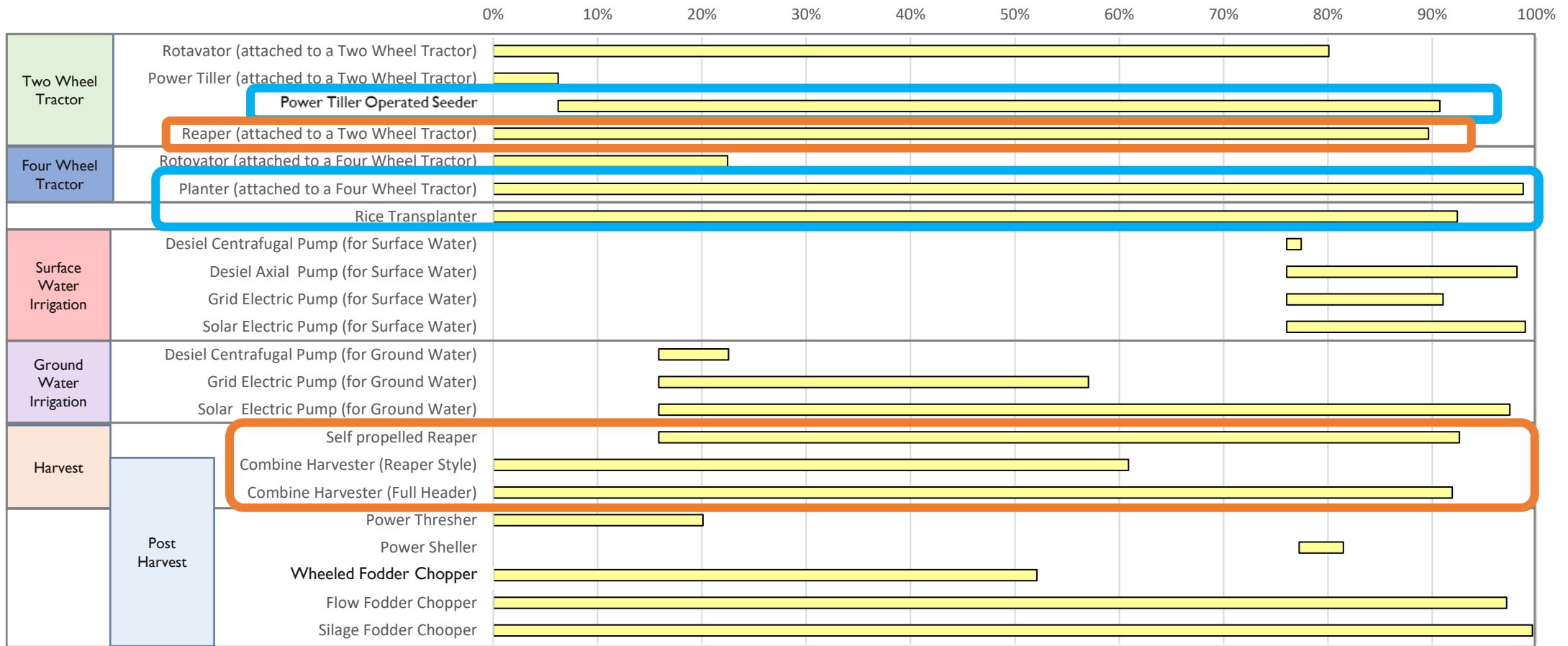




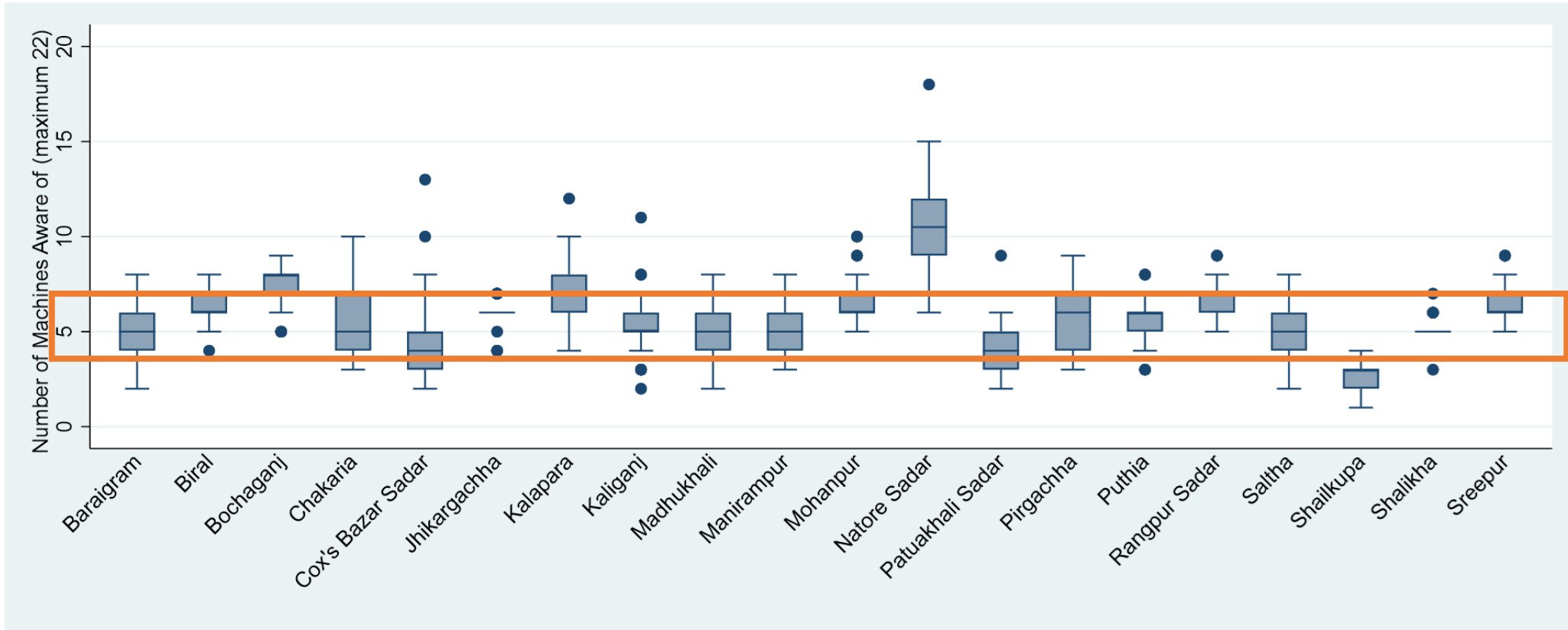
# Typology Status for each machine



# Typology Status for each machine

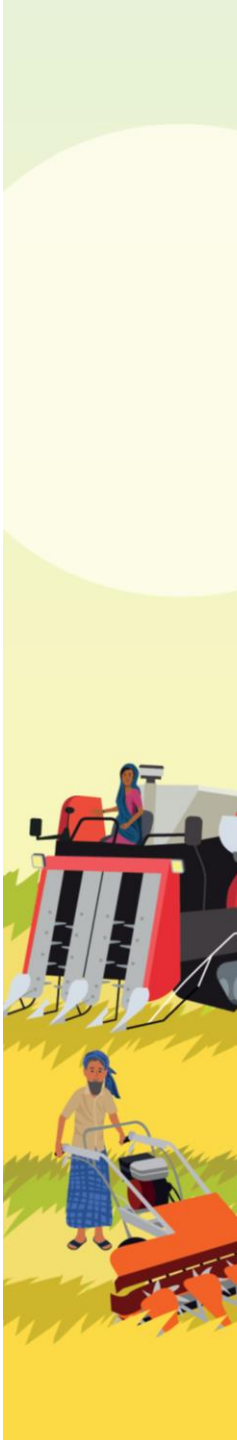
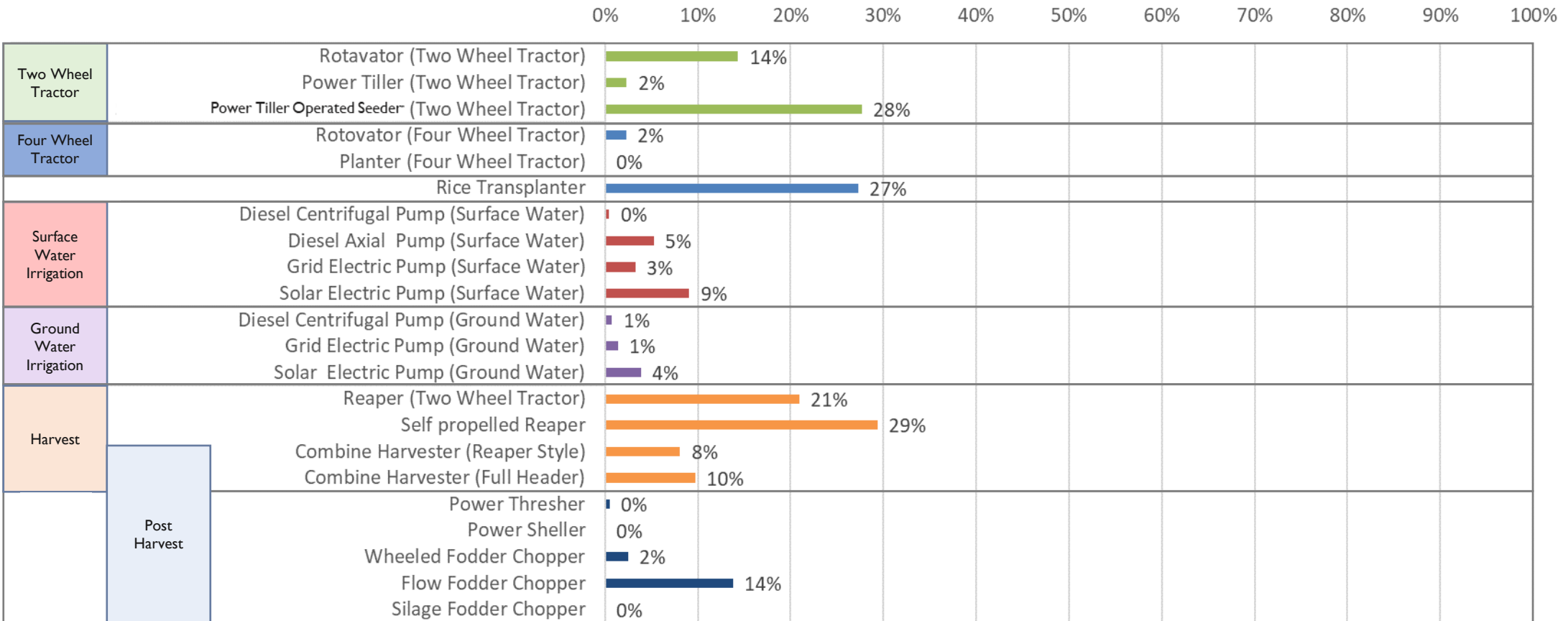


# Awareness of machinery





# Do you still need more information on the [machine]?



## What is your preferred source of information for the [machine]?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%



- Government Extension systems
- farmer groups and federations
- Local Institutions
- other neighbouring Farmers
- Internet
- INGOs
- Farmer Groups
- TV or Radio
- other



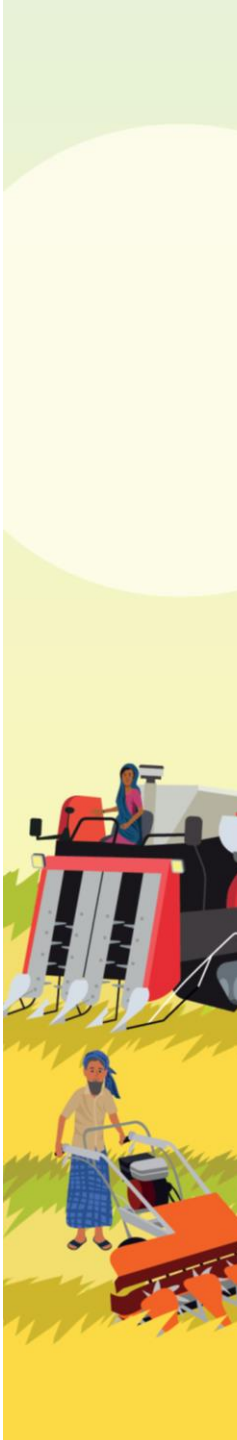
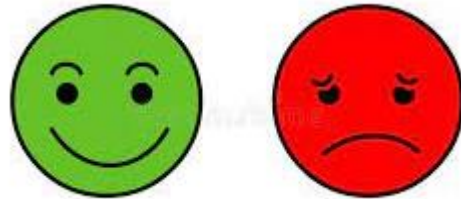
**USAID**  
আমেরিকার জনগণের পক্ষ থেকে



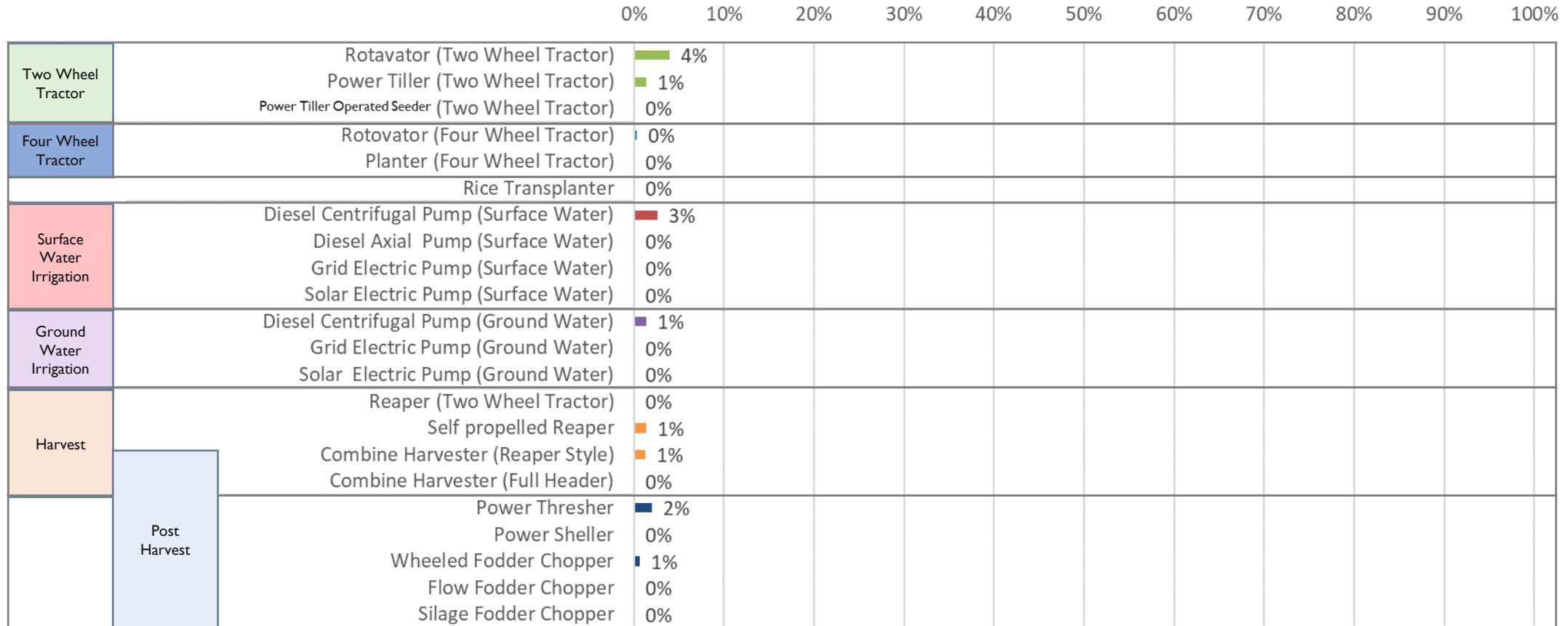
**CIMMYT**  
International Maize and Wheat Improvement Center



Is  
**machinery performance**  
a constraint to mechanisation in Bangladesh?



# Does the [machine] need improvements?





Is  
**access to machinery**  
a constraint to mechanisation in Bangladesh?

**FOR  
HIRE**



**USAID**  
আমেরিকার জনগণের পক্ষ থেকে



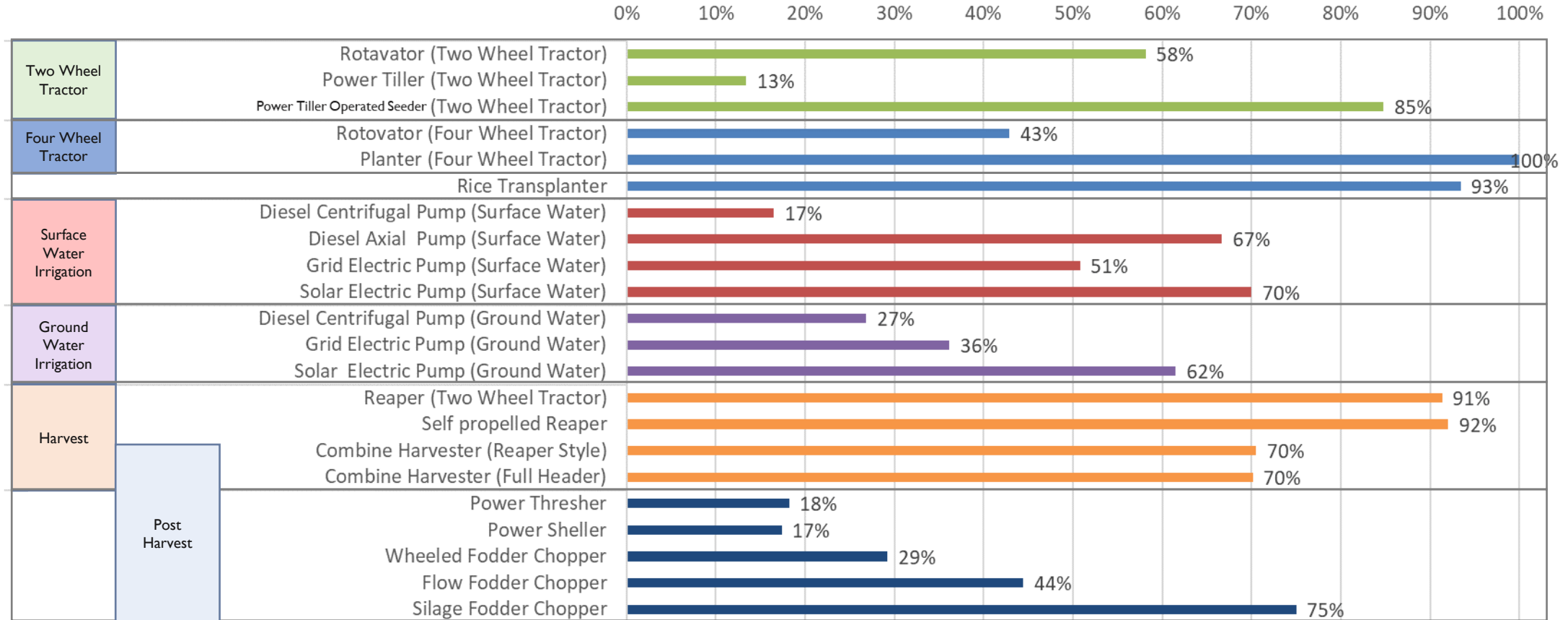
**CIMMYT**  
International Maize and Wheat Improvement Center

**iDE**

**GT** Georgia  
Tech.



# Is it difficult to access the [machine]?



# How is the [machine] is Accessed?



Is  
**ownership of machinery**  
a constraint to mechanisation in Bangladesh?



**USAID**  
আমেরিকার জনগণের পক্ষ থেকে



**CIMMYT**  
International Maize and Wheat Improvement Center

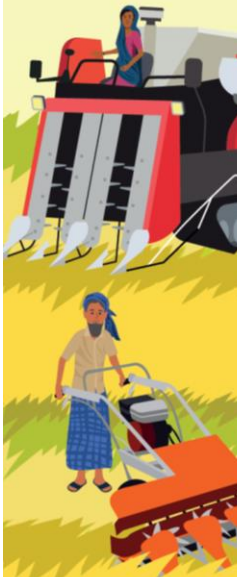
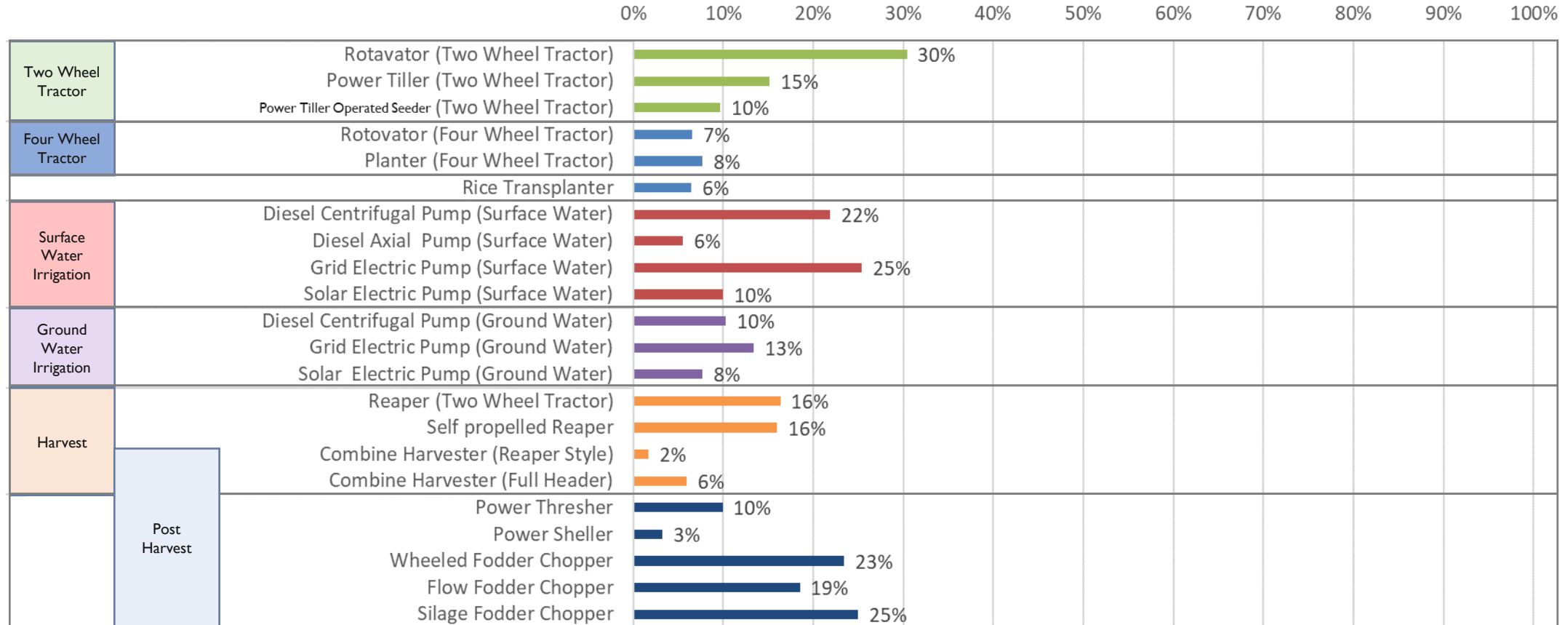
**iDE**

**GT** Georgia  
Tech.

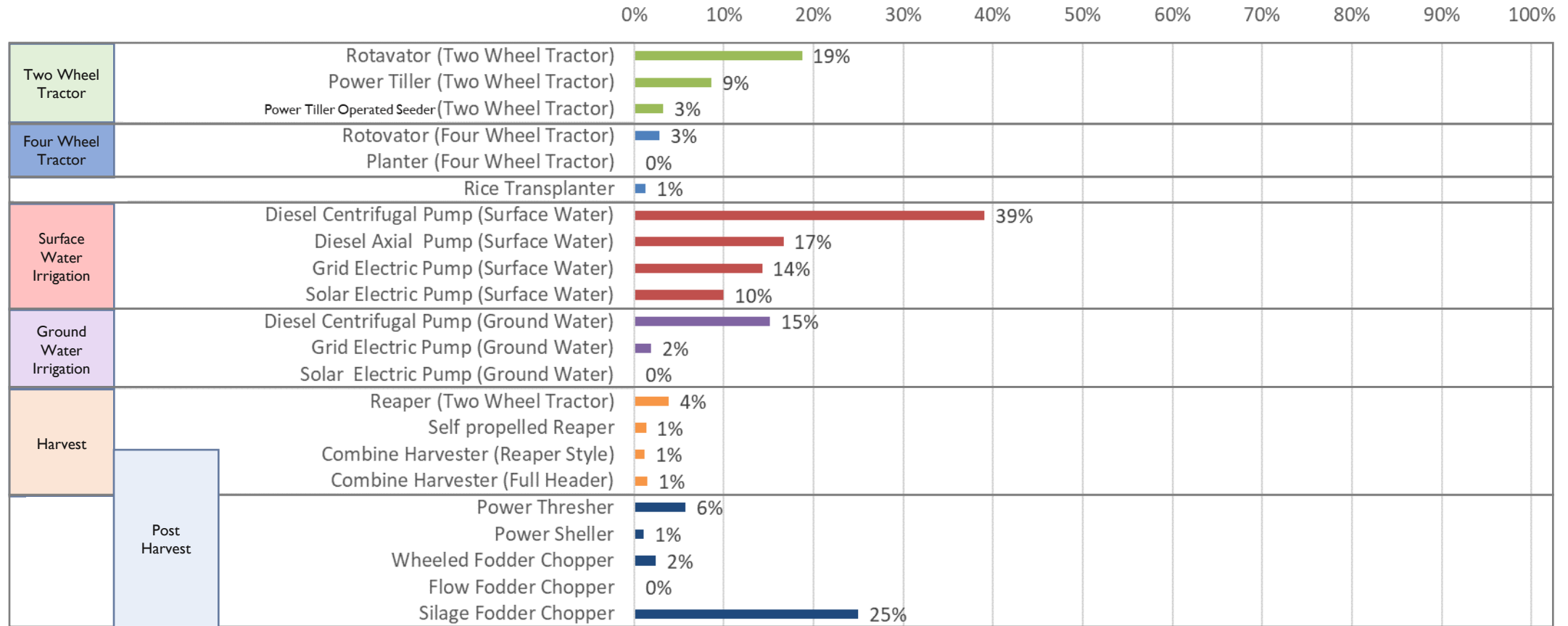




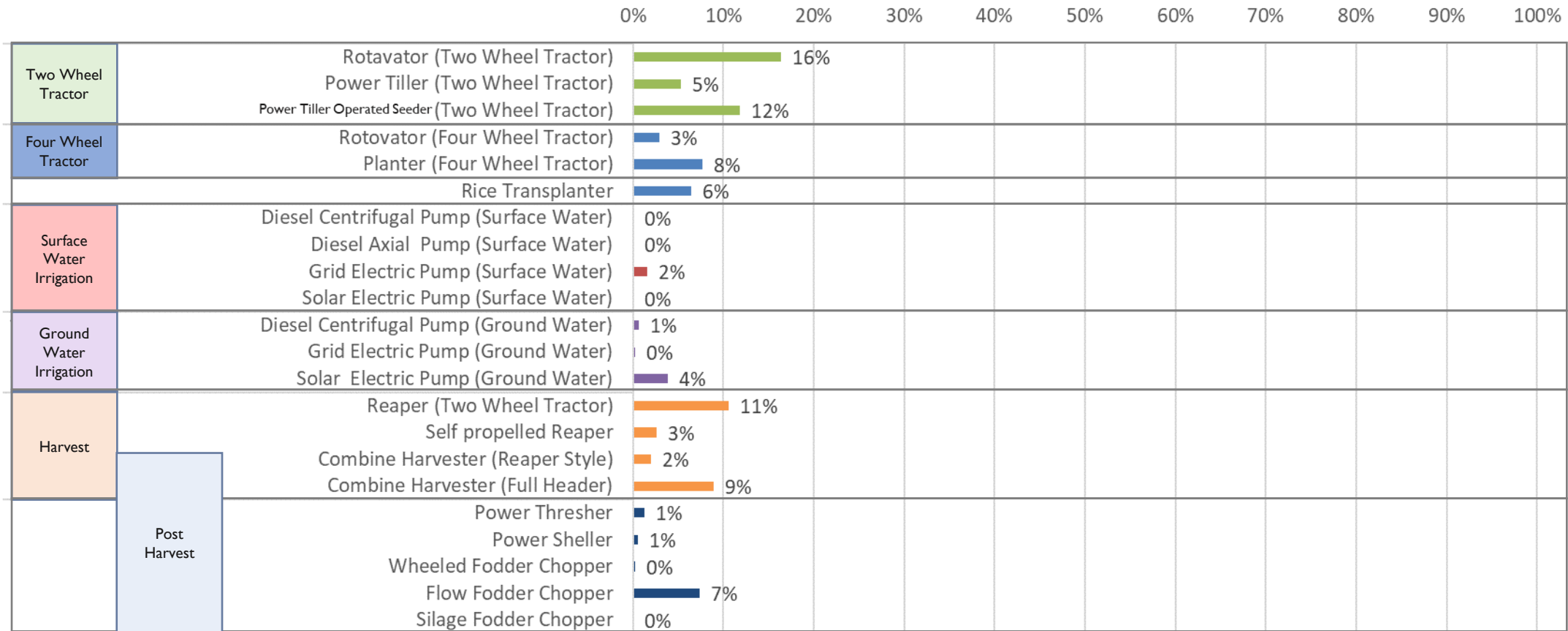
# Do you think you will own the [machine] in the future?



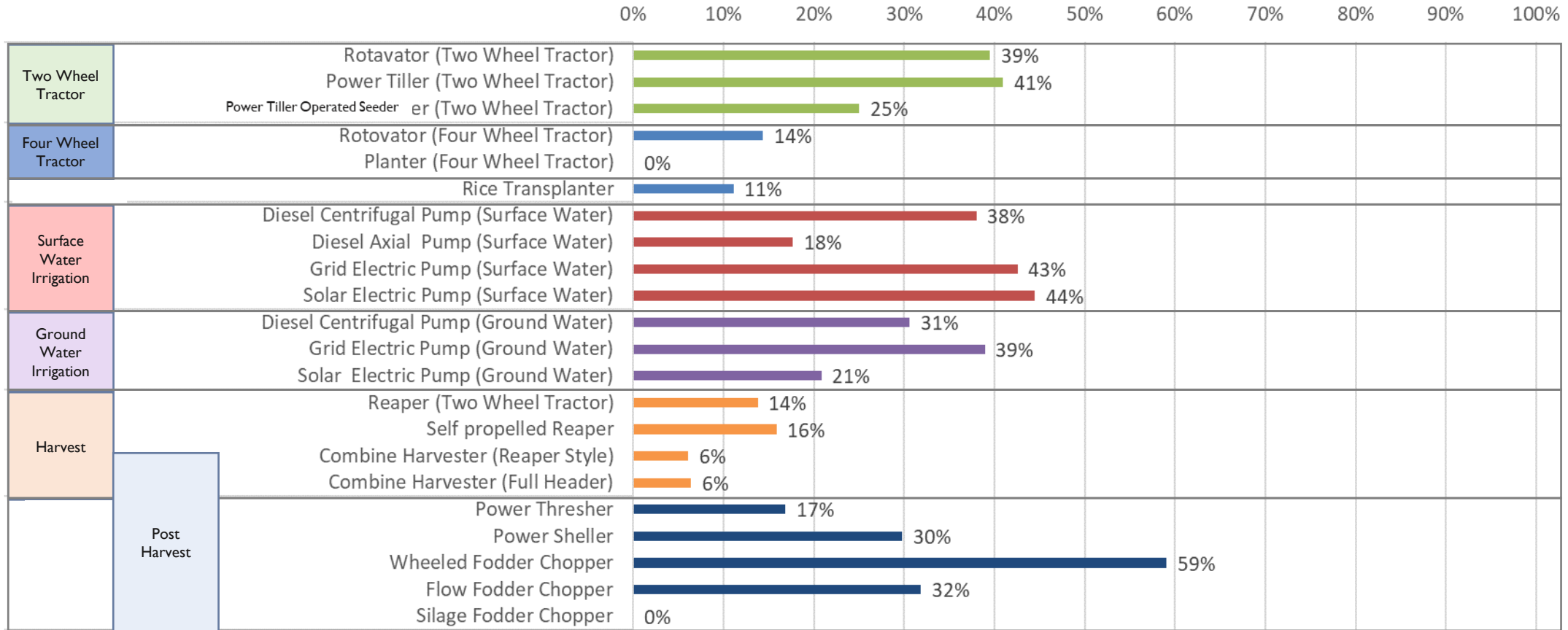
## If you wanted to, could you access a loan to buy the [machine]?



## Do you know of any subsidy support to help you buy the [machine]?



## If you could get a 50% subsidy, would you buy the [machine]?





## What is the status of agri-mechanisation in Bangladesh

Some machines individually are being adopted  
Overall system mechanisation (across activities) is limited

Planting and harvest remain barely mechanised  
four-wheel tractor transition underway,  
particularly in northern Bangladesh

Otherwise, limited diversity of experience with machines  
Suggests mechanisation experience beyond tillage equipment is yet to occur

*(And what can we do to catalyze it)?*

Awareness is a key limitation (but no need for in-depth training)

Needs to be addressed in machinery specific ways

Access is constraining, and unlikely to be boosted by individual ownership

Subsidies and loans are key constraints  
Need to explore other access pathways to extend access more widely



**USAID**  
আমেরিকার জনগণের পক্ষ থেকে



**CIMMYT**  
International Maize and Wheat Improvement Center

**iDE**

**GT** Georgia Tech.





# FEED THE FUTURE

The U.S. Government's Global Hunger & Food Security Initiative

# THANK YOU



## USAID

আমেরিকার জনগণের পক্ষ থেকে



**CIMMYT**  
International Maize and Wheat Improvement Center

**iDE**

**GT** Georgia Tech.