

# NPK Applications: Improving Over the Years?

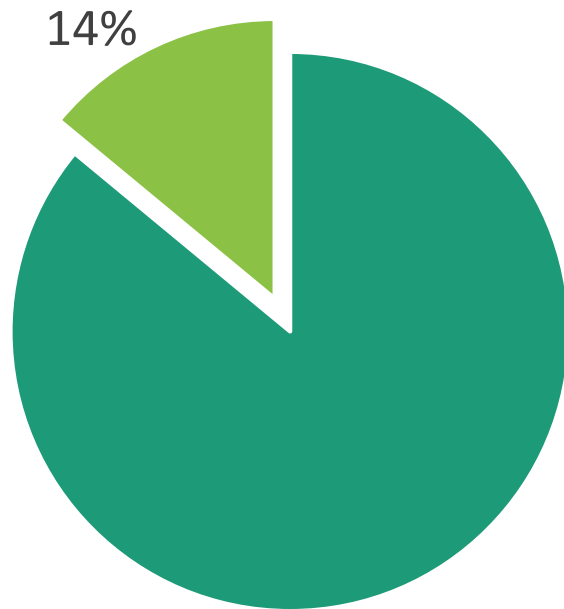
Daphne L. Kitongan

Socioeconomics Division





Fertilizer cost share to  
total production cost



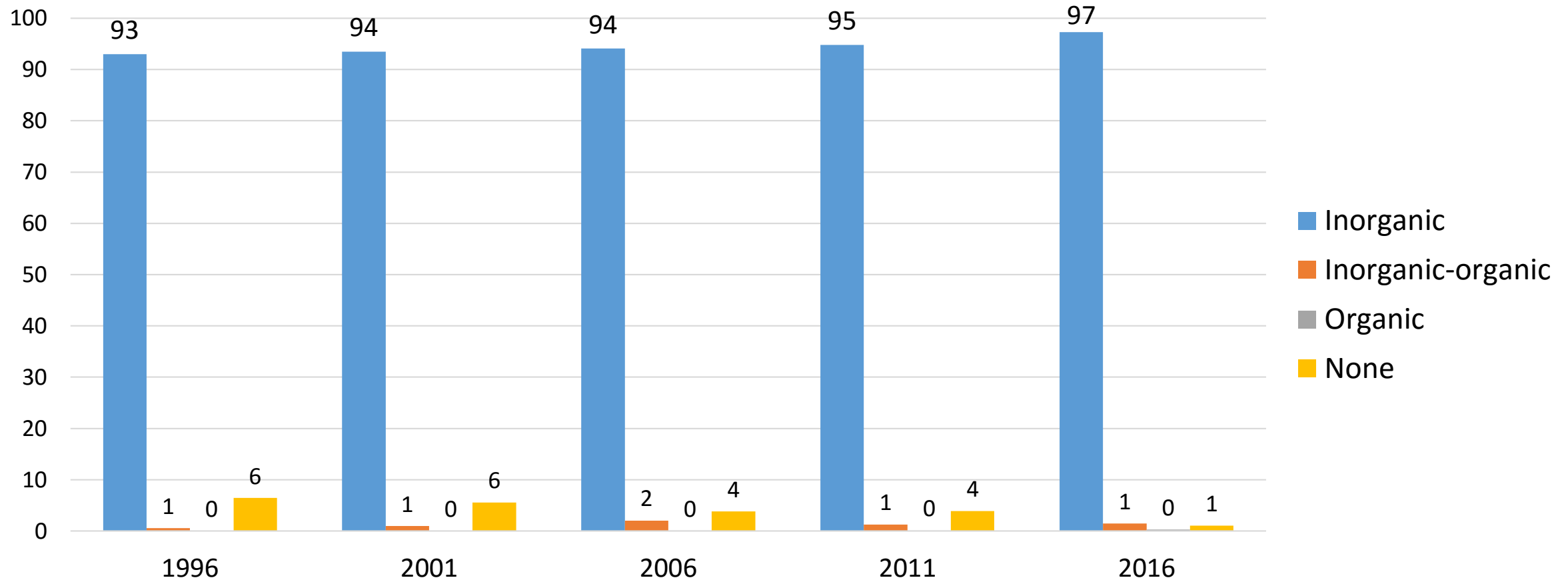
- What do farmers “feed” their rice?
- How much fertilizer do they use?
- How frequent do they feed their rice plants?
- When do they feed their rice?
- Do they get their money’s worth?

# What do farmers “feed” their rice?



% of farmers

Wet Season

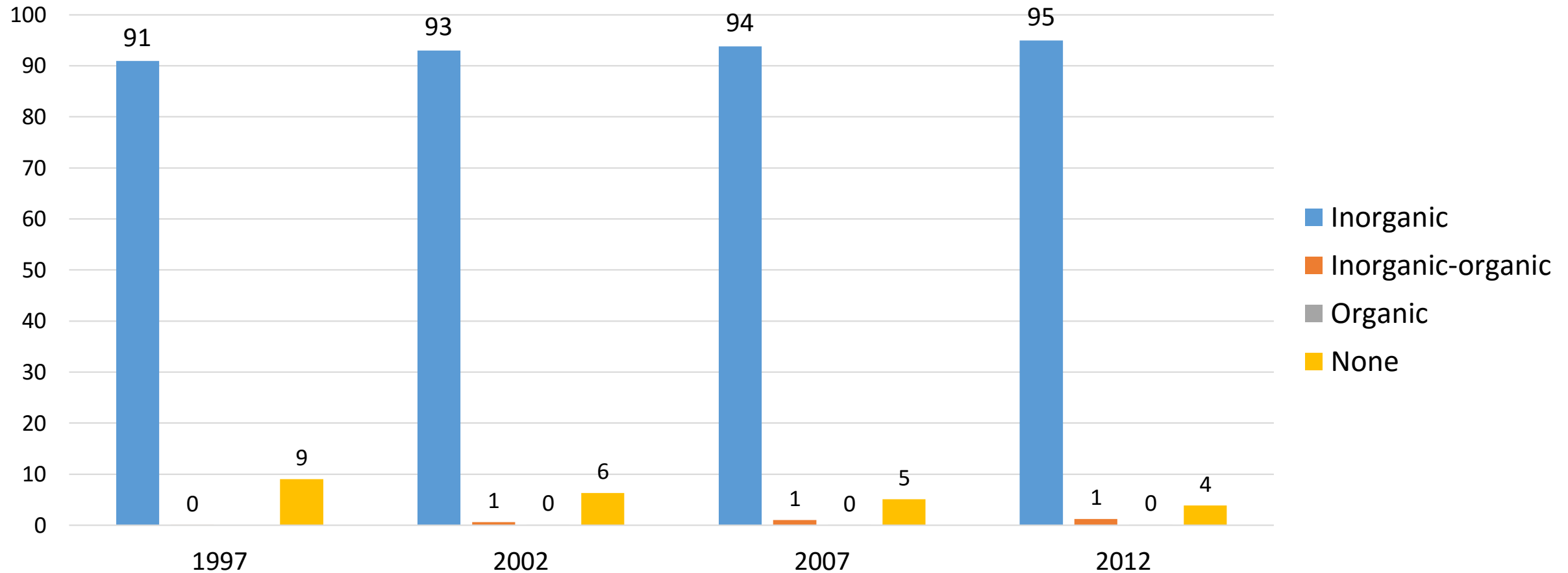


# What do farmers “feed” their rice?



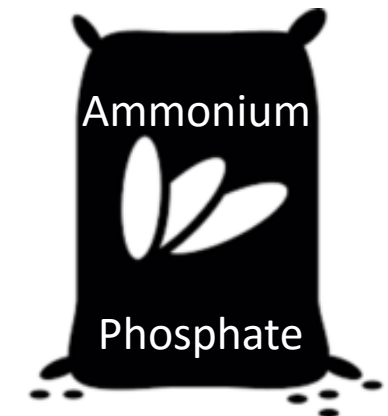
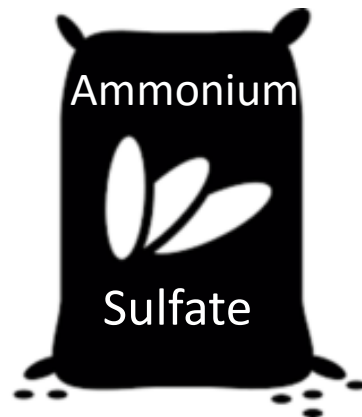
% of farmers

Dry Season



# Commonly used Inorganic fertilizer,

From 1996-2016



# How much fertilizer do they use?



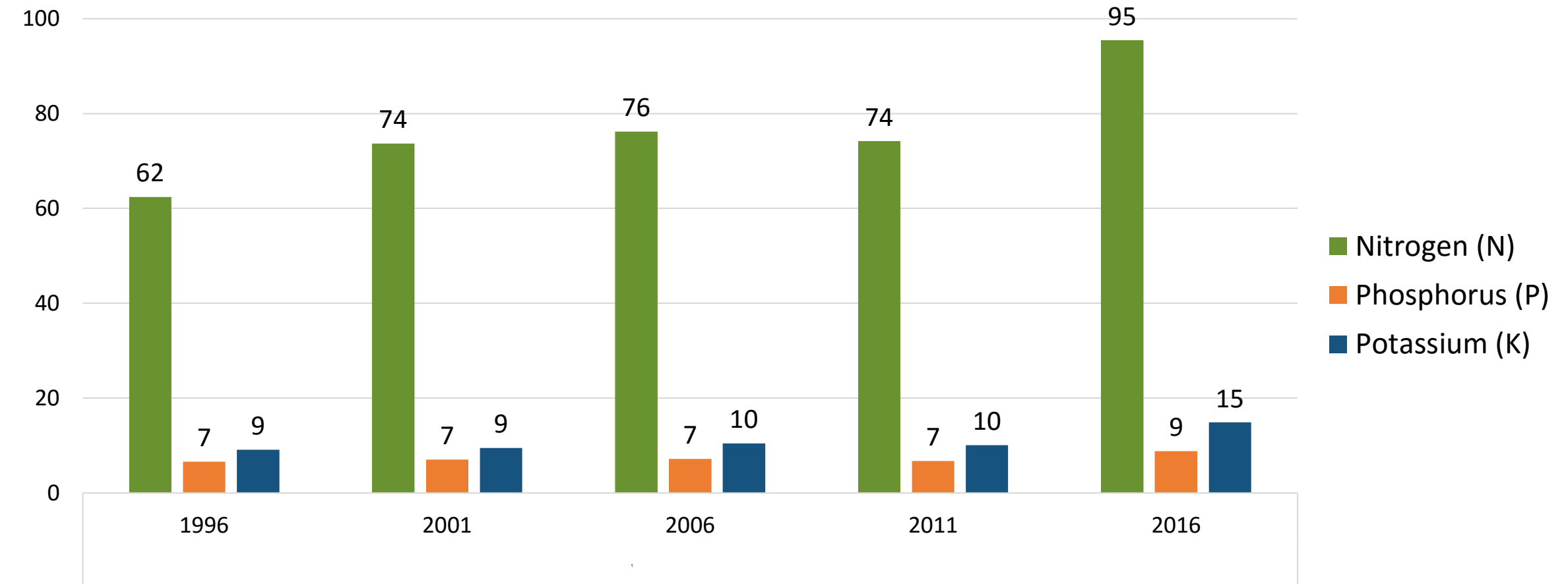
Inorganic Fertilizer	(bag/ha)		
	2011WS	2012DS	2016WS
Ammonium Sulfate (21-0-0)	0.65	0.68	0.77
Urea (45-0-0)	0.33	0.33	0.15
Urea (46-0-0)	1.92	1.89	2.78
Complete (14-14-14)	1.50	1.62	2.00
Ammonium Phosphate (16-20-0)	0.46	0.47	0.57
Muriate of Potash (0-0-60)	0.02	0.03	0.10
Potassium nitrate (17-0-17)	0.06	0.05	0.07
Other Inorganic	0.09	0.07	0.10
<b>Total</b>	<b>5.04</b>	<b>5.16</b>	<b>6.53</b>

# Average NPK used

General  
Recommended NPK  
WS: 90-40-40

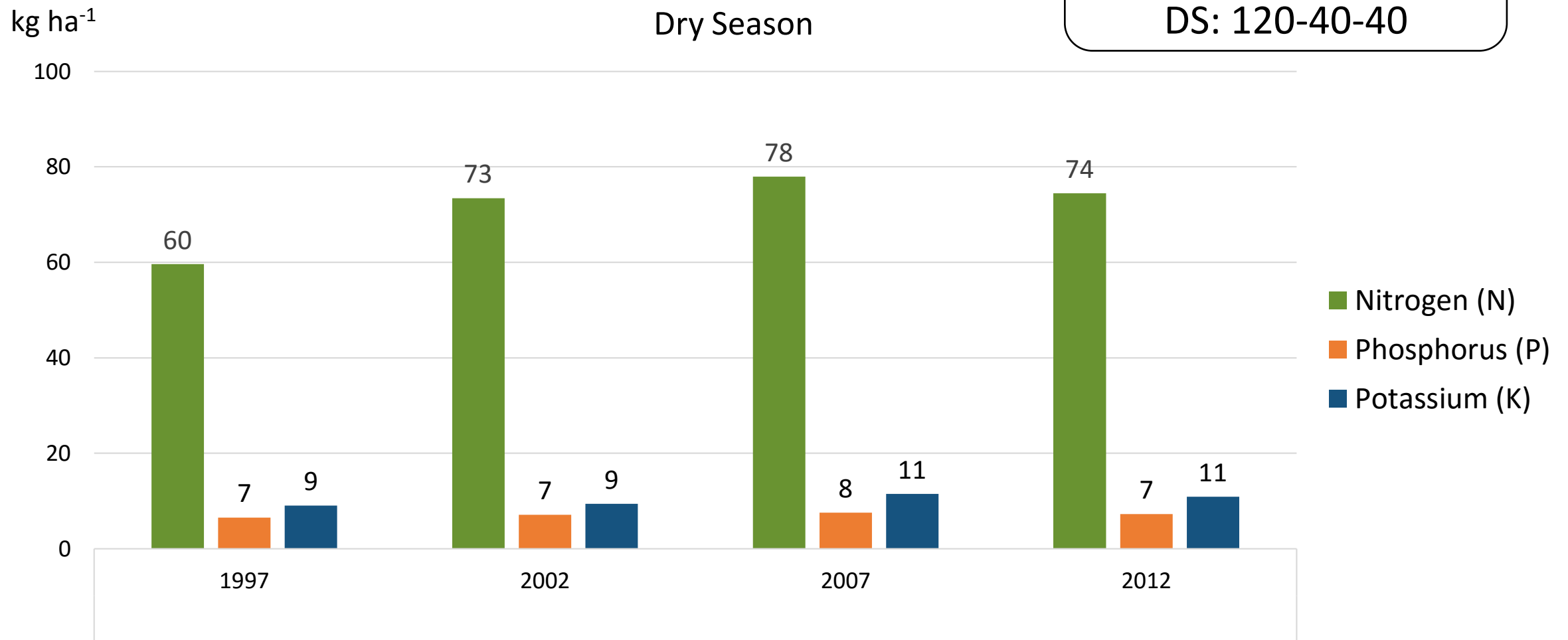
kg ha<sup>-1</sup>

Wet Season



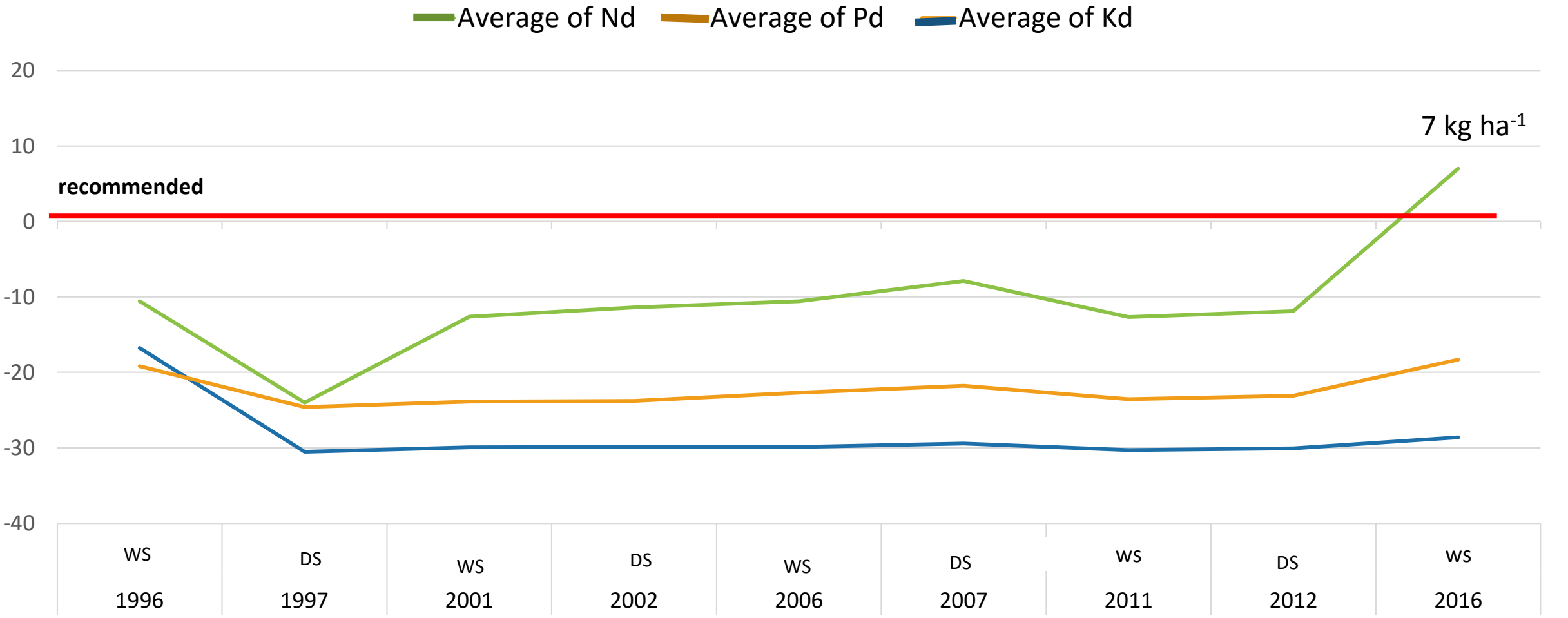
# Average NPK used, DS

General  
Recommended NPK  
DS: 120-40-40





# Difference between the actual NPK and recommended rates

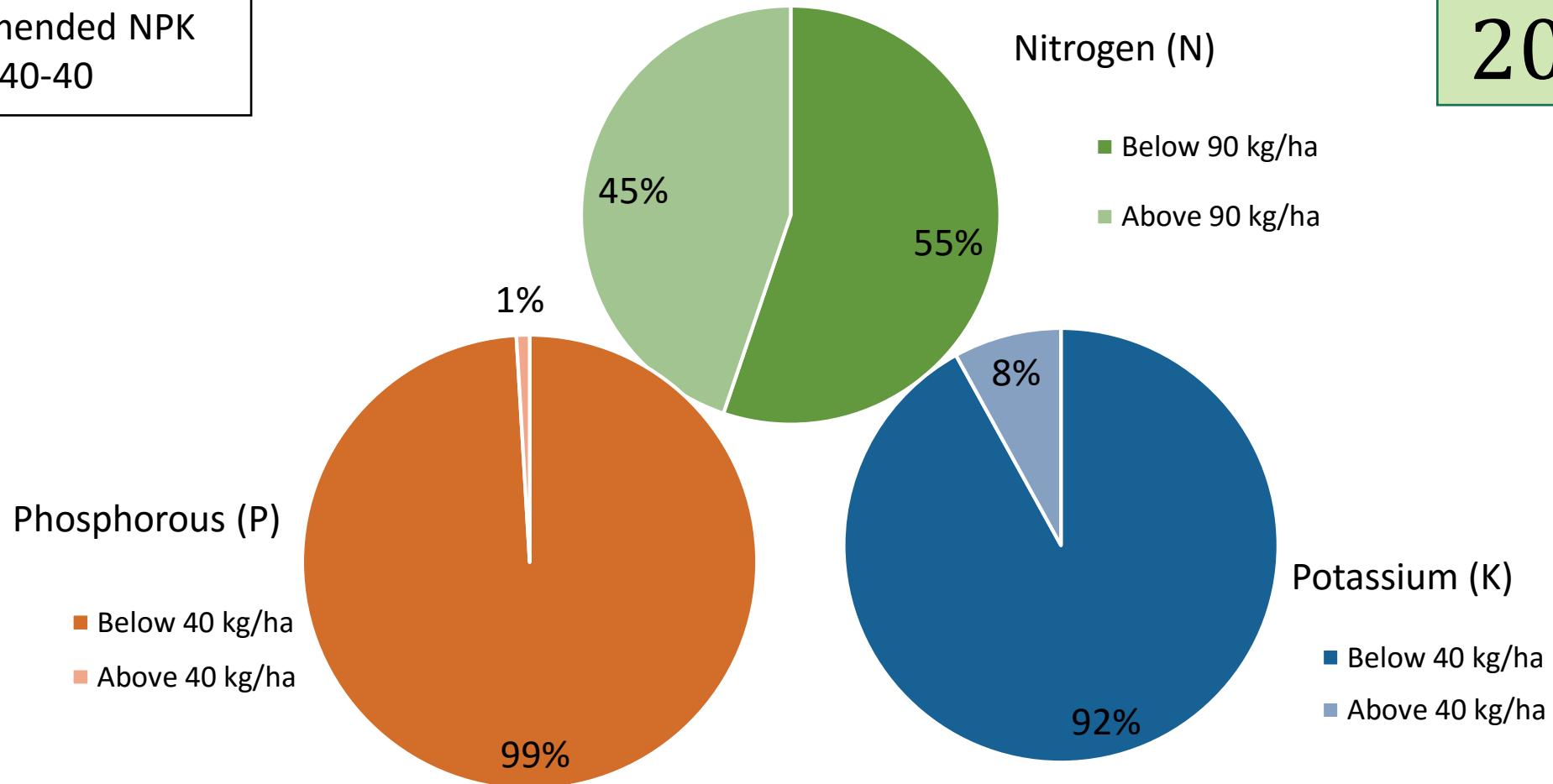


# Percent of Farmers by NPK level



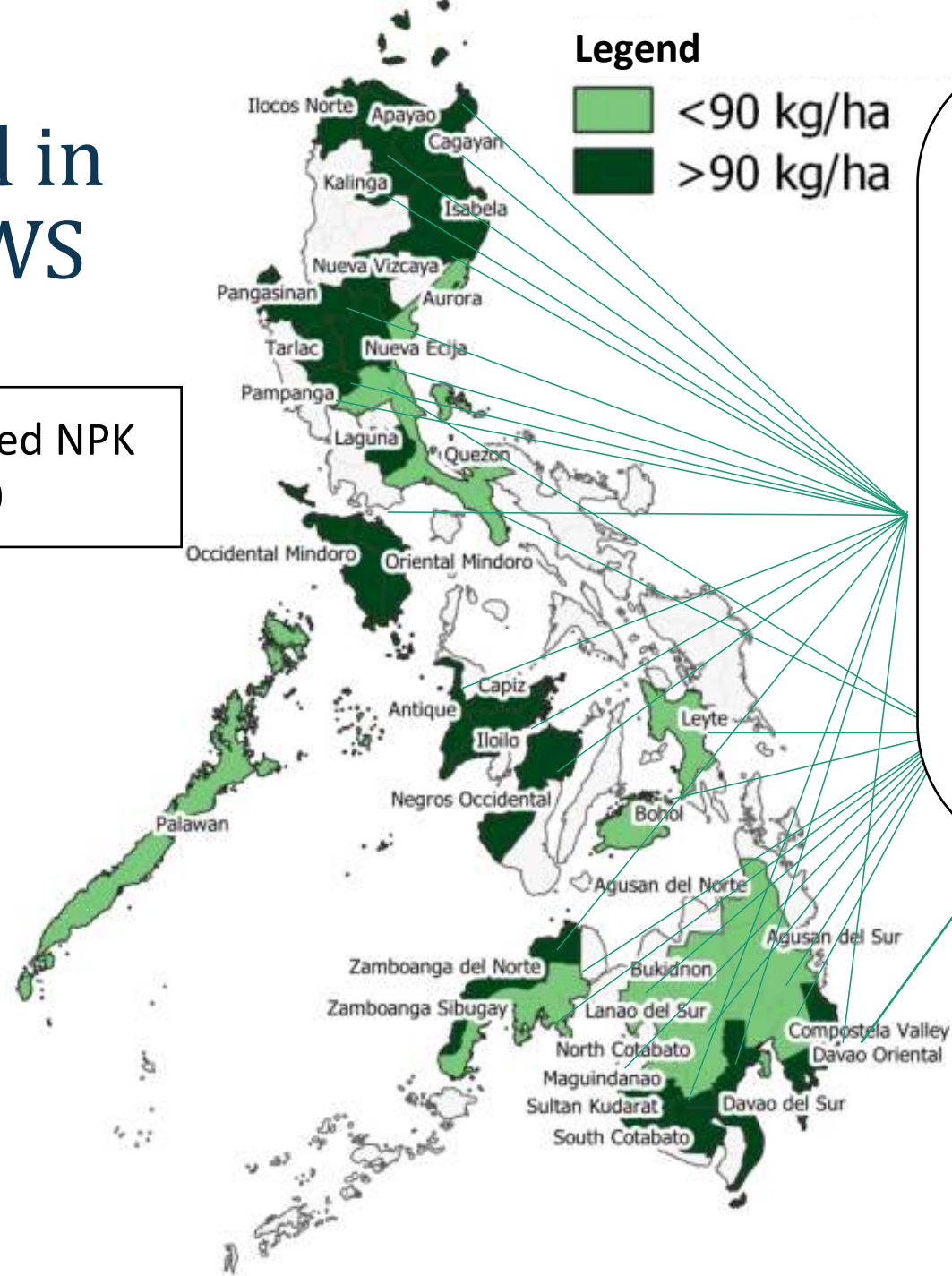
Recommended NPK  
WS: 90-40-40

2016 WS



# N Used in 2016 WS

Recommended NPK  
WS:90-40-40



## Province:>90kg/ha

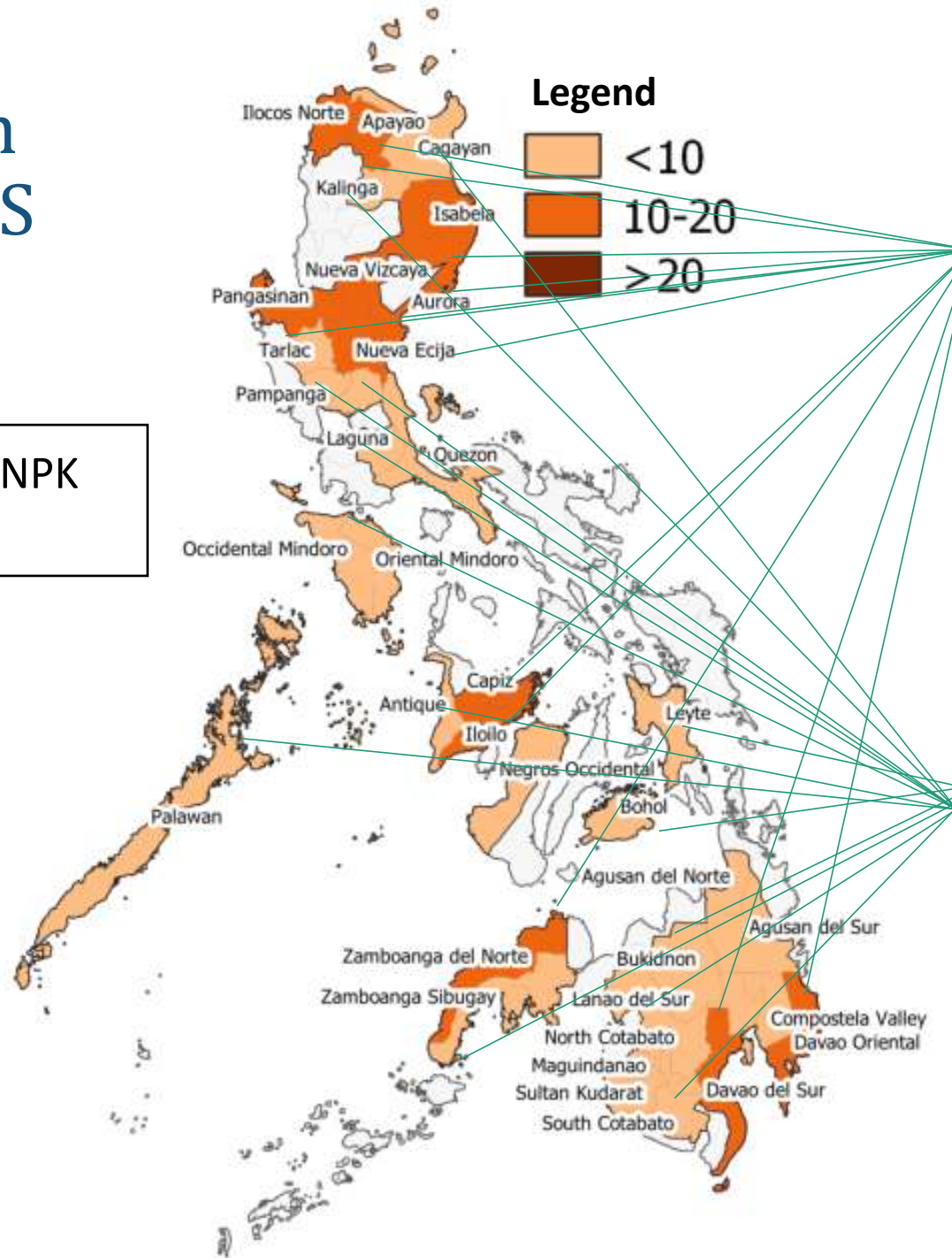
- |                    |                     |
|--------------------|---------------------|
| Apayao             | Antique             |
| Kalinga            | Capiz               |
| Cagayan            | Iloilo              |
| Nueva Vizcaya      | Negros Occidental   |
| Isabela            |                     |
| Ilocos Norte       | Davao del Sur       |
| Pangasinan         | Davao Oriental      |
| Nueva Ecija        | South Cotabato      |
| Aurora             | Sultan Kudarat      |
| Pampanga           | Zamboanga Del Norte |
| Tarlac             |                     |
| Laguna             |                     |
| Occidental Mindoro |                     |
| Oriental Mindoro   |                     |

## Province: <90kg/ha

- |         |                   |
|---------|-------------------|
| Bulacan | Agusan del Norte  |
| Palawan | Agusan del Sur    |
| Quezon  | Bukidnon          |
|         | Compostela Valley |
|         | Davao del Norte   |
|         | Lanao Del Sur     |
|         | Maguindanao       |
|         | North Cotabato    |
|         | Zamboanga del Sur |
|         | Zamboanga Sibugay |

# P Use in 2016WS

Recommended NPK  
WS:90-40-40



## Prov: 10-20kg/ha

Apayao	Tarlac
Aurora	Capiz
Ilocos Norte	Iloilo
Isabela	Davao del Sur
Nueva Ecija	Davao Oriental
Nueva Vizcaya	Zamboanga Del Norte
Pangasinan	

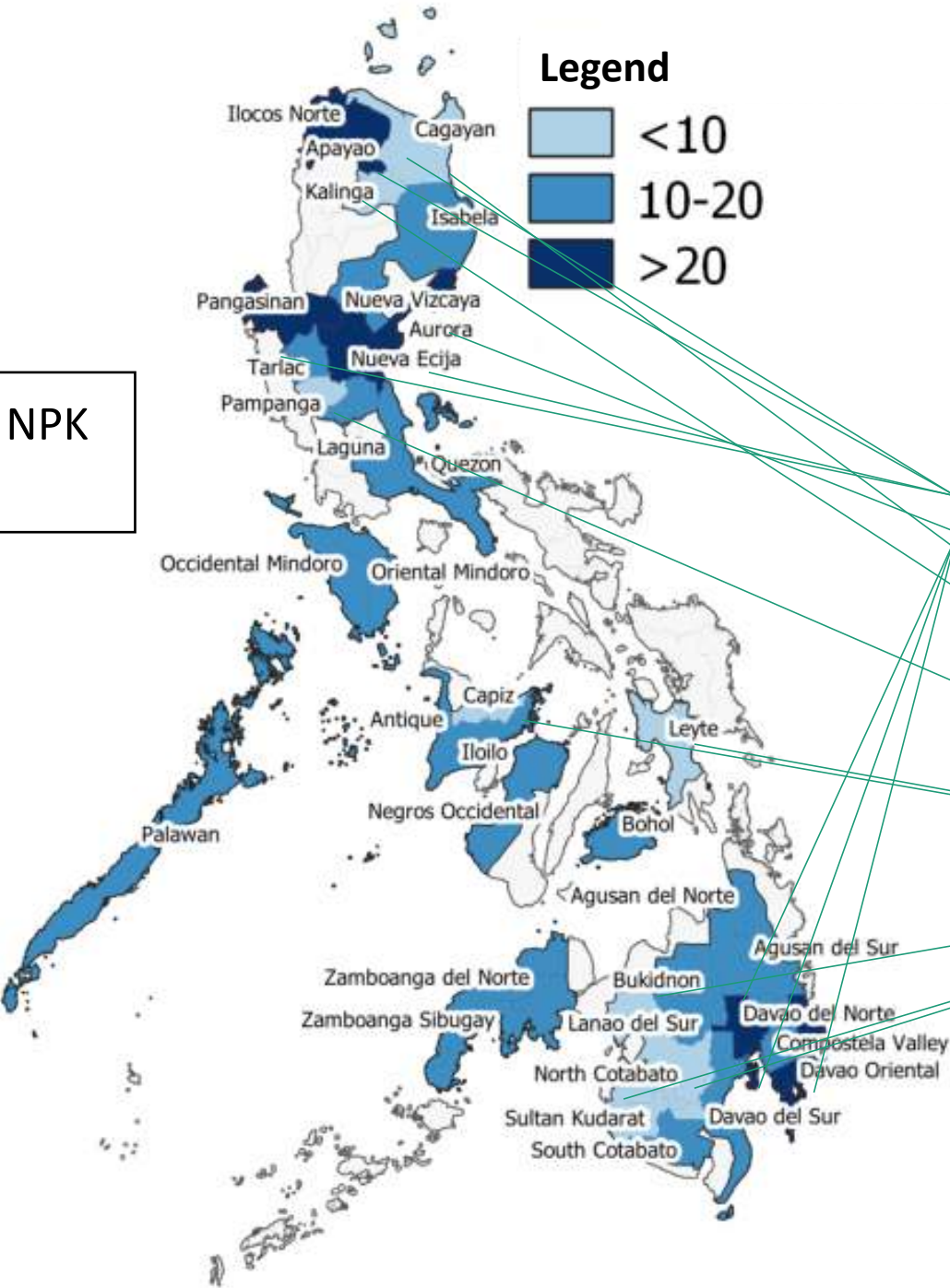
## Province: <10kg/ha

Bulacan	Agusan del Norte
Cagayan	Agusan del Sur
Kalinga	Bukidnon
Laguna	Compostela Valley
Occidental Mindoro	Davao del Norte
Oriental Mindoro	Lanao Del Sur
Palawan	Maguindanao
Pampanga	North Cotabato
Quezon	South Cotabato
	Sultan Kudarat
Antique	Zamboanga del Sur
Bohol	Zamboanga Sibugay
Leyte	
Negros Occidental	



# K Use 2016WS

Recommended NPK  
WS:90-40-40



**Province: >20kg/ha**

Apayao  
Aurora  
Ilocos Norte  
Nueva Ecija  
Pangasinan

Davao del Norte  
Davao del Sur  
Davao Oriental

**Prov: <10kg/ha**

Cagayan  
Kalinga  
Pampanga

Capiz  
Leyte

Lanao Del Sur  
Maguindanao  
North Cotabato  
Sultan Kudarat

# How frequent do they feed their rice plants?



Crop stage/frequency	WS			DS	
	2006	2011	2016	2007	2012
Ave. no. of application	2.5	2.6	2.7	1.8	2.5
Seedbed* (%)					
once	84	54	54	53	52
twice	16	12	34	4	10
thrice	0	1	11	0	0
Pre-standing (%)					
once	0	7	6	9	8
Standing (%)					
once	20	17	16	25	19
twice	58	62	57	53	58
thrice	13	13	22	14	15
4 or more	3	3	2	4	4

# When do they feed their rice?



Frequency of Application	Farmers (%)	Average DAS/DAT (2016 WS)							
		1st	2nd	3rd	4th	5th	6th	7th	8th
Once	14	21							
2x	56	16	43						
3x	23	14	35	46					
4x or more	3	11	30	43	55	65	68	84	98

Recommended App (3x)	0-14	28-32	42-46
----------------------	------	-------	-------



# Do they get their money's worth?



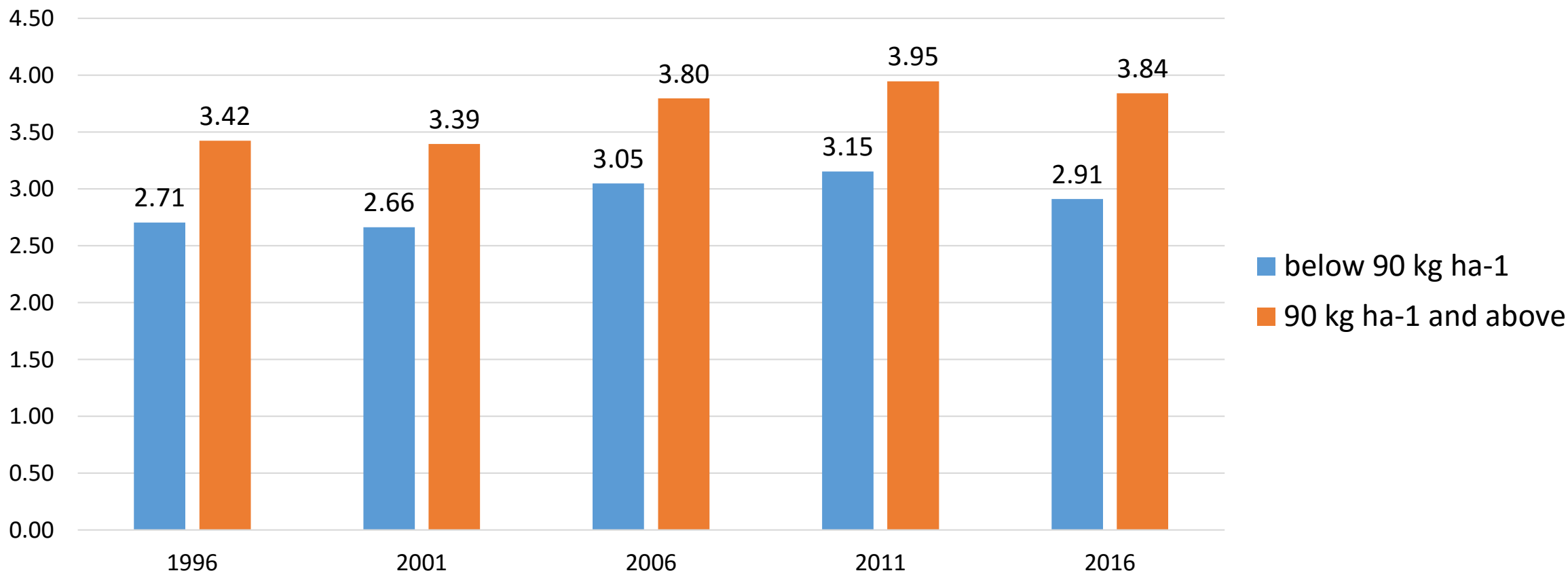
# Yield at 14% MC (kg ha<sup>-1</sup>)

Target Yield: 5 mt/ha



mt ha<sup>-1</sup>

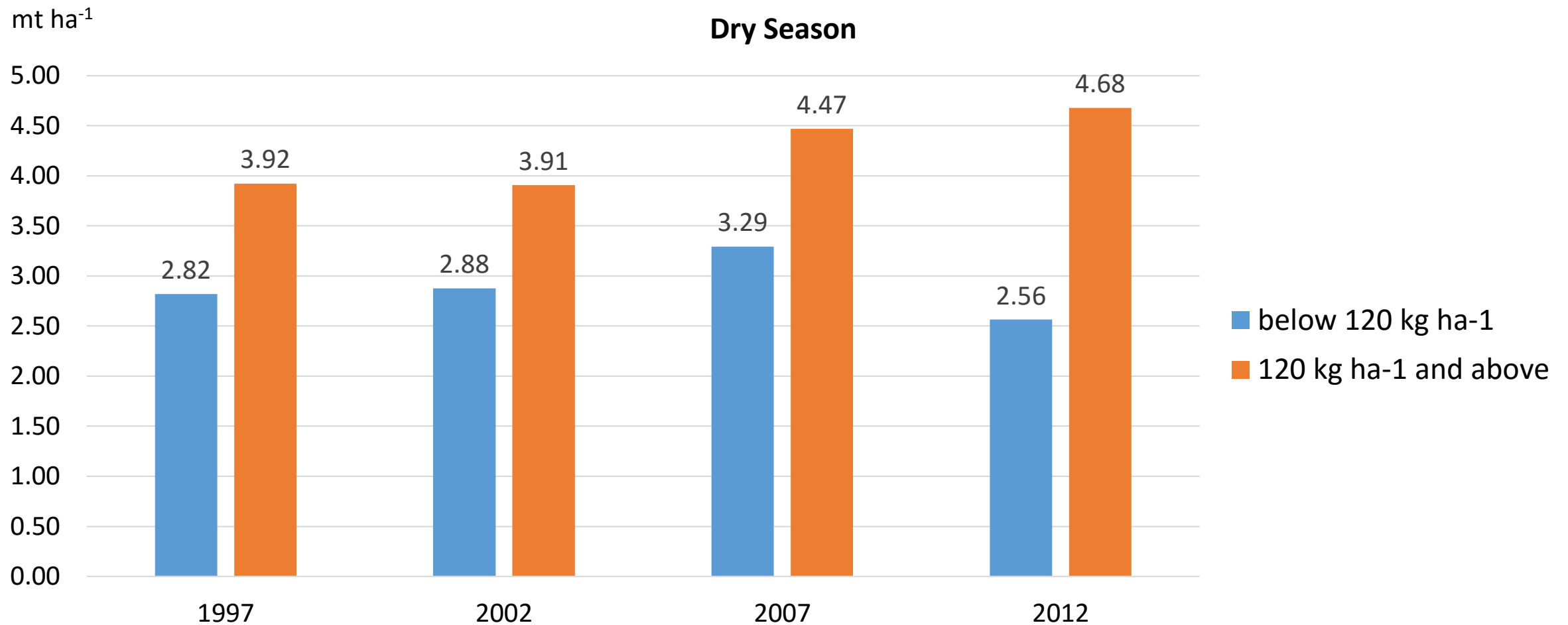
## Wet Season



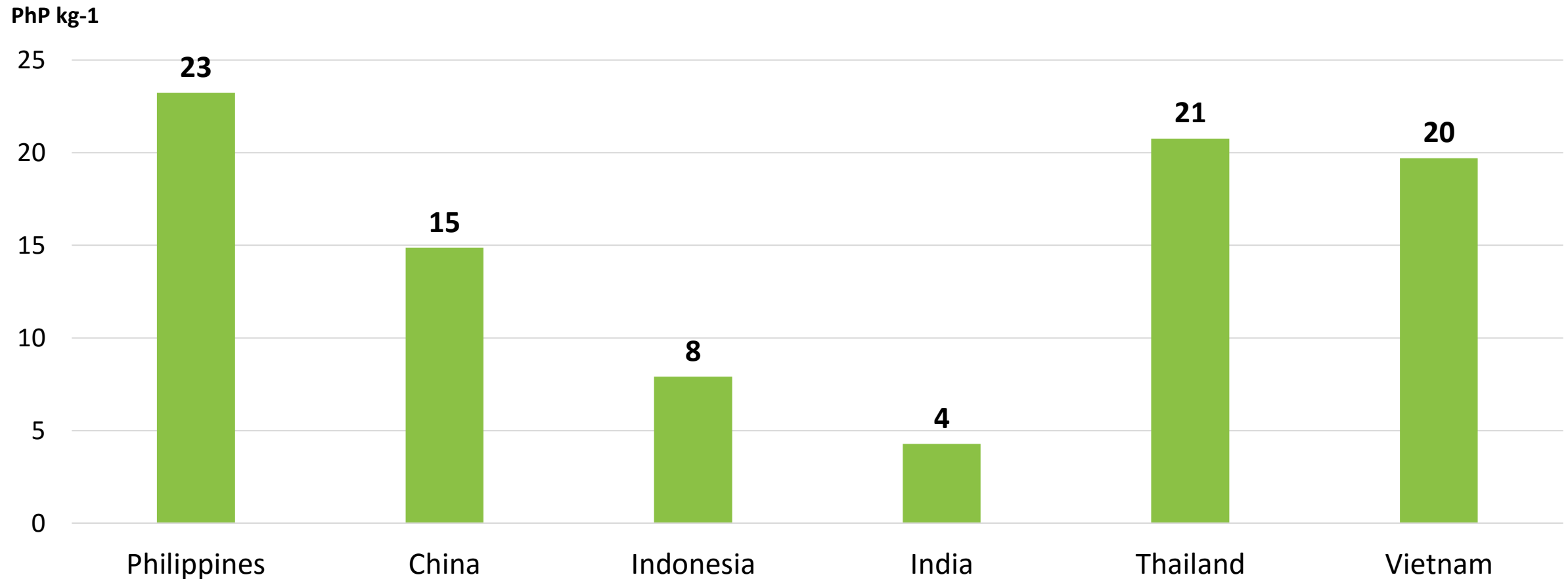
# Yield at 14% MC (kg ha<sup>-1</sup>)



Target Yield: 6-7 mt/ha

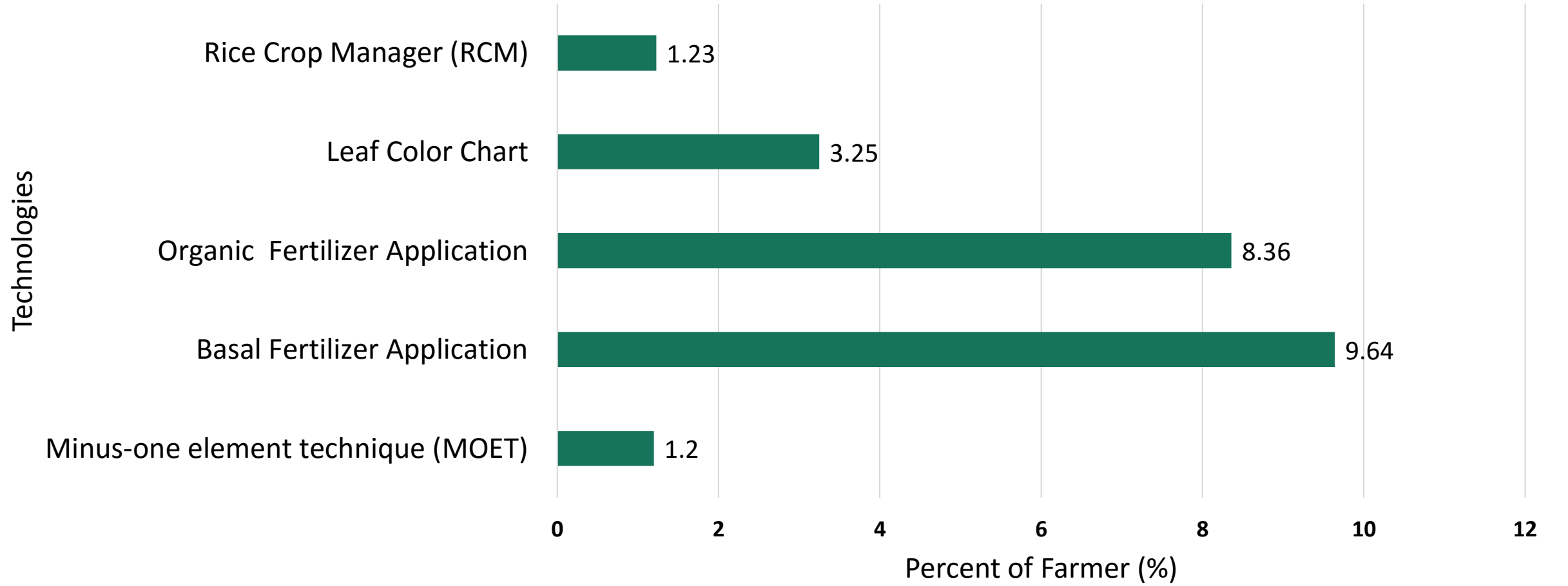


# Comparative prices of N



Source: Manalili et al., 2016

# Adoption of Technologies, 2016WS



# Conclusion



- Generally, farmers practice on NPK application is almost the same through the years.
- With 45% adopters of recommended N rate, 1 province achieved the expected yield of 5 mt/ha (Davao Oriental, 5.47 mt/ha).
- Low adoption of recommended nutrient management such as proper amount of NPK, frequency and right timing of applications
- From 1996-2016 farmers applying the recommended NPK rates have significantly higher yield
- Price is one of the constraints to adoption. Price of N was highest in the Philippines compared to other major rice producing countries (Manalili et al., 2016).
- Other technologies/practices related to nutrient management with low adoption are RCM, LCC, Organic and Basal Application, MOET (2016 WS).

# Recommendations



- There is still a need to improve the extension activities on nutrient management
- Proper amount, greater frequency and right timing of fertilizers especially N should be given emphasis to get the full potential of this input in obtaining higher yield. A greater frequency of application could improve the efficiency of nutrient uptake of the rice plant. This could be addressed by intensifying dissemination of information on nutrient management technologies and tools such as the LCC and RCM.

# Thank you!

Socioeconomics Division

Rhemilyn Z. Relado

Jesusa C. Beltran

Imelda A. Arida

Rowena G. Manalili

Alice B. Mataia

Aileen C. Litonjua

Ronell B. Malasa

Nefriend M. Francisco

Adrielle C. Flores

Maria Juvail T. Antivo

Chona A. Parayno

May Angelica A. Saldudez

Romualdo R. Quiroz



**PhilRice Text Center**  
**0917-111-7423**



**rice.matters**



**PhilRiceTV**



**[www.philrice.gov.ph](http://www.philrice.gov.ph)**  
**[www.pinoyrice.com](http://www.pinoyrice.com)**



**[prri.mail@philrice.gov.ph](mailto:prri.mail@philrice.gov.ph)**

