Quality Rice. Quality Life.

Managing Pests & Diseases: THEN & NOW

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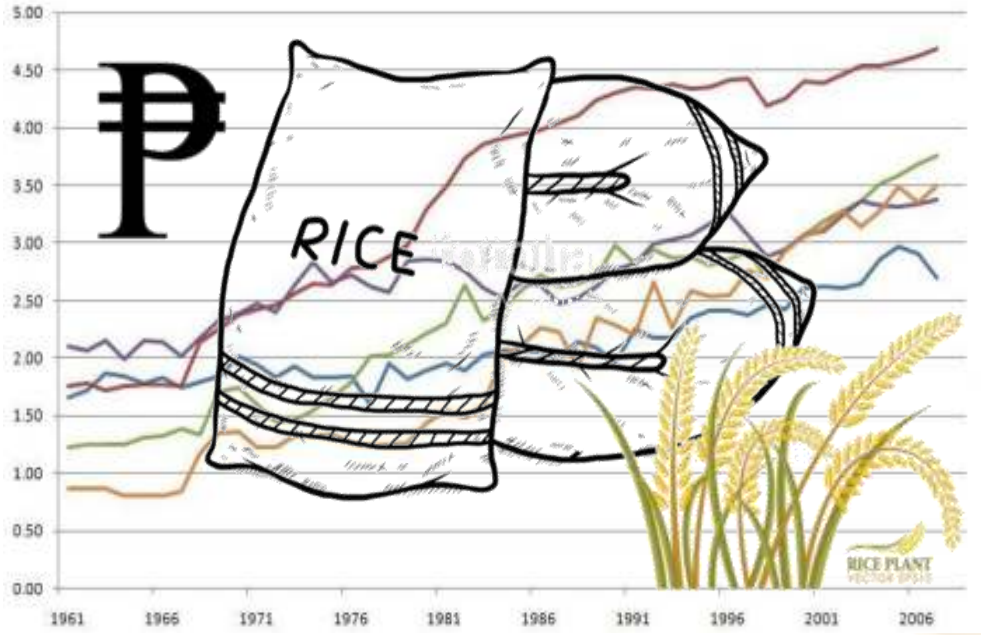
PhilRice

Factors that can ENSURE better farmers' INCOME

Rice quality

Yield



We hope to answer these:

1. What are farmers' major pest problems then and now?

2. How do farmers managed these pest problems?

The Data

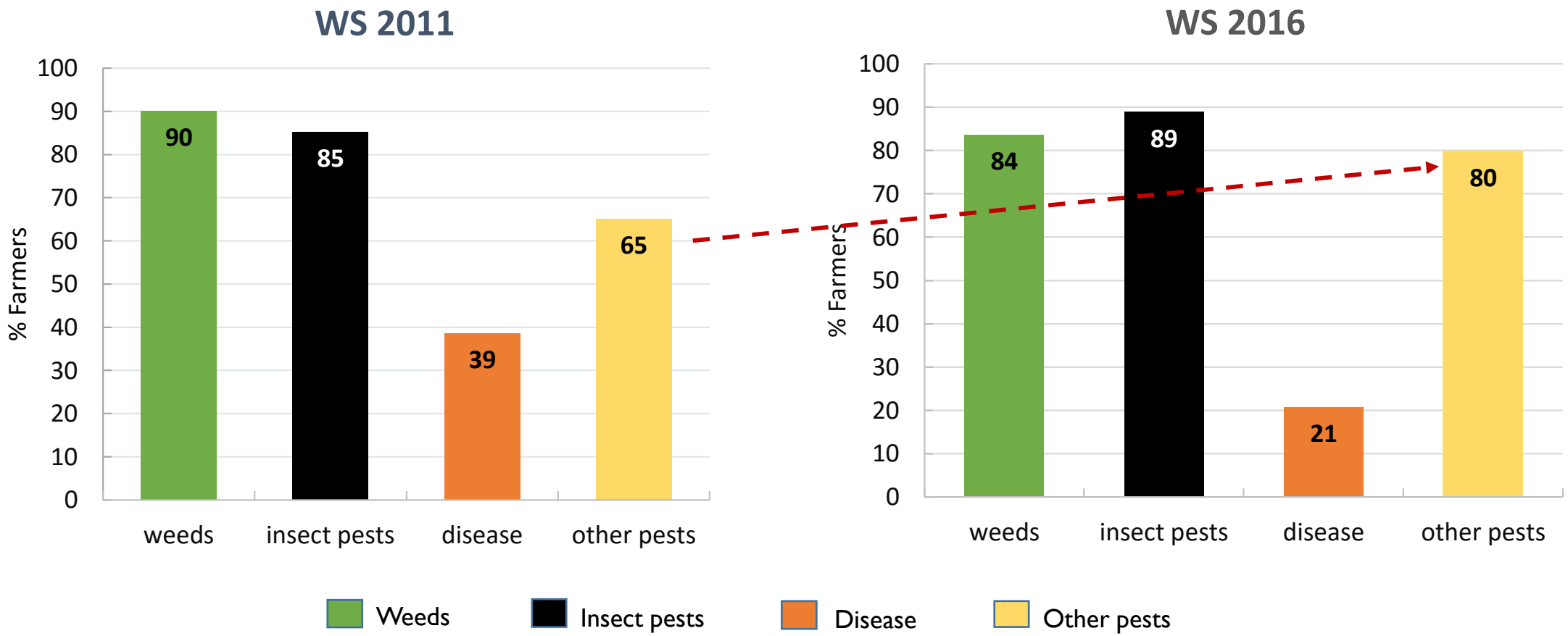
Rice-based Farm Household Survey

- July-Dec 2011 and July-Dec 2016 cropping seasons
- 33 and 42 major rice producing provinces, respectively

A show card was used to help farmers identify pests.

Pest problems were reported by farmers and not based on expert's opinion.

Distribution of farmers by problem encountered, Philippines, 2011 & 2016



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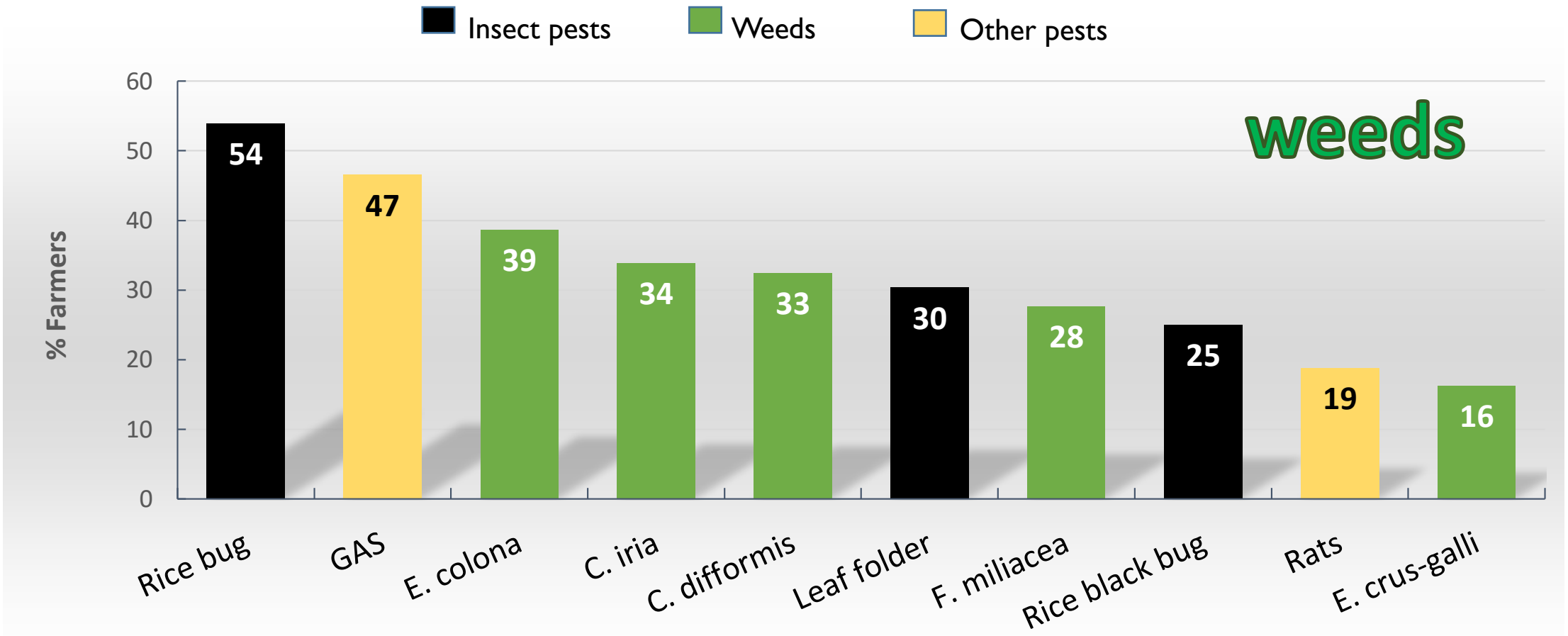
Top 10 Pest Problems in WS 2011



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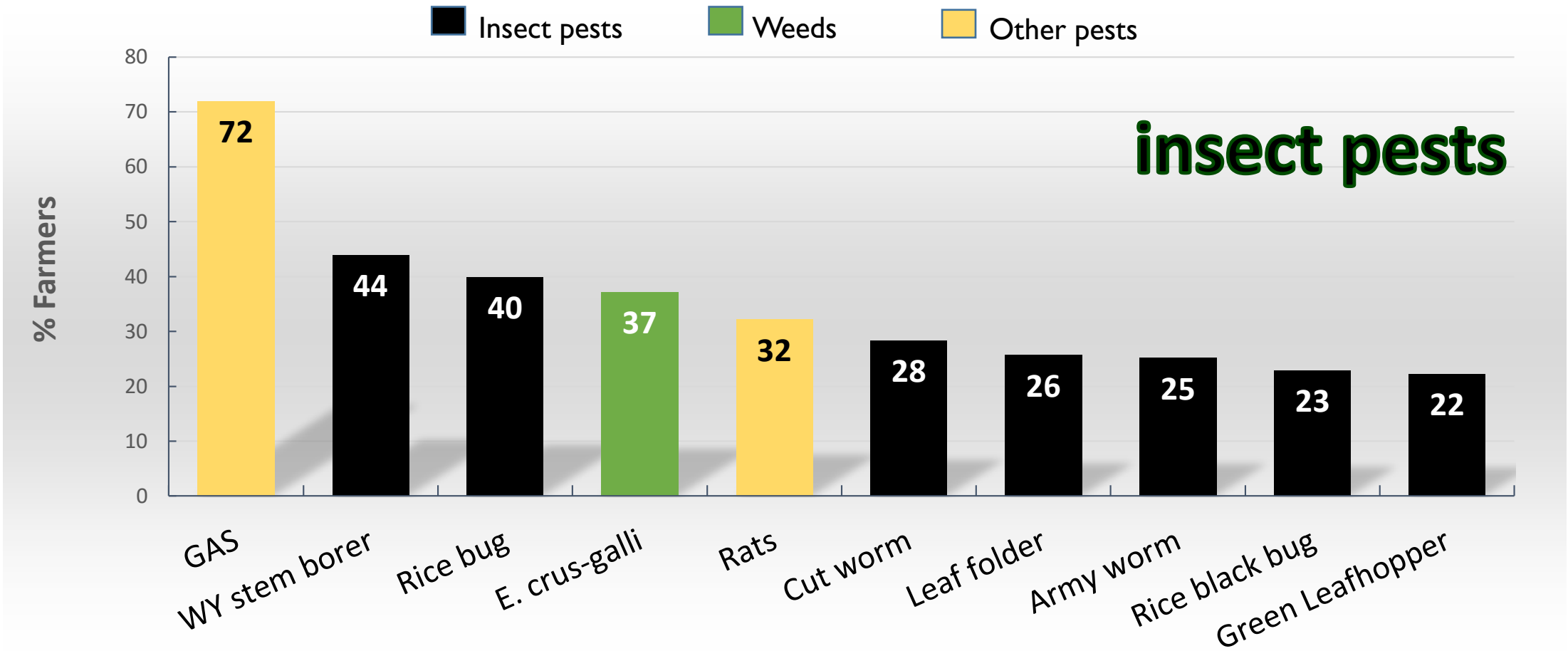
Top 10 Pest Problems in WS 2016



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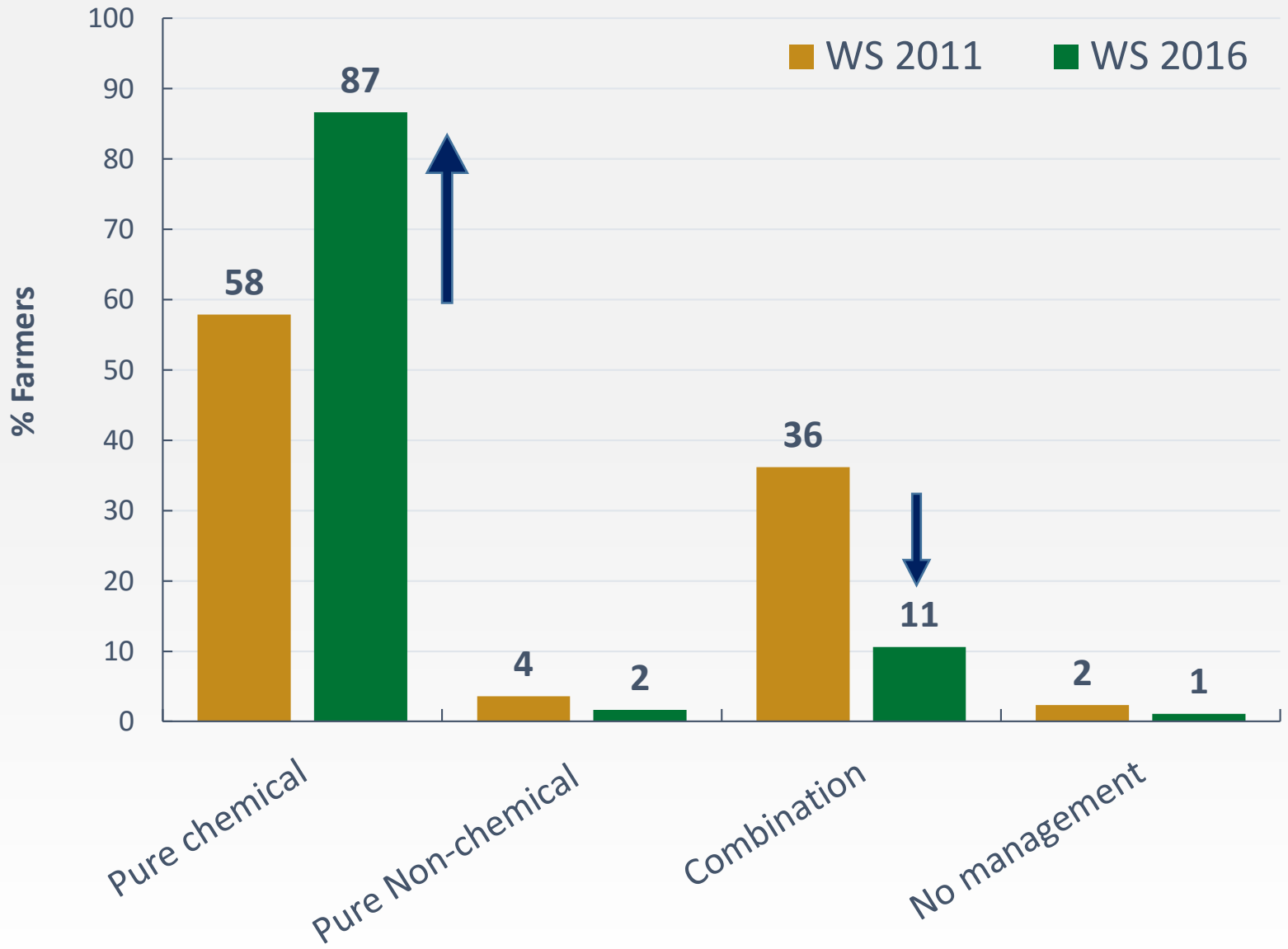
How do farmers respond to different pest problems?

- ✓Chemical application
- ✓Non-chemical pest management
- ✓Use of both chemical and non-chemical

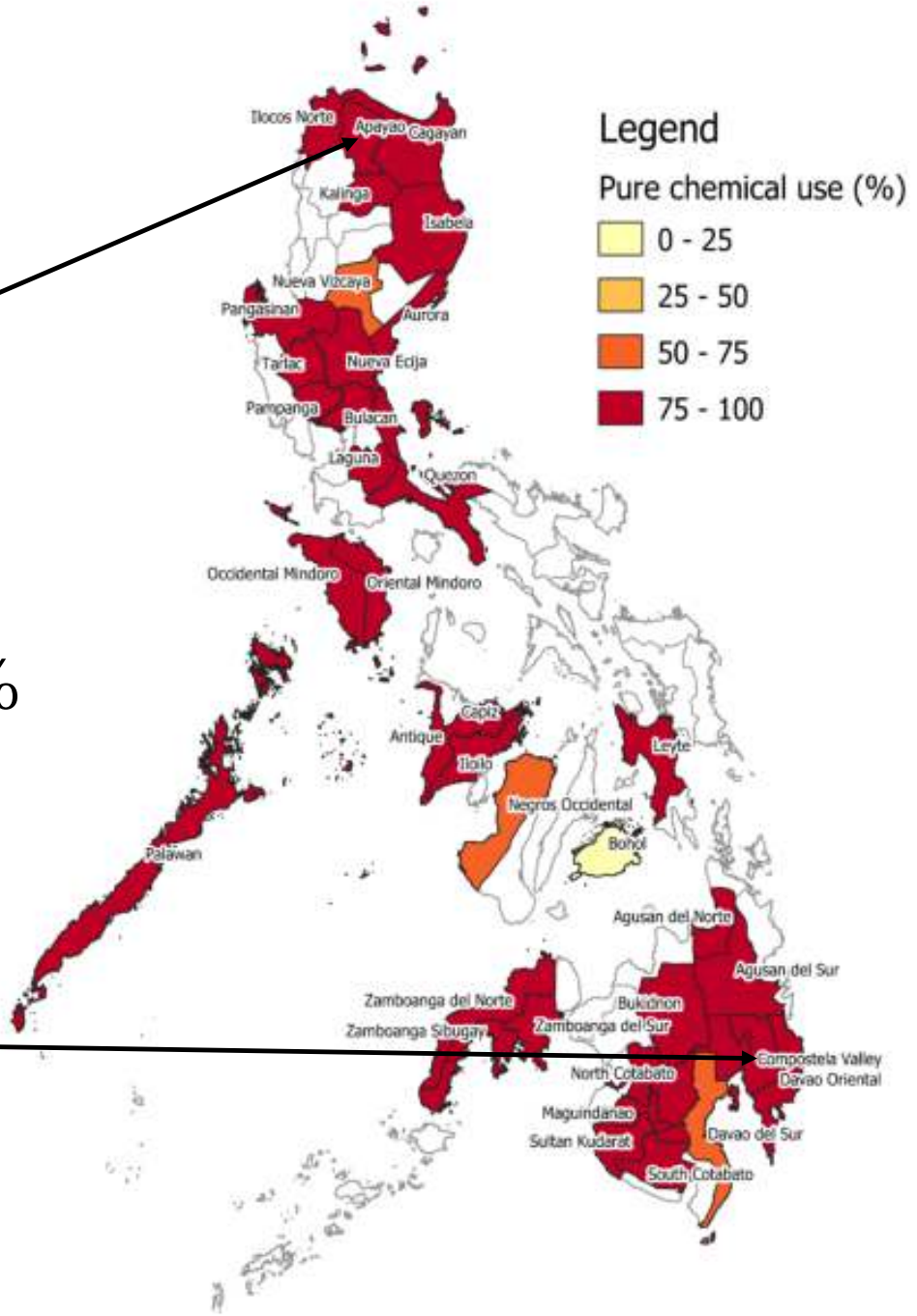
Distribution of farmers based on chemical and non-chemical management, WS 2011 & WS 2016

- Pure chemical application increased by about 20%
- Both chemical and non-chemical application decreased by about 25%

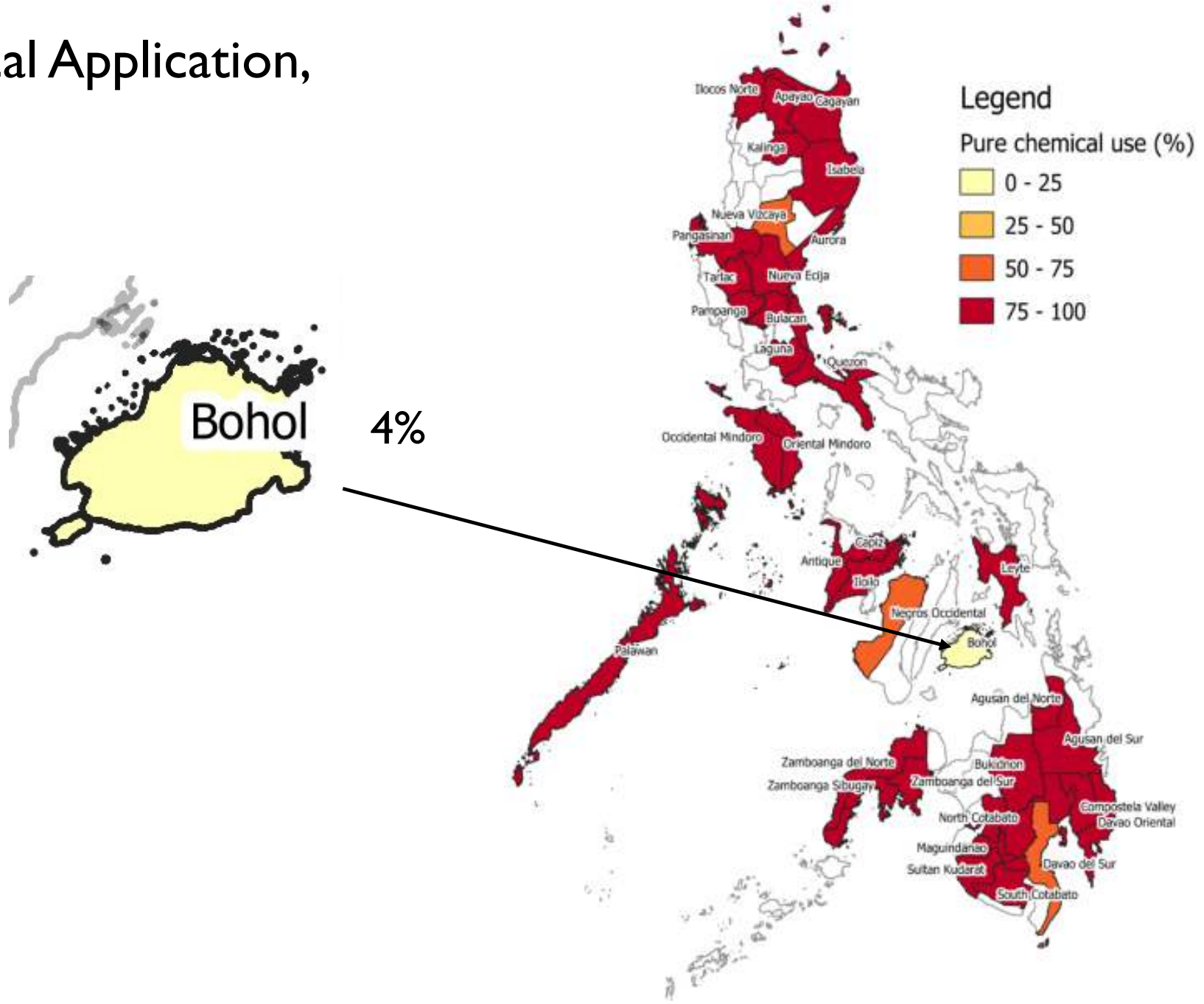


Pure Chemical Application, WS 2016

100%



Pure Chemical Application, WS 2016



Prevalent Pest and Common Active (AI) Ingredients used

WEEDS

WS 2011 (% Farmers)	
Echinochloa colona (pulang-puwet, lau-lau)	39
Cyperus iria	34
Cyperus difformis	33
Fimbristylis miliacea	28
Echinochloa crus-galli	16

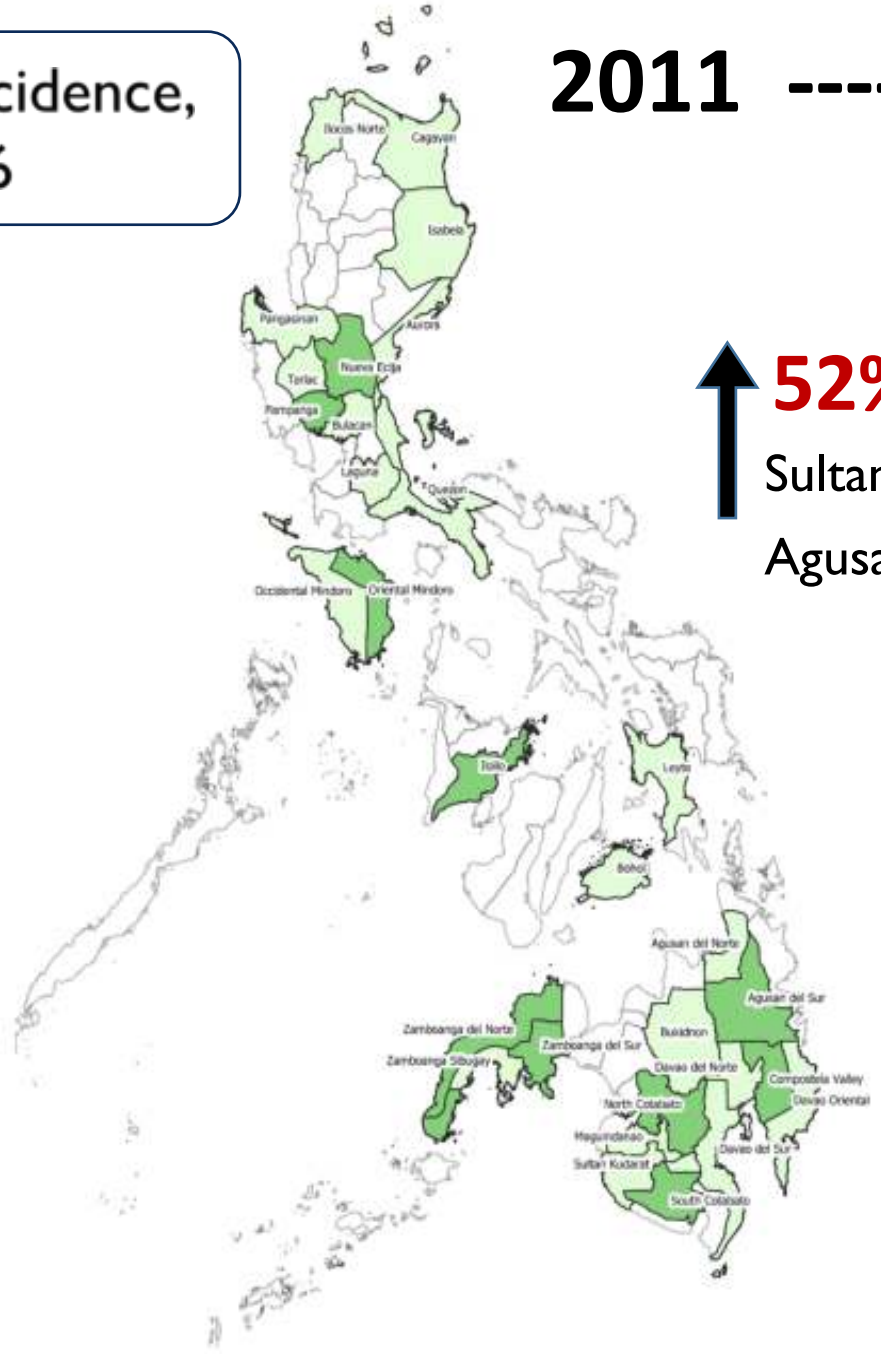
Maguindanao (66%)

WS 2016 (% Farmers)	
Echinochloa crus-galli (telebisyon, marapagay)	37
Cyperus iria	20
Cyperus difformis	17
Leptochloa chinensis	15
Ischaemum rugosum	14

North Cotabato (60%)

Echinocloa crus-galli incidence, WS 2011 vs. WS 2016

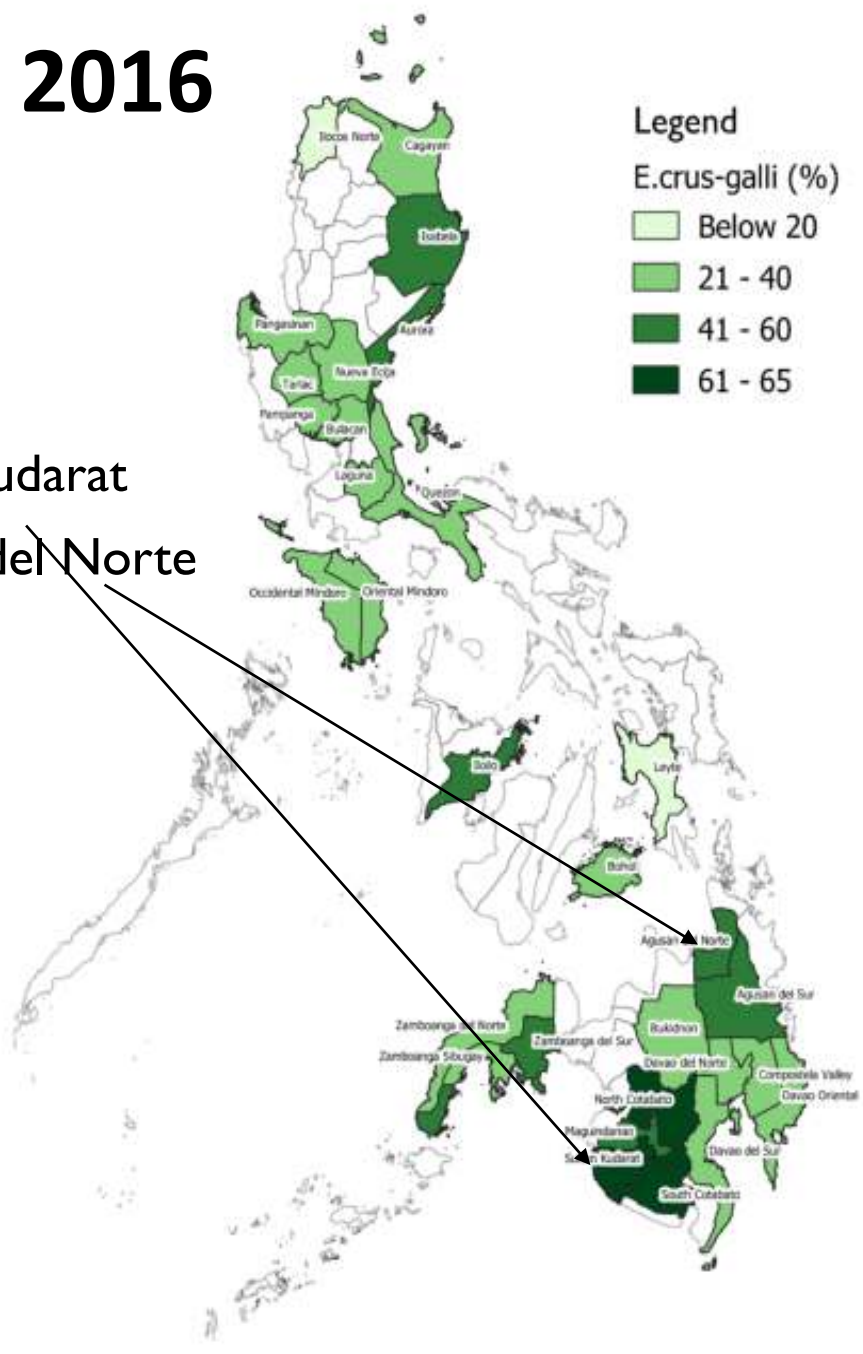
2011 ----> 2016



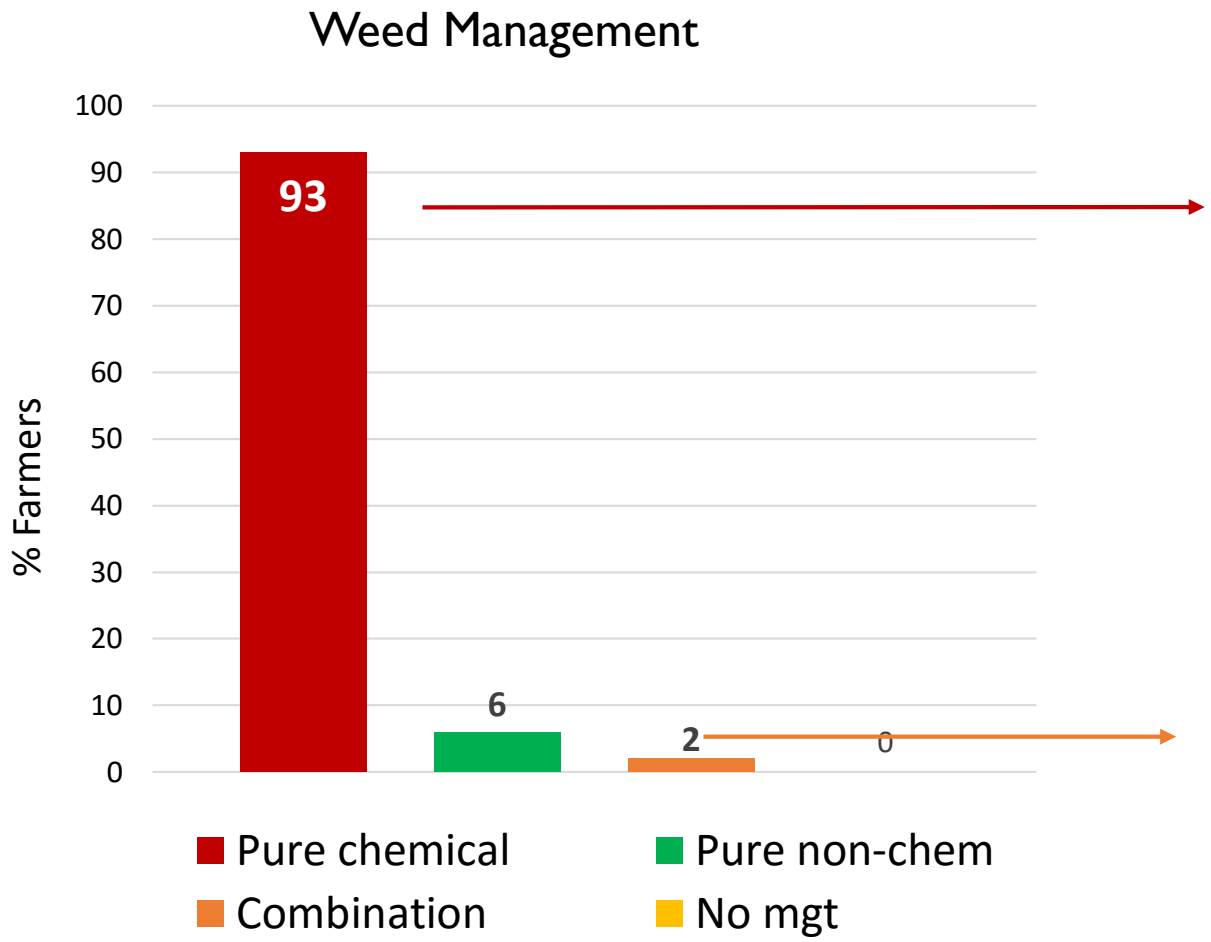
52%

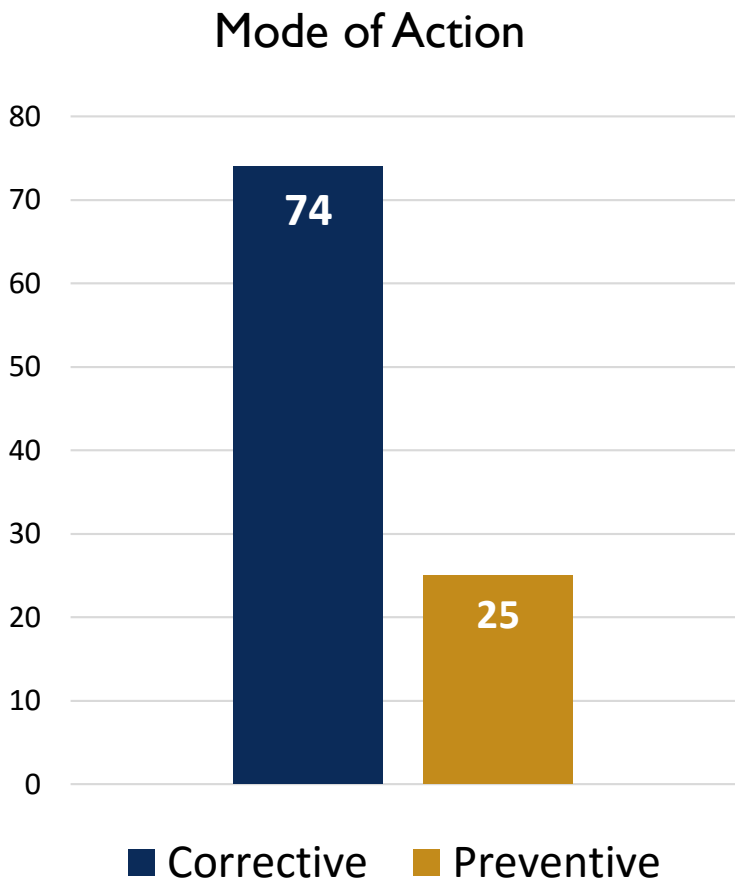
Sultan Kudarat

Agusan del Norte



Weed Management Action of Farmers, Philippines, WS 2016





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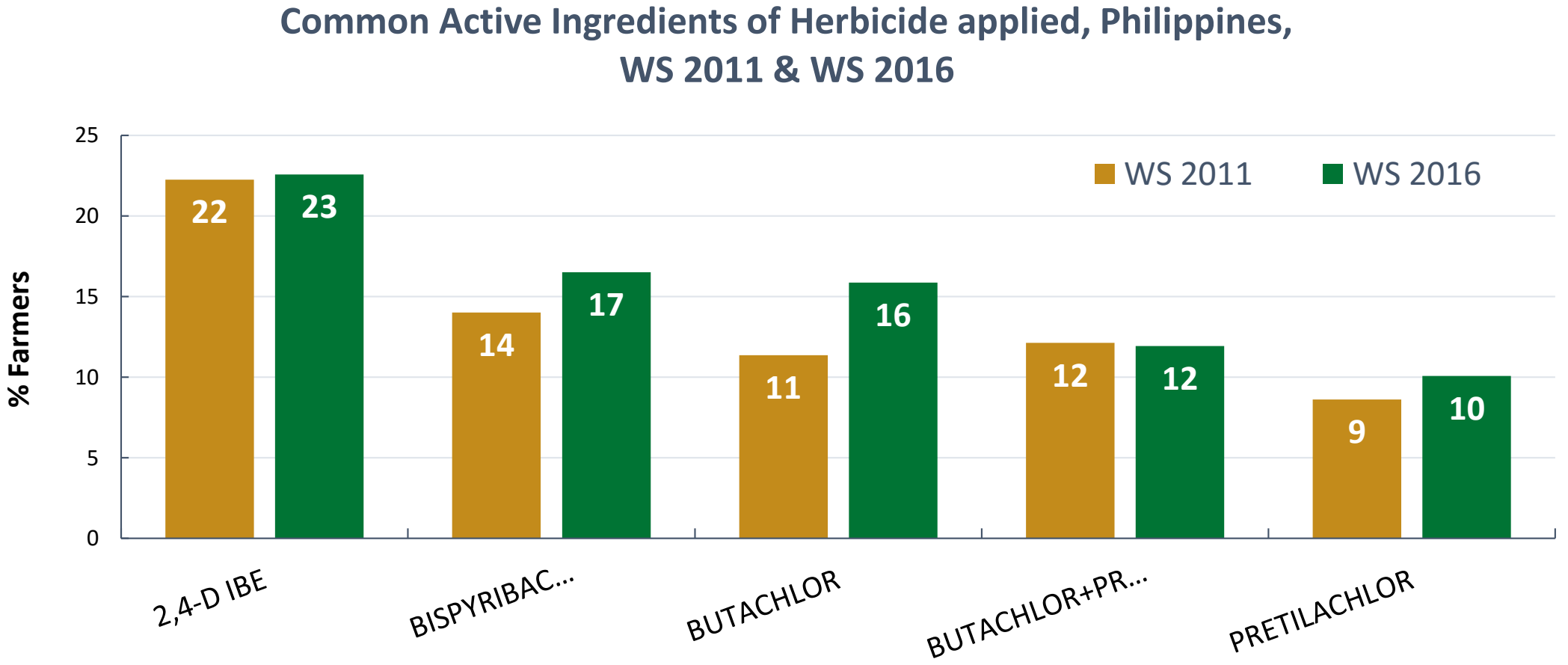
Common Herbicide AI



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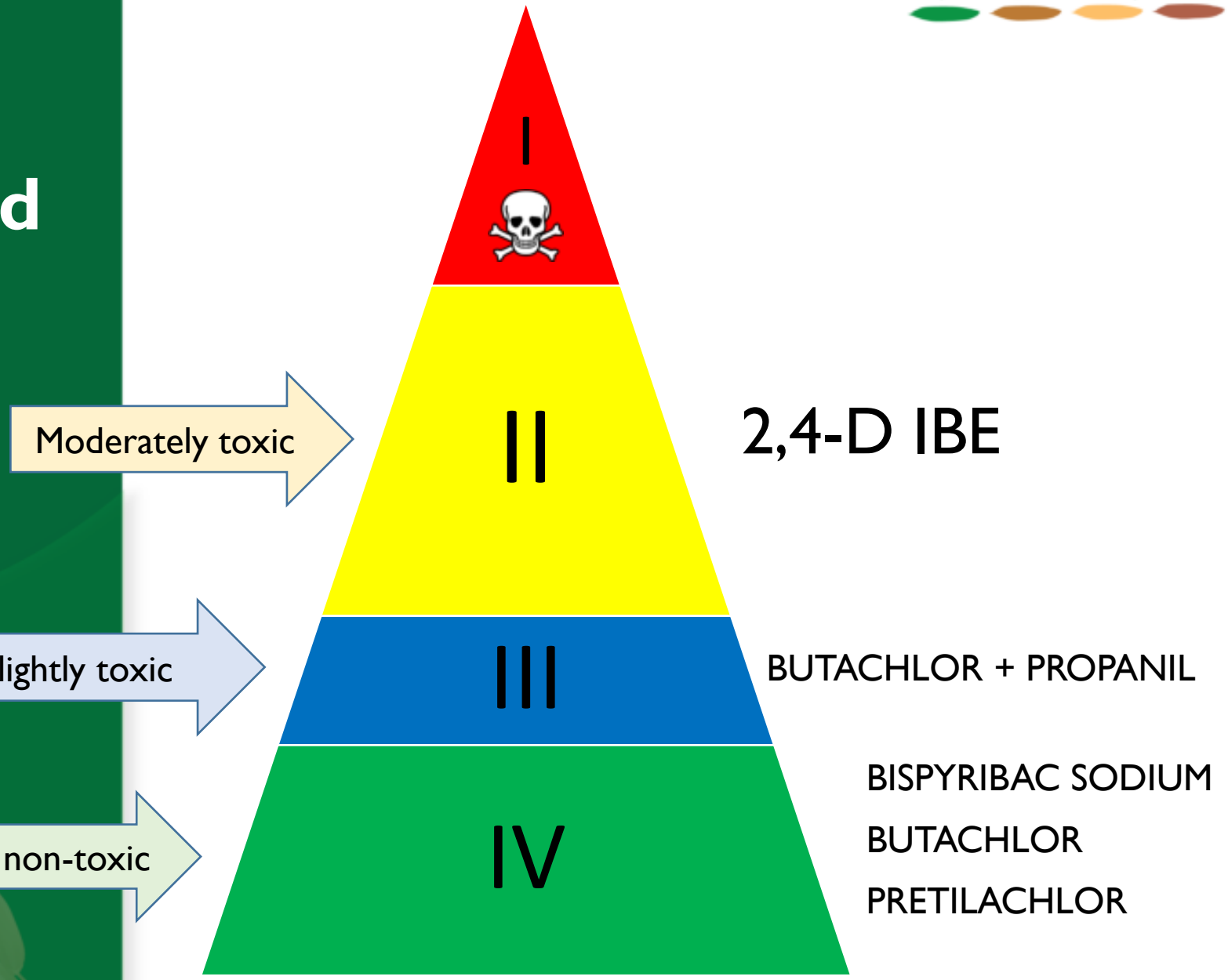
Toxicity Category of Commonly Used Herbicide AI



INSECT PESTS

WS 2011 (% Farmers)	
Rice bug (tayangaw, piyangaw)	54
Leaf folder	30
Rice black bug	25
Whorl maggot	15
White/Yellow stem borer	14

Zamboanga Sibugay (88%)

WS 2016 (% Farmers)	
W/Y stem borer (aksip, kuribangbang)	44
Rice bug	40
Cut worm	28
Leaf folder	26
Army worm	25

Zamboanga del Sur (75%)

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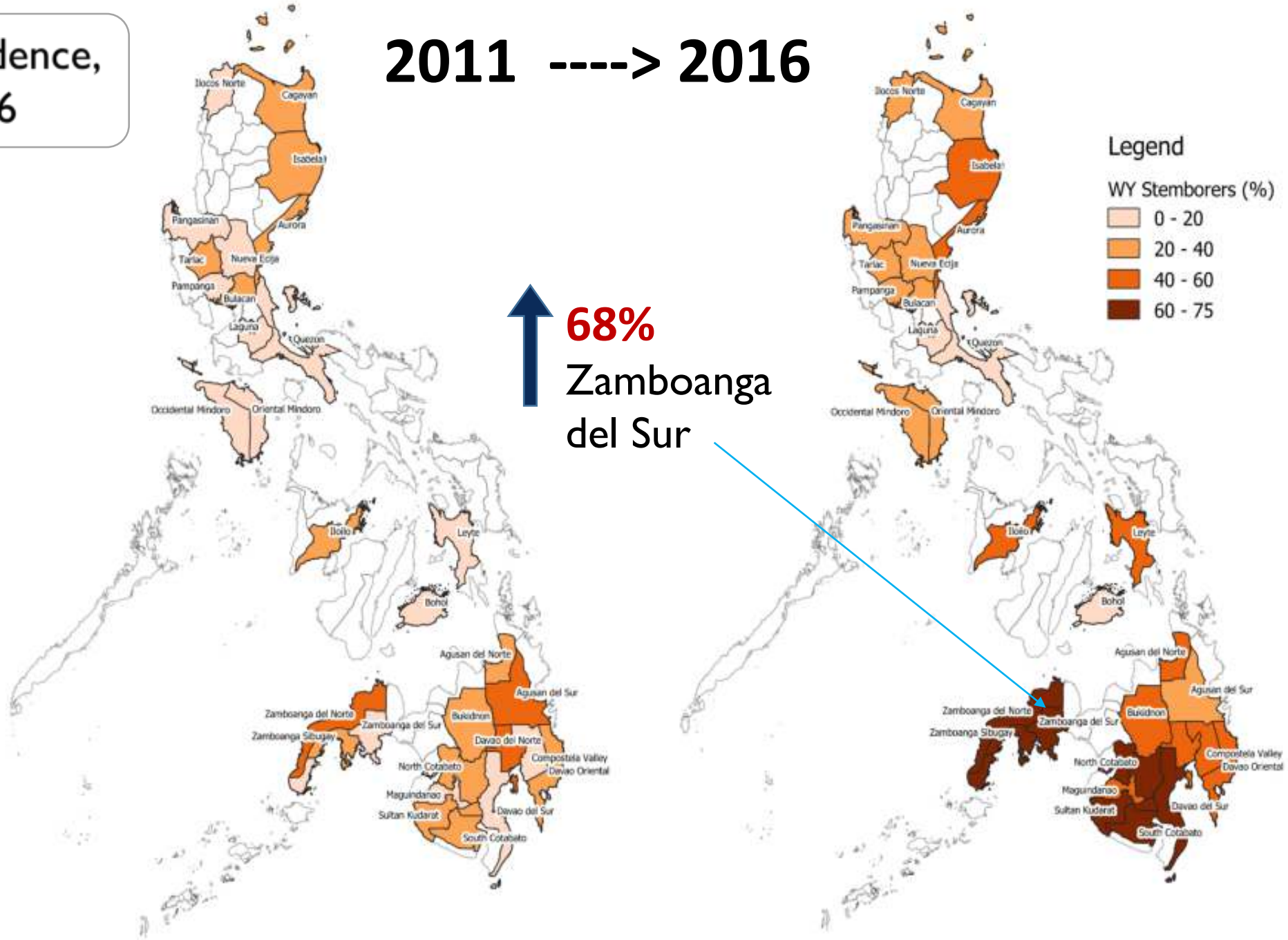
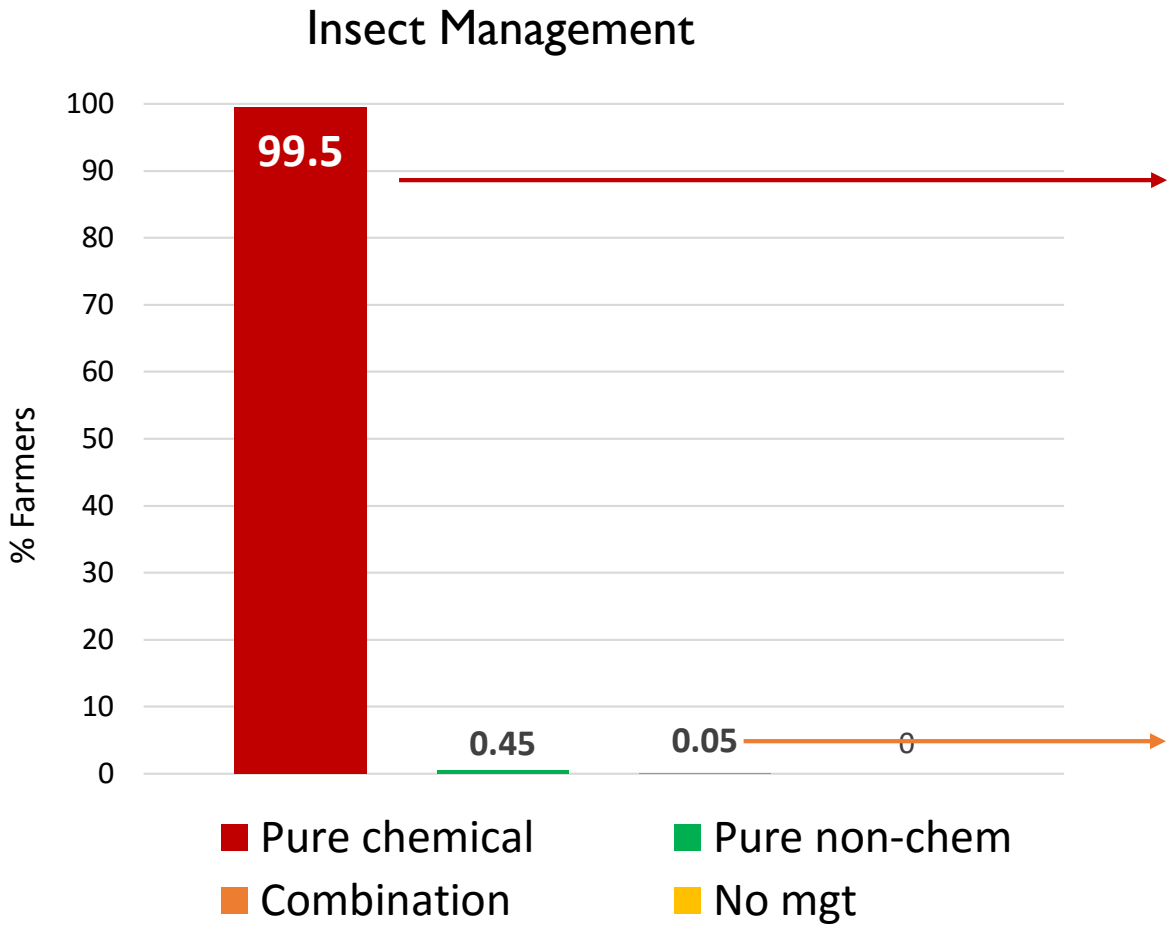
W/Y Stemborer incidence, WS 2011 vs. WS 2016

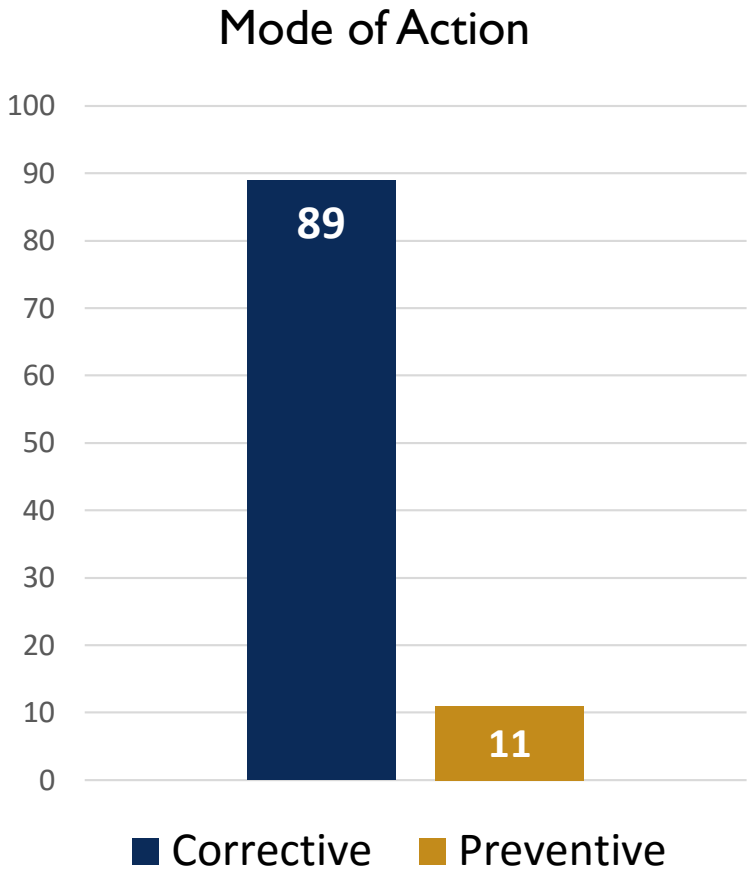
2011 ----> 2016



68%
Zamboanga del Sur

Insect Management Action of Farmers, Philippines, WS 2016





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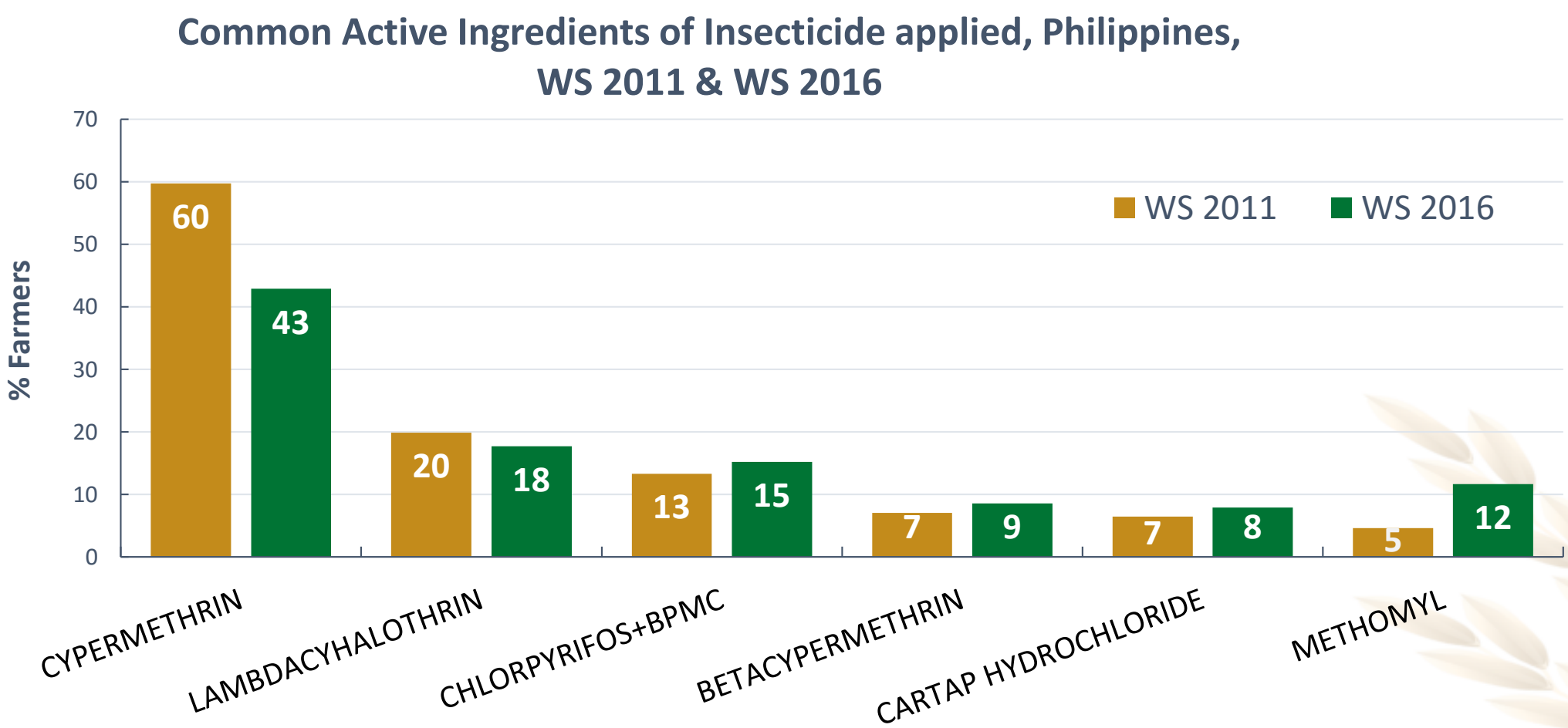
Common Insecticide AI



Toxicity Category of Commonly Used Insecticide AI

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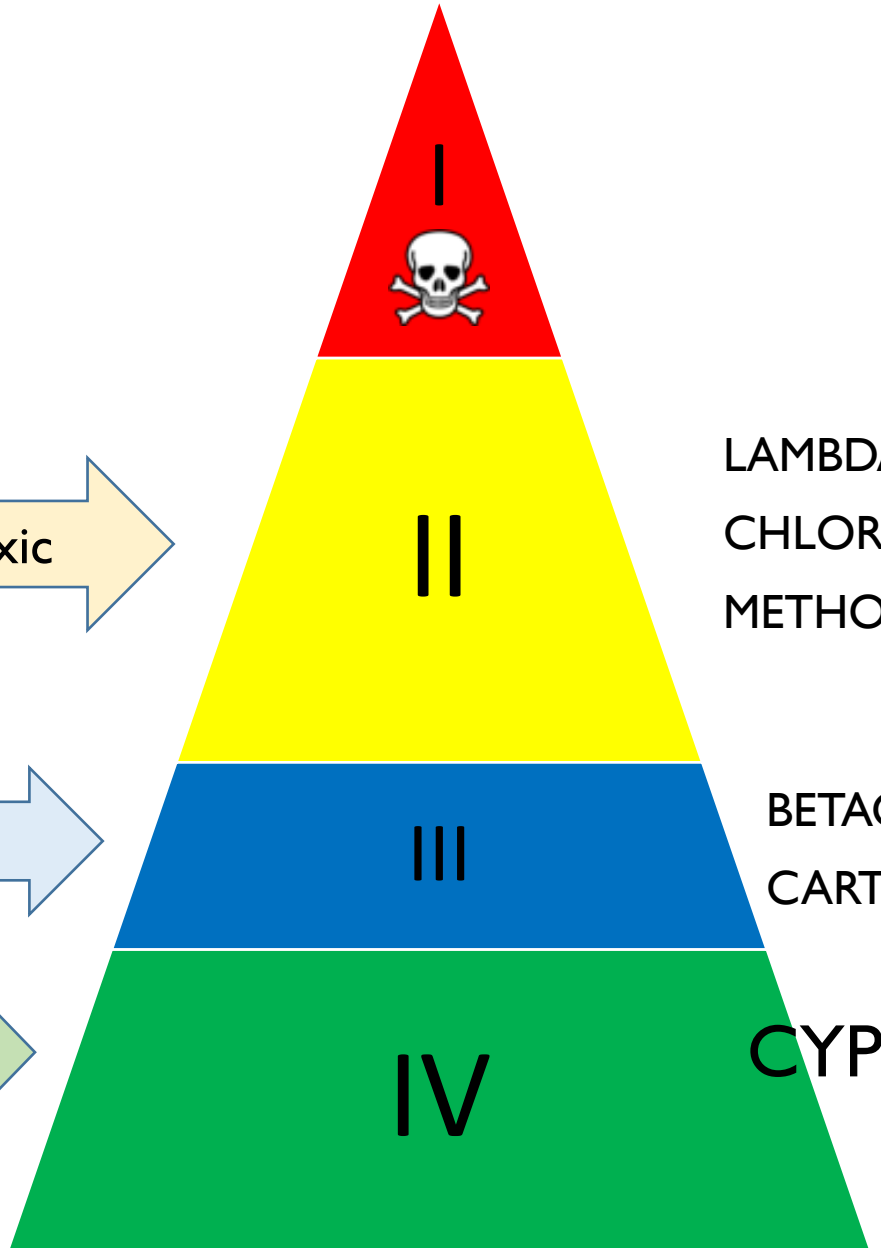


Moderately toxic

Slightly toxic

Practically non-toxic

LAMBDACYHALOTHRIN
CHLORPYRIFOS+BPMC
METHOMYL

BETACYPERMETHRIN
CARTAP HYDROCHLORIDE

CYPERMETHRIN

DISEASES

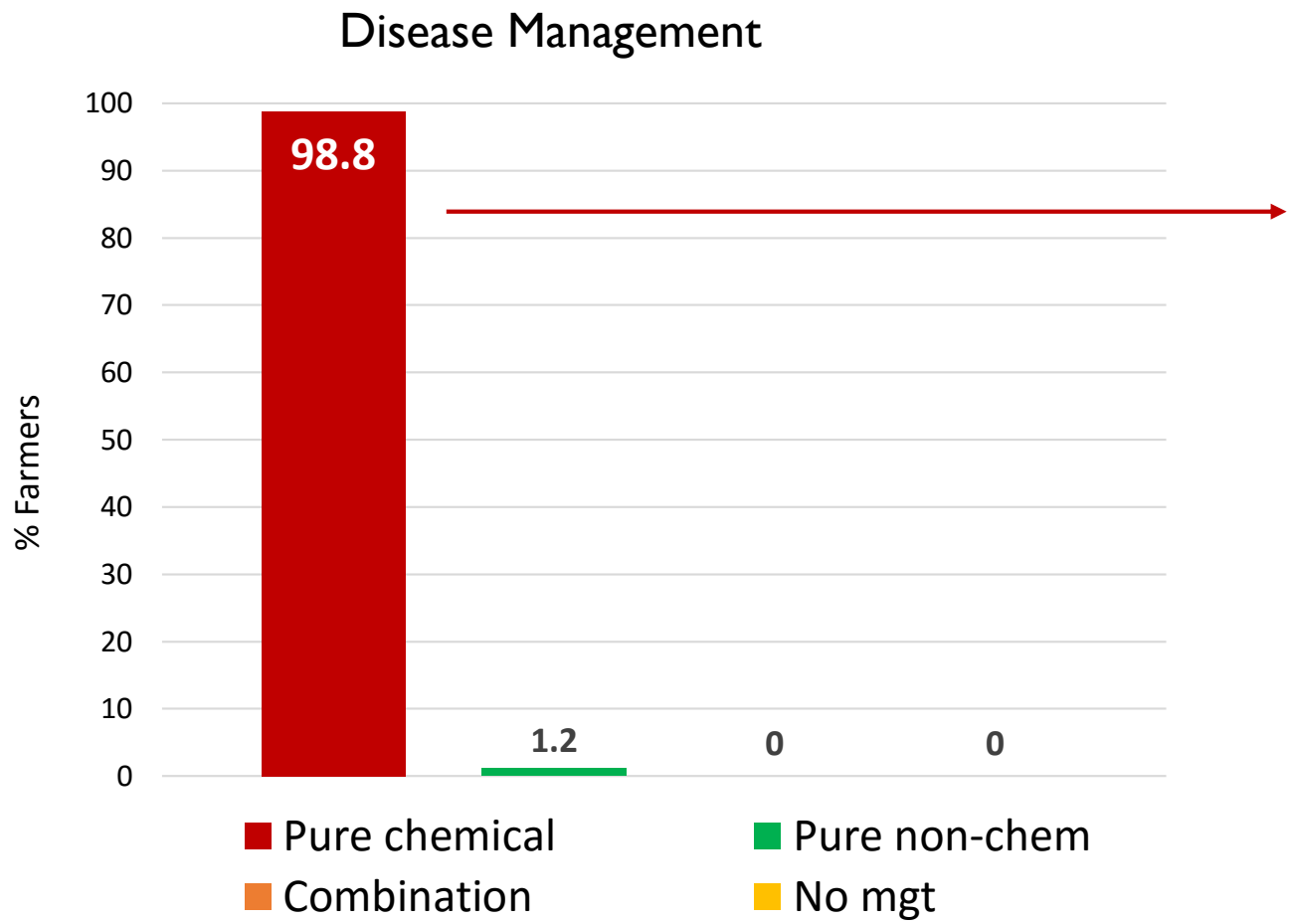
WS 2011 (% Farmers)	
Stem rot	11
Brown spot	9
Leaf blast	9
Sheath blight	9
Neck/Panicle blast	8

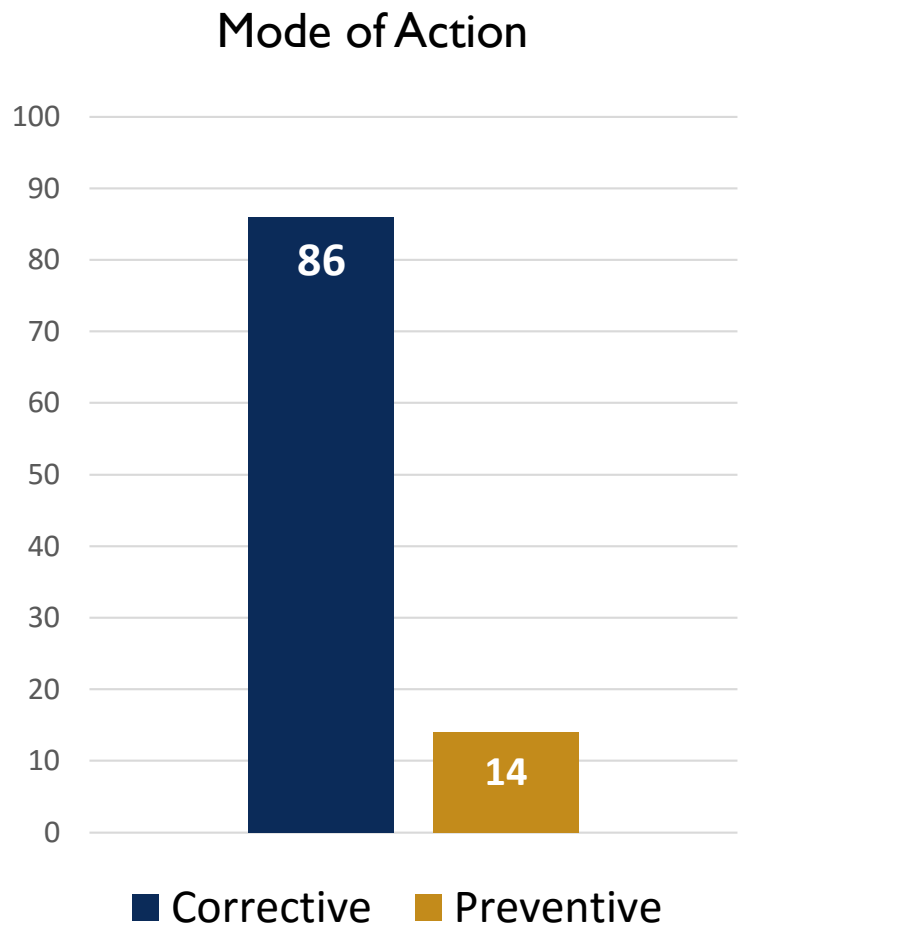
Maguindanao (35%)

WS 2016 (% Farmers)	
Narrow brown spot	6.4
Tungro	5.6
Brown spot	4
Neck/Panicle blast	3
Bacterial Leaf Blight (BLB)	3

Iloilo (16%)

Disease Management Action of Farmers, Philippines, WS 2016





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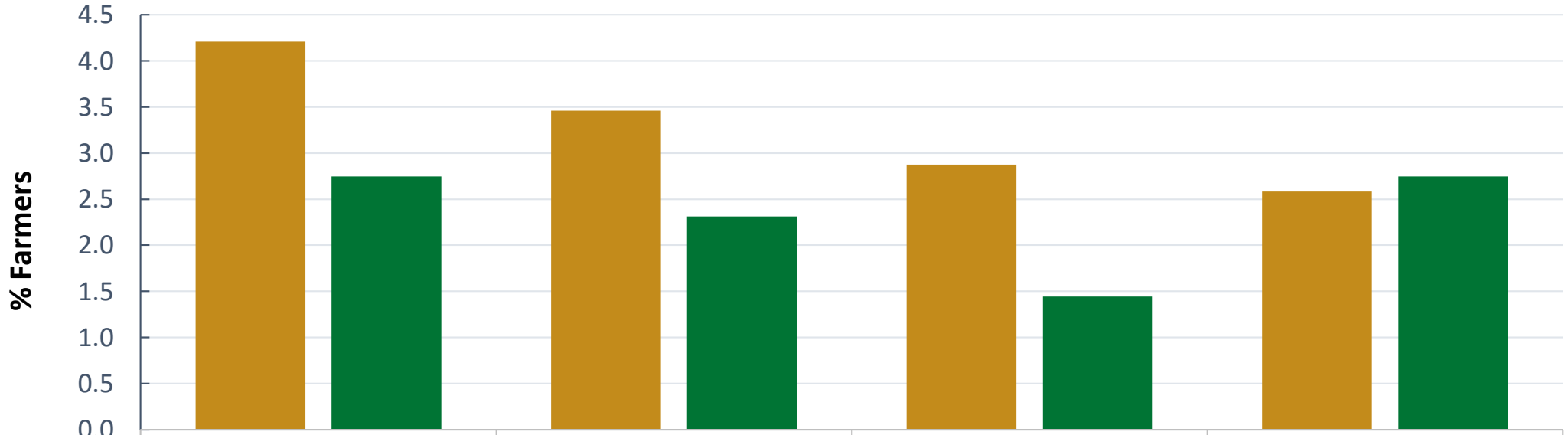
Common Fungicide AI

Common Active Ingredients of Fungicide applied, Philippines, WS 2011 & WS 2016



	COPPER HYDROXIDE	MANCOZEB	THIOPHANATE METHYL	DIFENOCONAZOLE+PROPICONAZOLE
WS 2011	4.2	3.5	2.9	2.6
WS 2016	2.7	2.3	1.4	2.7

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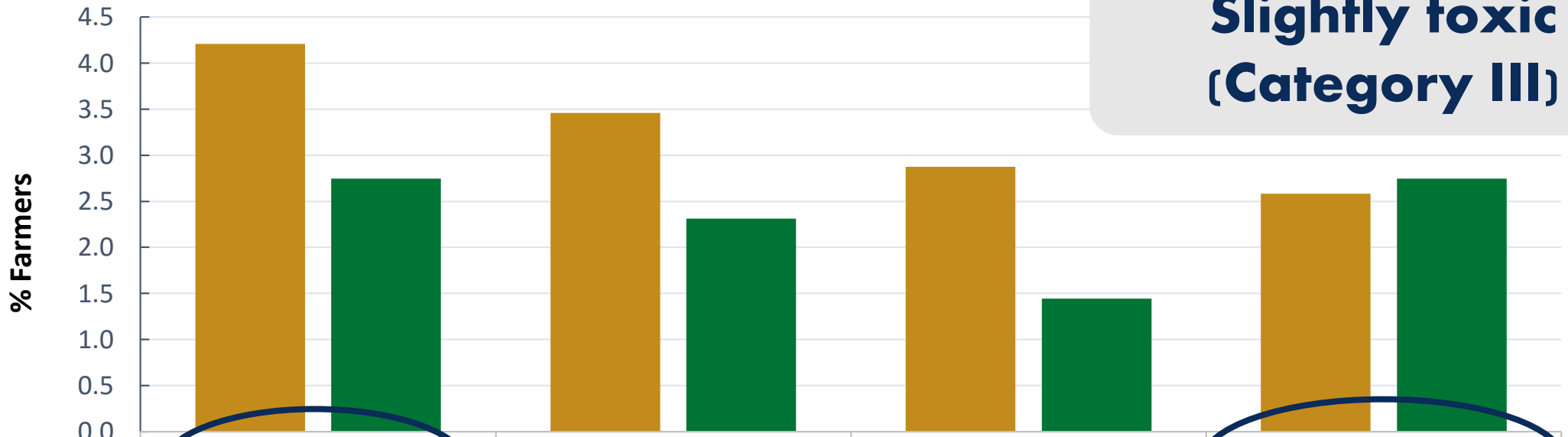
Common Fungicide AI

Common Active Ingredients of Fungicide applied, Philippines, WS 2011 & WS 2016



	COPPER HYDROXIDE	MANCOZEB	THIOPHANATE METHYL	DIFENOCONAZOLE+PROPICONAZOLE
WS 2011	4.2	3.5	2.9	2.6
WS 2016	2.7	2.3	1.4	2.7

Slightly toxic (Category III)

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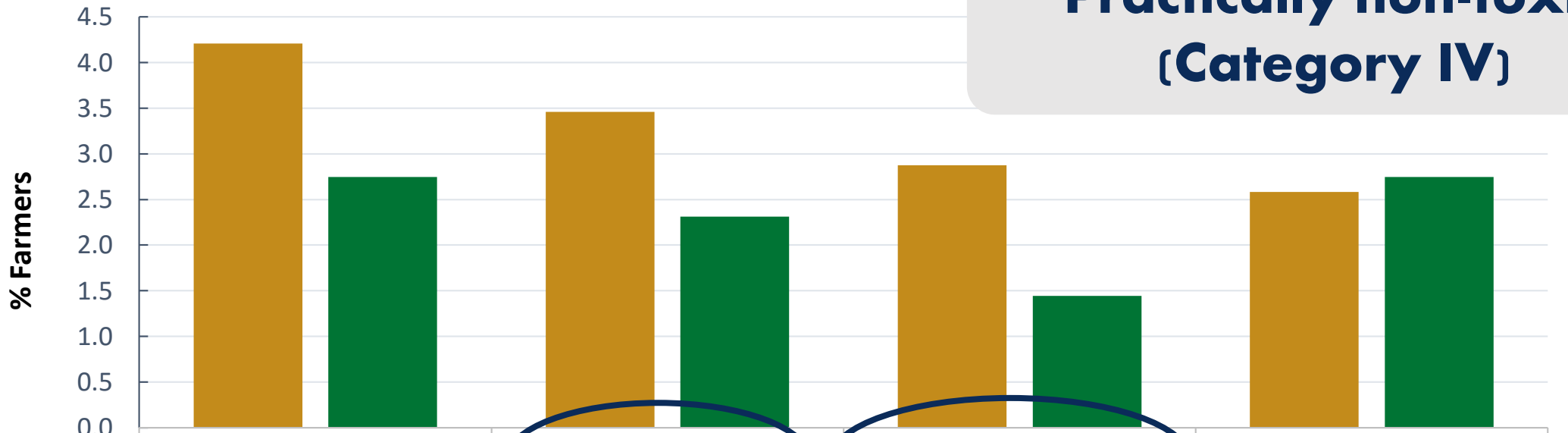
Common Fungicide AI

Common Active Ingredients of Fungicide applied, Philippines, WS 2011 & WS 2016



	COPPER HYDROXIDE	MANCOZEB	THIOPHANATE METHYL	DIFENOCONAZOLE+PROPICONAZOLE
WS 2011	4.2	3.5	2.9	2.6
WS 2016	2.7	2.3	1.4	2.7

Practically non-toxic (Category IV)

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OTHER PESTS

WS 2011 (% Farmers)	
GAS	47
Rodents	19
Birds	3

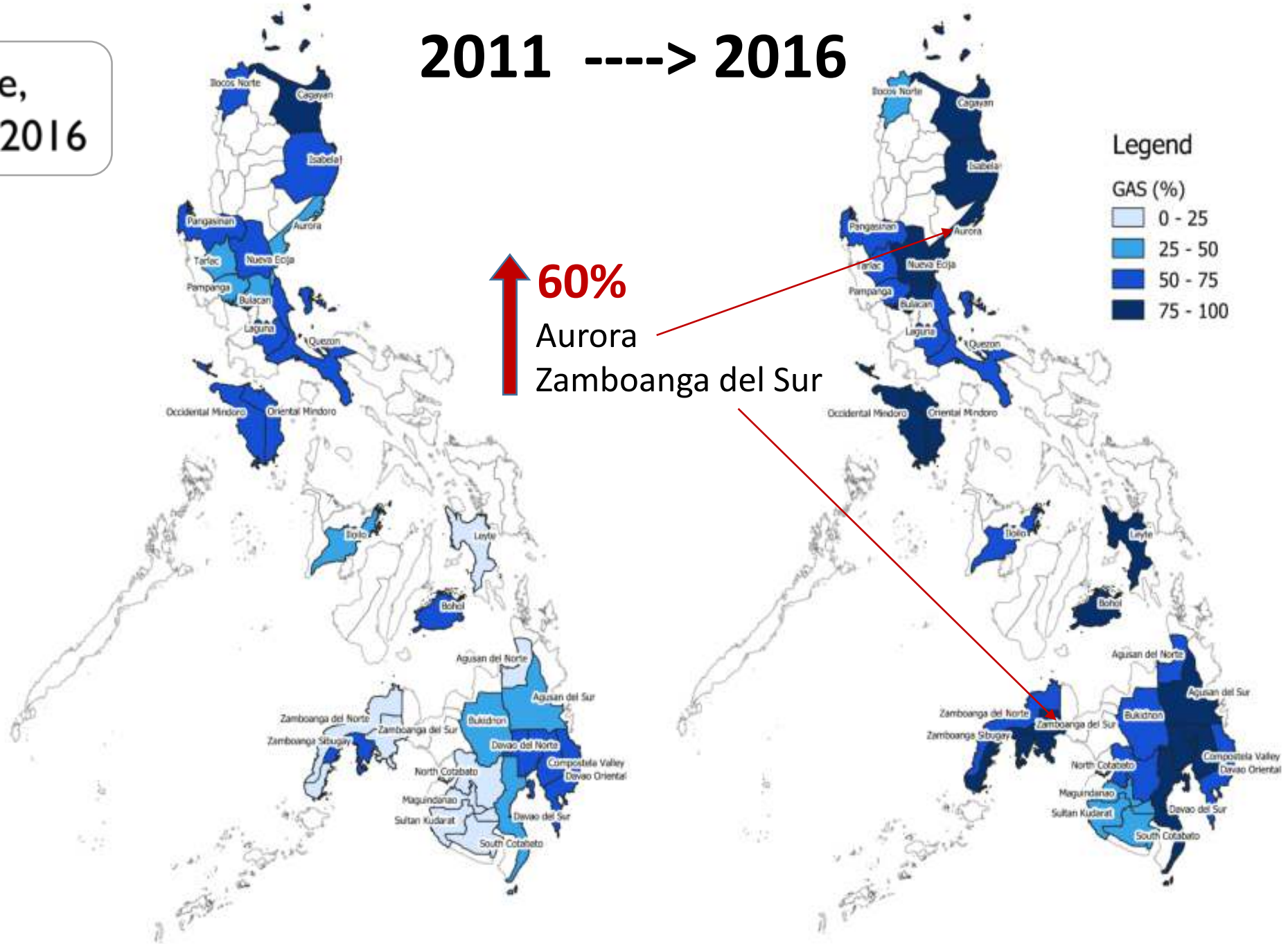
WS 2016 (% Farmers)	
GAS	72
Rodents	32
Birds	2

Cagayan (88%)

Isabela (93%)

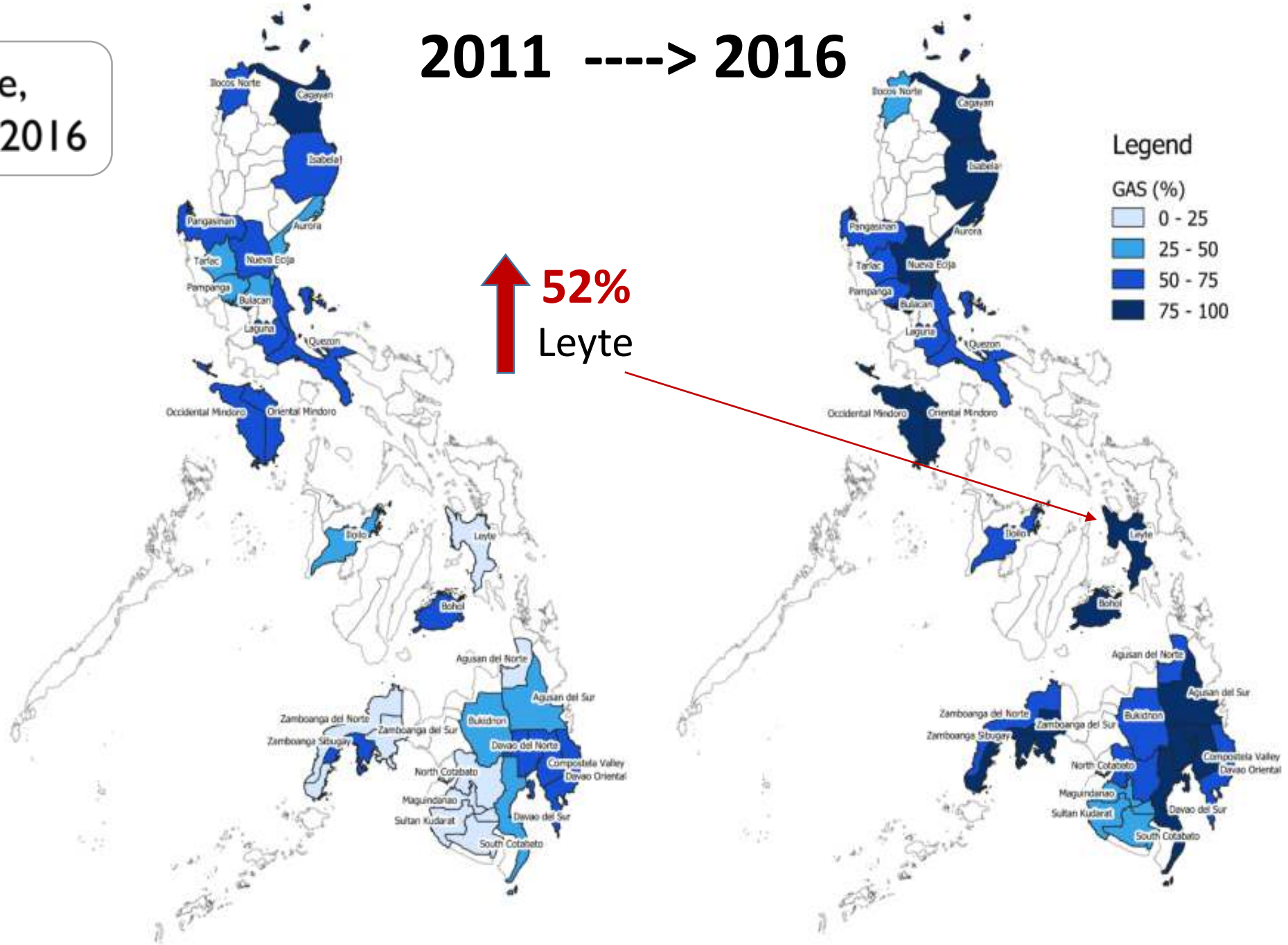
GAS incidence,
WS 2011 vs. WS 2016

2011 ----> 2016

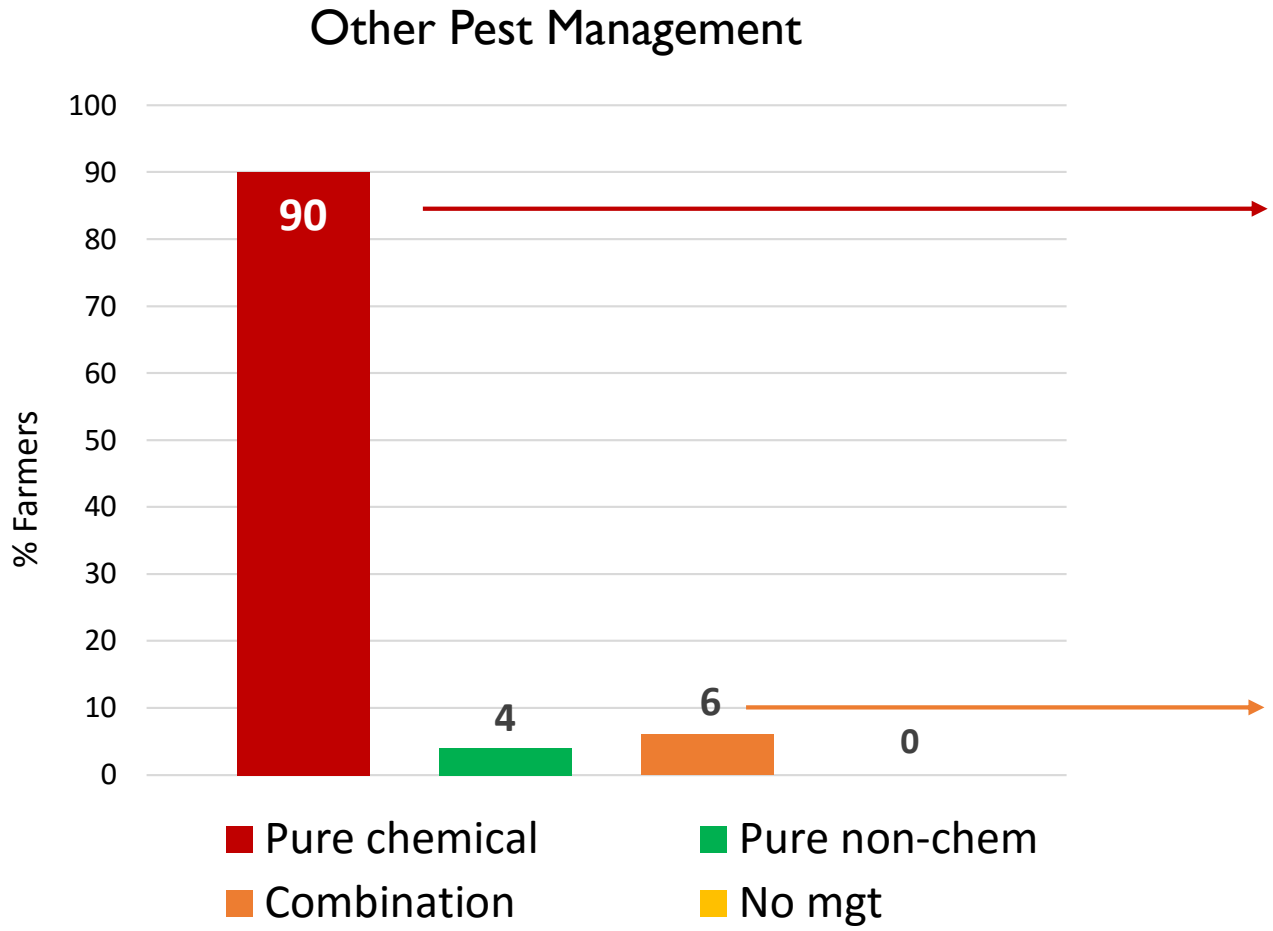


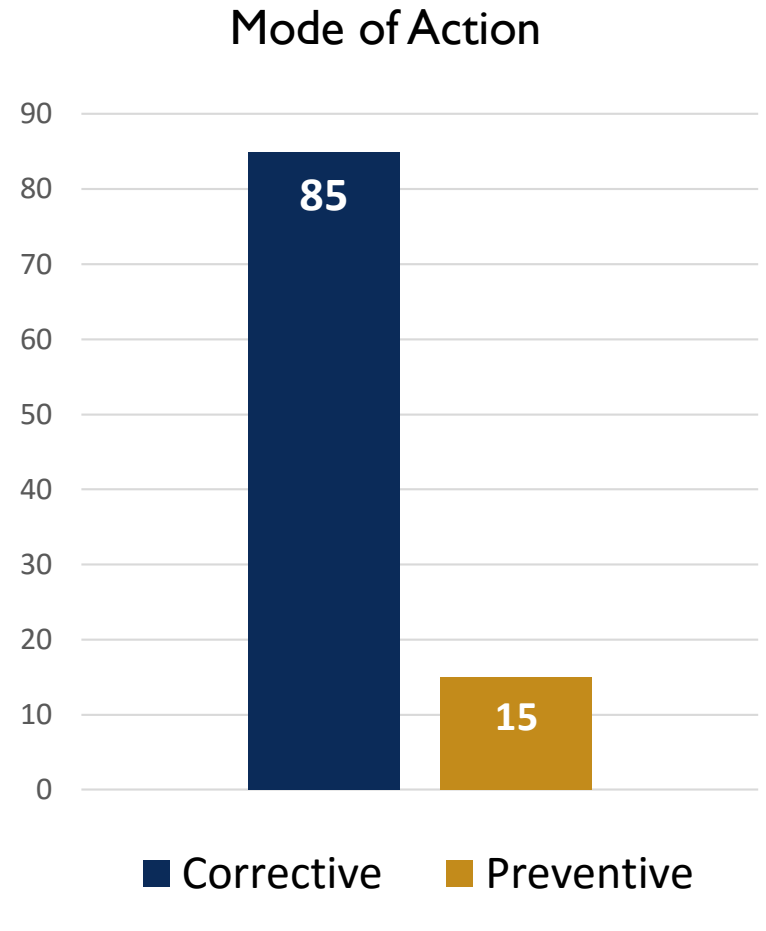
GAS incidence,
WS 2011 vs. WS 2016

2011 ----> 2016



Other Pest Management Action of Farmers, Philippines, WS 2016





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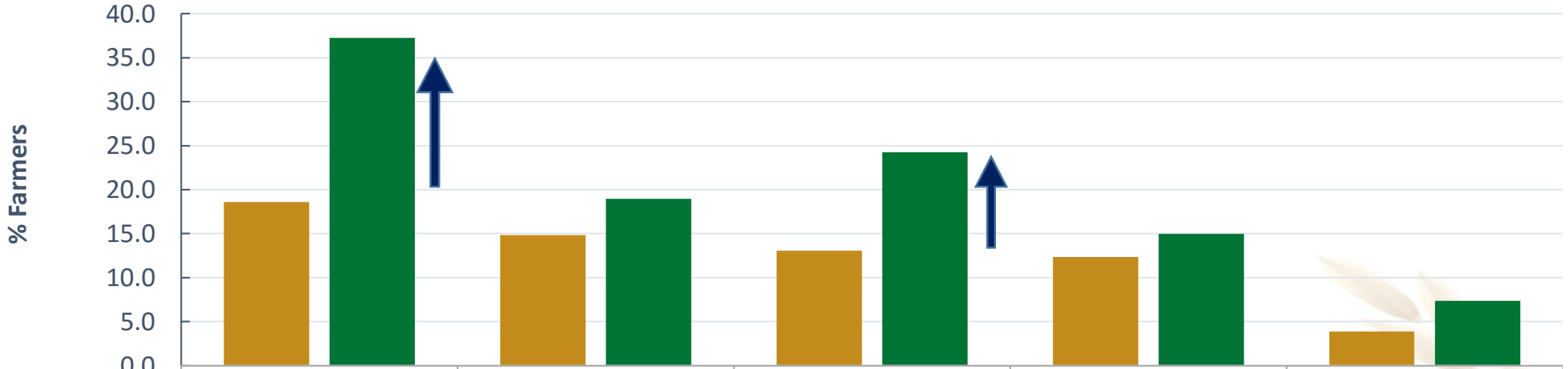
Other Pesticide AI

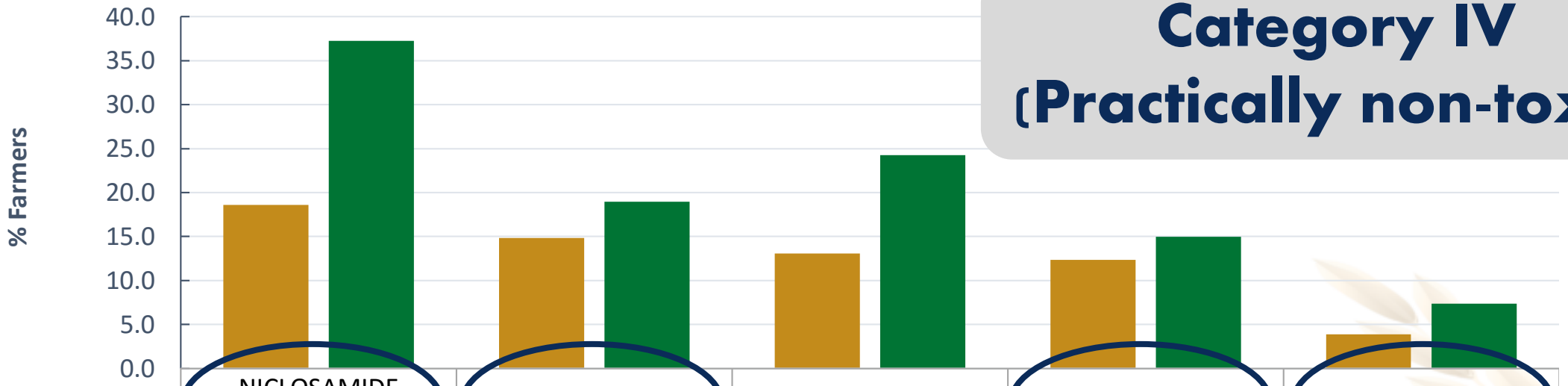
Common Active Ingredients of Other pesticide applied, Philippines, WS 2011 & WS 2016



	NICLOSAMIDE ETHANOLAMINE	NICLOSAMIDE	ZINC PHOSPHIDE	METALDEHYDE	COUMATETRALYL
WS 2011	18.6	14.8	13.1	12.3	3.9
WS 2016	37.3	18.9	24.3	15.0	7.4

Other Pesticide AI

Common Active Ingredients of Other pesticide applied, Philippines, WS 2011 & WS 2016

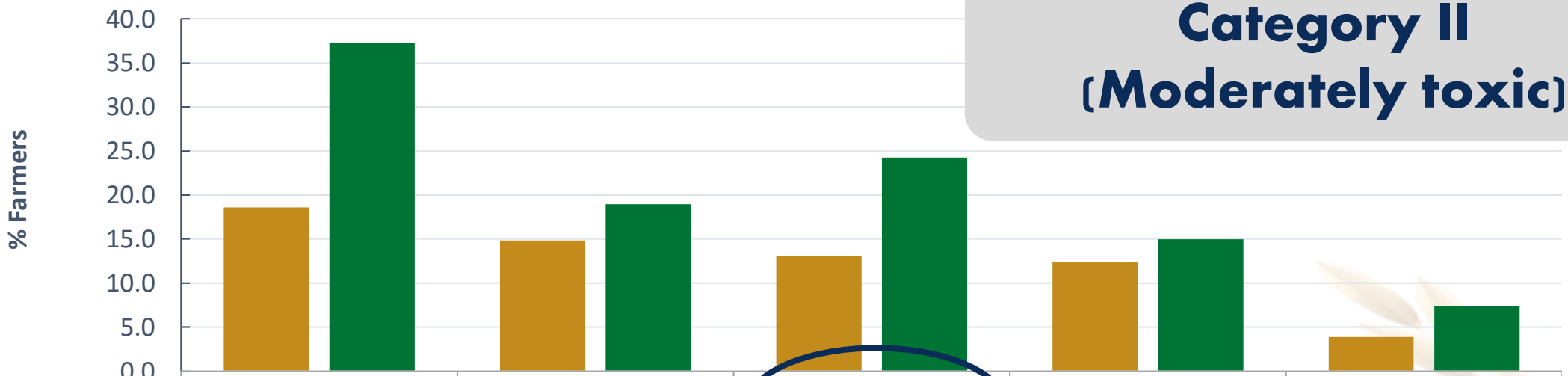


	NICLOSAMIDE ETHANOLAMINE	NICLOSAMIDE	ZINC PHOSPHIDE	METALDEHYDE	COUMATETRALYL
WS 2011	18.6	14.8	13.1	12.3	3.9
WS 2016	37.3	18.9	24.3	15.0	7.4

Category IV (Practically non-toxic)

Other Pesticide AI

Common Active Ingredients of Other pesticide applied, Philippines, WS 2011 & WS 2016



	NICLOSAMIDE ETHANOLAMINE	NICLOSAMIDE	ZINC PHOSPHIDE	METALDEHYDE	COUMATETRALYL
WS 2011	18.6	14.8	13.1	12.3	3.9
WS 2016	37.3	18.9	24.3	15.0	7.4

Category II (Moderately toxic)

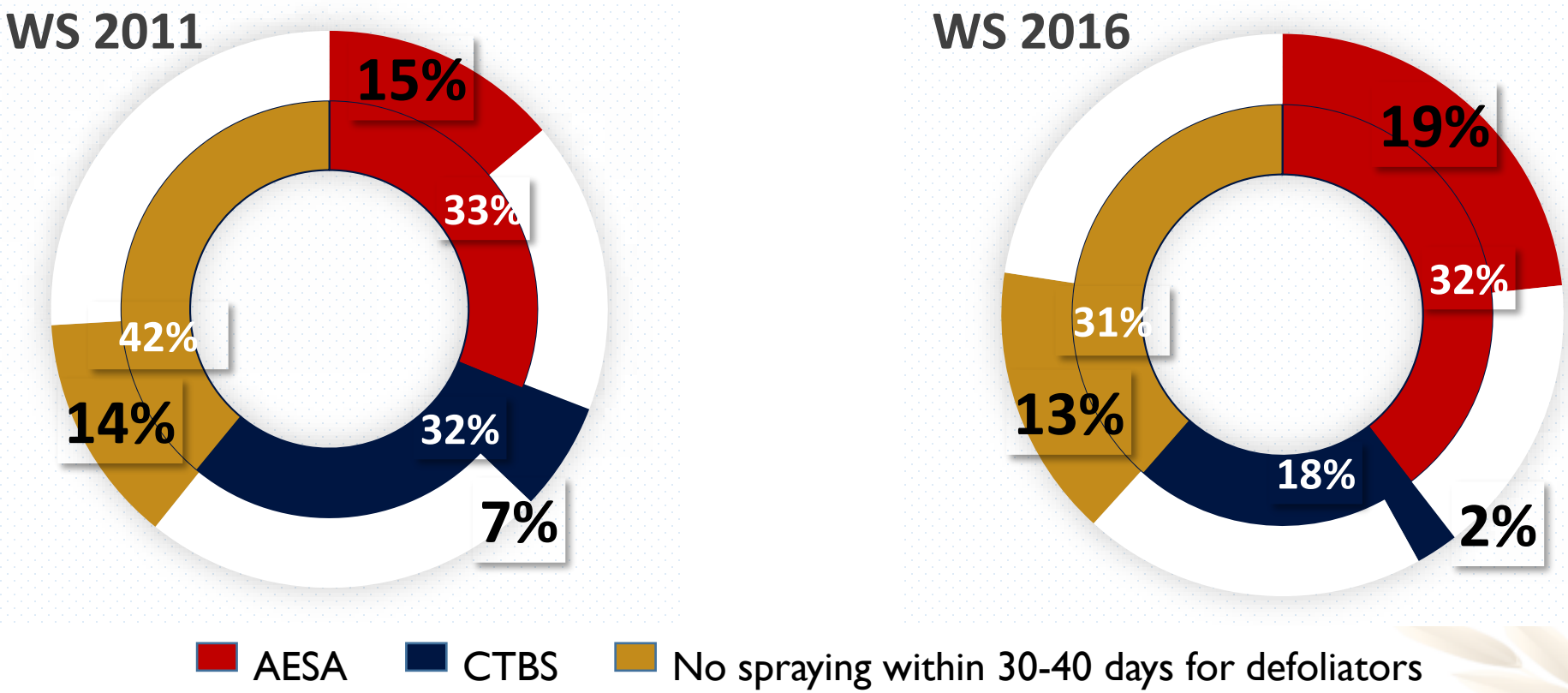
Awareness and Adoption of Pest Management Technology among farmers

Agroecosystem Analysis

Community Trap Barrier System

No spraying within 30 DAT or 40 DAS for defoliators

Awareness and Adoption of Pest Management Technology among farmers



SUMMARY & IMPLICATIONS

- There had been a slight change in pest problems observed in WS 2011 and WS 2016. Weeds were prevalent in 2011; insect pest in 2016
- *E. colona* (weeds), rice bug (insect pests), stem rot (disease), and GAS were prevalent in WS 2011
- *E. crus-galli* (weeds), WY stemborer (insect pests), narrow brown spot (disease), GAS, and rodents were prevalent in WS 2016
- Use of pure chemical application increased in 2016 which imply that more farmers are now reliant to chemicals in managing pest problems

SUMMARY & IMPLICATIONS

- Majority applied chemicals as a "Corrective" measure. However, for herbicide application, it should be as "Preventive".
- The popular herbicide AI was 2,4-D, which is for broadleaf weeds. However, the prevalent weeds were mostly GRASSES and SEDGES, which account the increase in the use of Bispyribac Sodium AI, which is a broad-spectrum post-emergent herbicide.
- Majority of farmers use non-toxic to moderately toxic chemicals.
- More than 30% of farmers are aware of the recommended technologies but only few of them adopted.

RECOMMENDATIONS

- Intensifying information dissemination on correct mode of action and usage of chemicals might need attention as well as on recommended technologies and practices related to pest management.

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