PRIME

PRE-SEMESTER BULLETIN

July 2018 to June 2019

REGION XI – Southern Mindanao Region

AT A GLANCE

Table. Mean incidence of pest injuries, percentage of weed cover, and count of insect pests by month

Region XI

	2018						2019					
	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
A. FOLIAR DISEASES												
Bacterial leaf blight	0.4	1.3	2.2	2.3	13.8	0.0	1.5	10.1	4.5	3.2	1.8	1.0
Bacterial leaf streak	0.6	0.5	1.4	2.8	0	0	0.6	1.3	2.1	0.1	0	0
Brown spot	0.3	0.6	0.6	1.6	10.3	0	0.5	0.8	2.7	1.9	6.3	0.1
Leaf blast	0.1	0.2	0.1	0.4	0.2	0	0.1	0.3	1.1	0.0	0.8	0
Red stripe	0.1	0.0	0.0	0.6	0	0	0	0	0.1	0	0	0
B. DISEASE OR PEST INJURY ON TILLERS												
Deadheart	0.9	0.9	2.4	1.4	0	0	0.8	1.3	0.2	0.1	2.9	0.5
Sheath Blight	1.8	0.1	1.1	1.8	0	0.2	0.3	2.3	1.6	0.5	4.8	0
C. DISEASE OR PEST INJURY ON PANICLES												
Neck Blast	0	0.2	1.2	2.5	17.3	0	0	0	0.9	1.2	0	0
Whitehead	0	0.2	6.4	4.4	6.4	0	0	2.5	1.3	6.3	5.2	6.7
D. SYSTEMIC DISEASE OR PEST INJURY												
Bugburn	0	0.0	0	0	0	1.6	0.2	0	0	0	0	0
Hopperburn	0	0	0	0	0	0	0	0	0	0	0	0
Tungro	0	0.1	0.5	0	0	0	0	0.0	0	0	0	0
E. INSECT COUNT												
Brown Plant Hopper	0.1	3.4	0.1	0.1	0	0	2.6	0.0	0.4	0.1	0	0
Green Leaf Hopper	0.0	0.4	0.3	0.1	0	0.0	0.5	0.2	0.4	0.2	0.3	0.2
Rice Black Bug	0.0	0.0	0.2	0.1	0	0.1	0.0	0.0	0.2	0.1	0	0.1
Rice Bug	0.1	0.2	0.3	1.8	6.0	0	0	0.4	0.8	0.9	2.3	2.2
Rice Grain Bug	0	0	0	0	0	0	0	0	0.0	0	0	0
F. RODENT INJURY	0.0	0.1	0.1	0.0	0	0	0.1	0.1	0	0.3	0	0.2
G. WEED COVER	1.0	3.6	4.2	6.8	26.7	0	2.9	5.7	8.8	2.3	21.3	1.1

LEGEND 1-5 % 5 %

Disclaimer: All the data presented in this report are based on the monthly monitoring of farmers' fields by regional data collectors of PRIME.

Monitored fields and data collectors

Municipalities surveyed:	Davao del Norte: Asuncion, Braulio E. Dujali, and Carmen Davao del Sur: Hagonoy, Magsaysay, and Matanao
Monitoring date:	July 2018 – June 2019
Number of monitoring fields:	98
Data collectors:	Erma Mausisa, Geraldine Gaterin, Kelvin Arce, Mary Leign Palma, Melvin Desamparo, Rudolph Gabriel Salang Mapanao, Victor Zeus Uyanguren, and Virgelio Gutierrez

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Growth stages

Transplanting in most of the monitored fields in the second semester of 2018 was in July and the peak of harvest was in October (Figure 1). Approximately 50% of the fields were fallow in November to December. In the first semester of 2019, the peak of crop establishment and harvest was in January and April, respectively. A large proportion of the fields were fallow in May to June 2019.

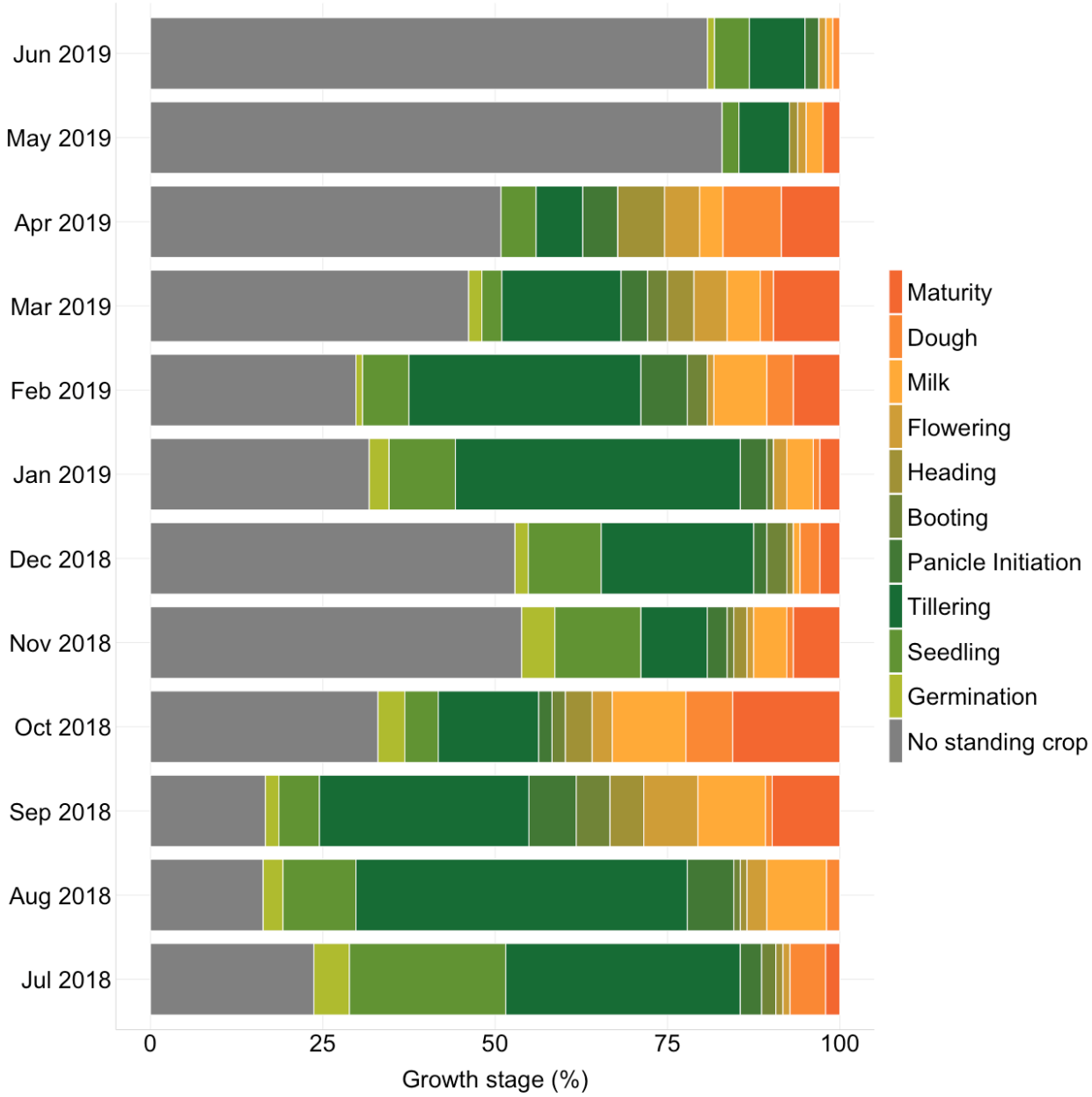

Figure 1. Proportion of crop growth stage of fields by month.

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Box plots, also known box-and-whisker plots, are presented to facilitate the visualization of the distribution or range of collected data (Figures 2 to 8). The black closed circle in or near each bar represents the mean of each pest injury. The black vertical line in each bar represents the median which refers to the midpoint of the range of data. Since it is not affected by extreme values or outliers like the mean, the median represents the most common value of a variable.

A. Foliar diseases

The highest mean and median incidence of brown spot (10%) was observed in November 2018, but only two fields were monitored in this month. The mean incidence of brown spot was 6% and the median was 2% in May 2018. In the other months, the mean incidence was lower than 2% and the median was lower than 0.5%. The mean and median incidence of bacterial blight was 14% in November 2018. In March 2019, the mean incidence was 5% but the median was only 0, which indicates that bacterial blight was not observed in most of the fields. The incidence of bacterial leaf streak, leaf blast and tungro was negligible.

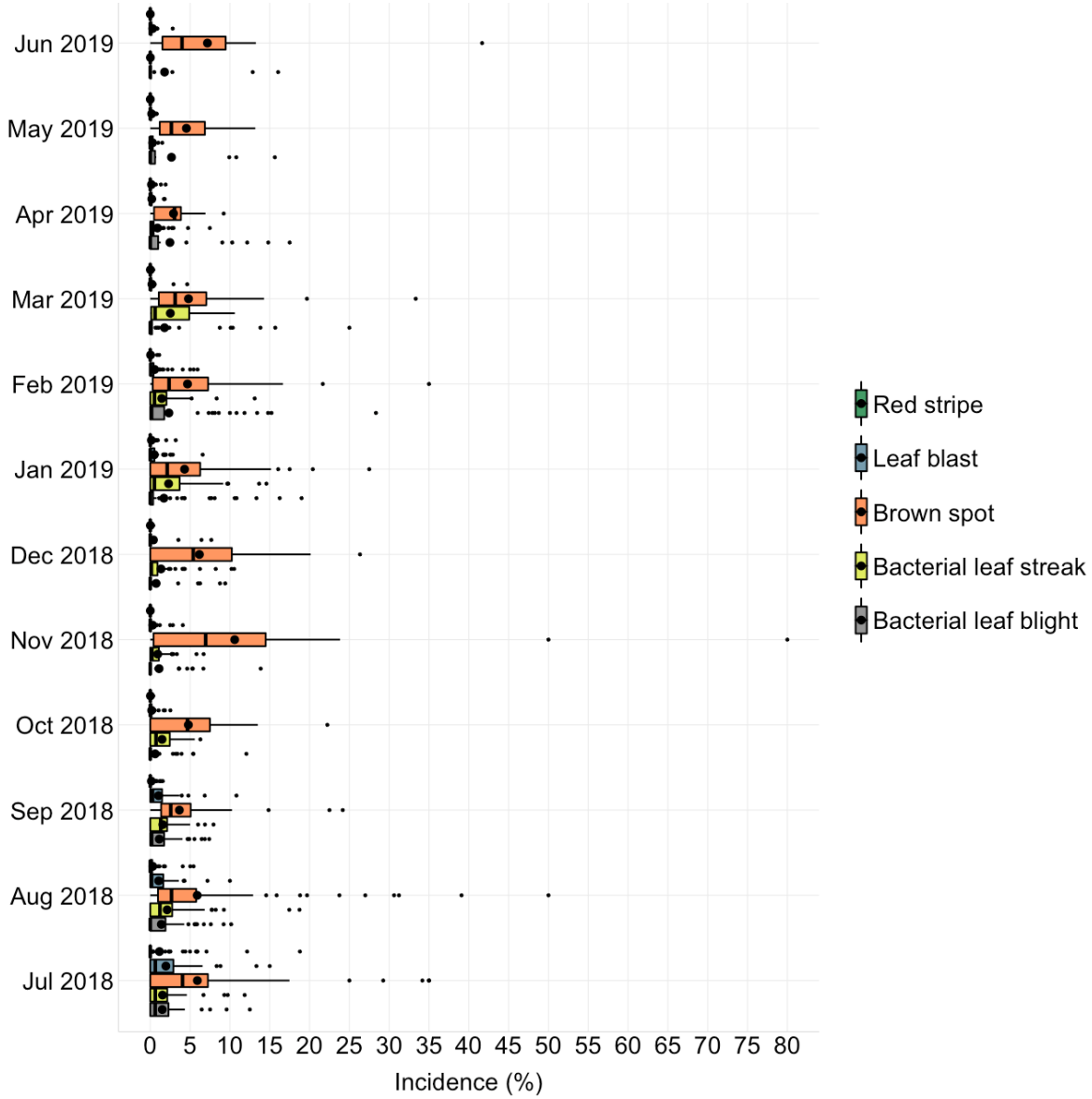

Figure 2. Incidence of foliar diseases in Region XI, July 2018 to June 2019.

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B. Insect pest injuries and diseases on tillers

The highest mean and median incidence of deadheart was observed in September 2018 and May 2019 (Figure 2). In September 2018, the mean and median incidence was 2% and 1%, respectively. The median incidence in the other months was 0 which indicates that deadheart was not observed in most of the monitored fields. The highest mean incidence of sheath blight (5%) was recorded in May 2019, but the median was only 0.36%. The median incidence was 0 in the other months.

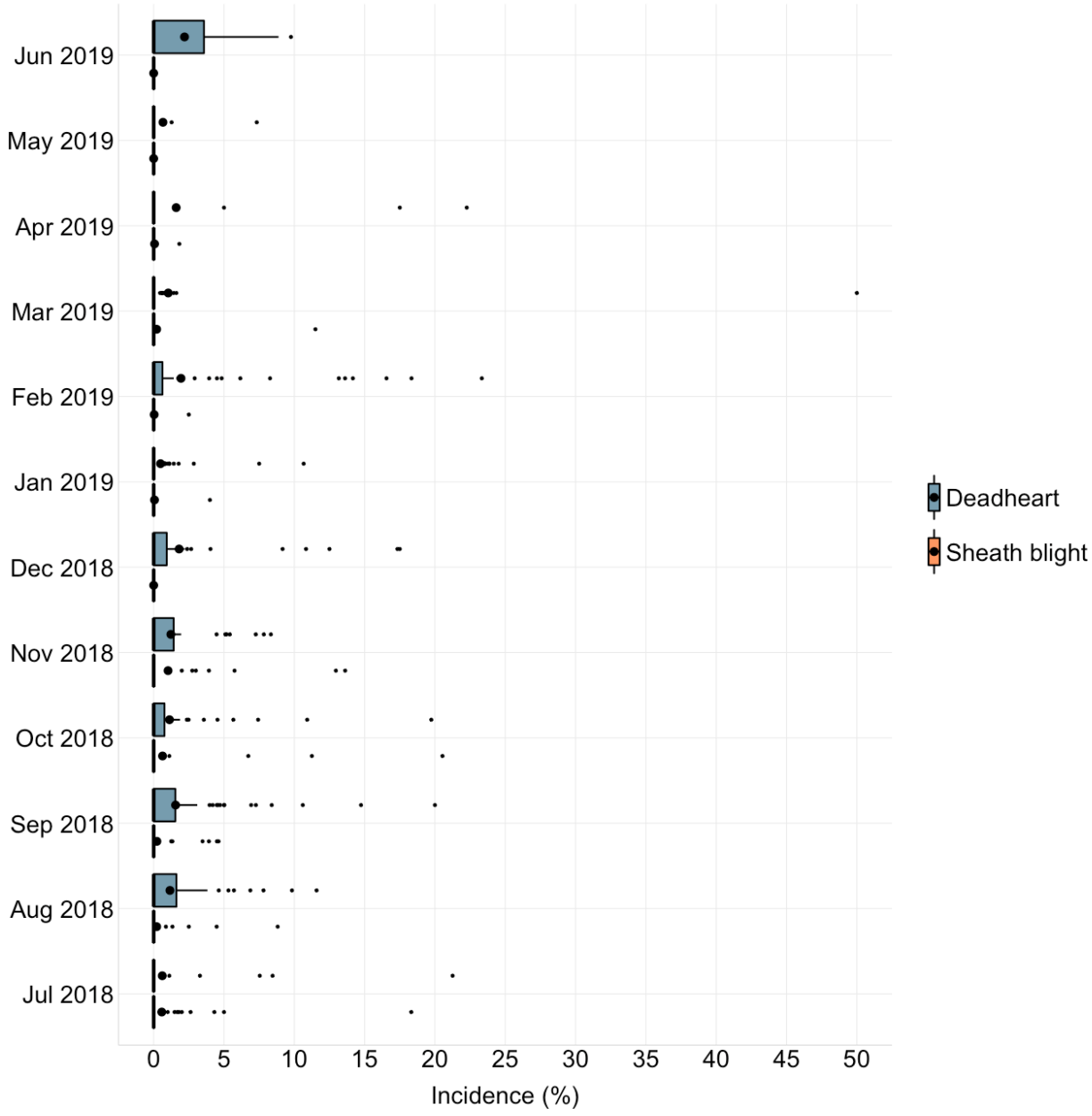

Figure 3. Incidence of deadheart and sheath blight in Region XI, July 2018 to June 2019.

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C. Insect pest injuries and diseases on panicles

The highest mean and median incidence of neck blast (17%) was observed in November 2018 (Figure 4), but only two fields were monitored in this month. The median was 0 in all the other months. The mean incidence of whitehead ranged from 5% to 7% in September 2018, November 2018, April 2019 and June 2019. The median incidence was 6% in November 2018 , April 2019 and June 2019.

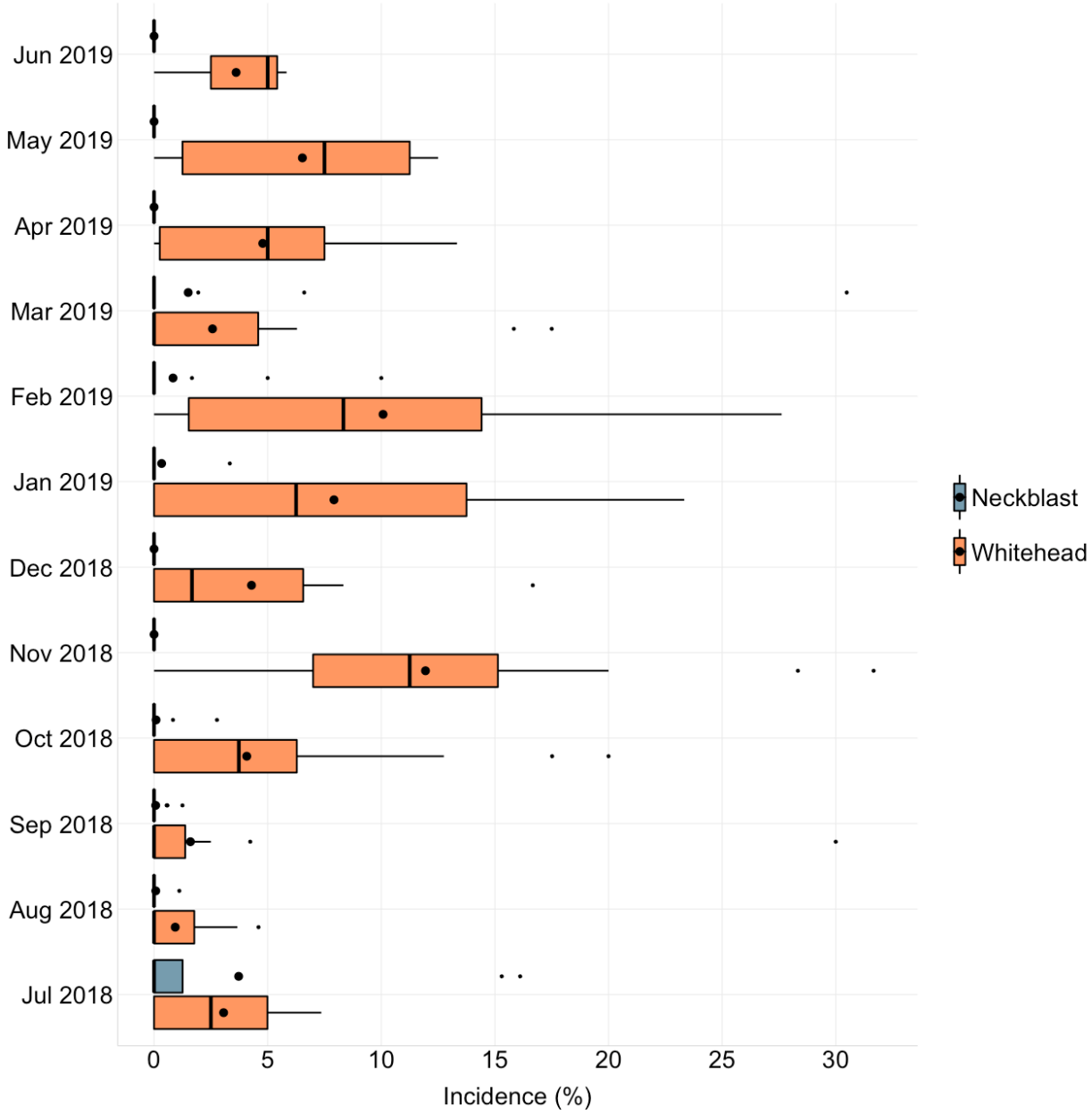

Figure 4. Incidence of neck blast and whitehead in Region XI, July 2018 to June 2019.

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D. Systemic diseases and pest injuries

The incidence of bugburn, hopperburn and tungro during the year was negligible (Figure 5)

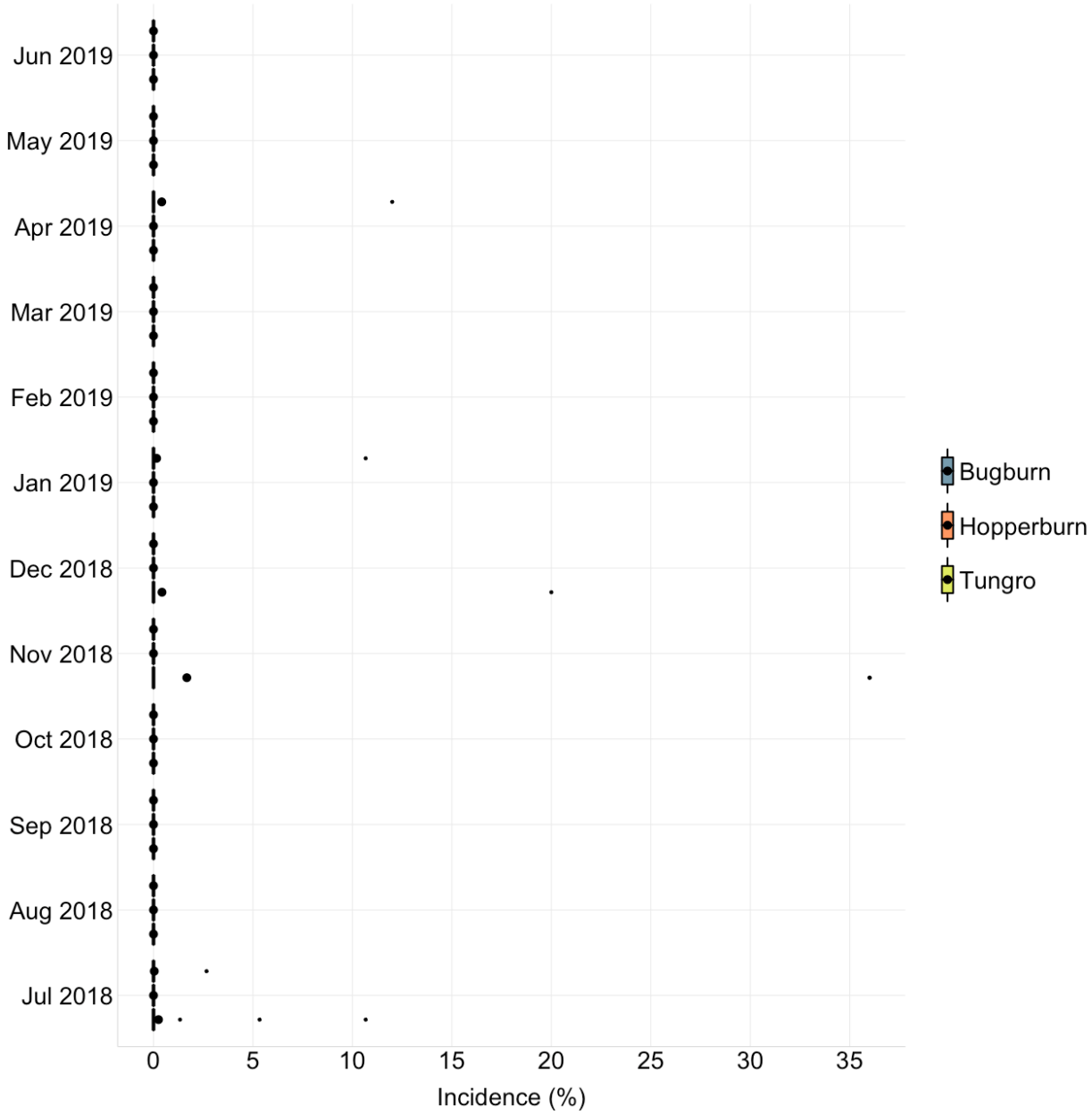

Figure 5. Incidence of bugburn, hopperburn and tungro in Region XI, July 2018 to June 2019.

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E. Count of insect pests

The highest mean and median number of rice bug (6 per square meter) was recorded in November 2018 (Figure 6). The median ranged from 0 to 2 in the other months. The highest mean and median number of brown planthopper (3 per square meter) was recorded in August 2018 and January 2019. The number of green leafhopper, rice black bug and rice grain bug was negligible.

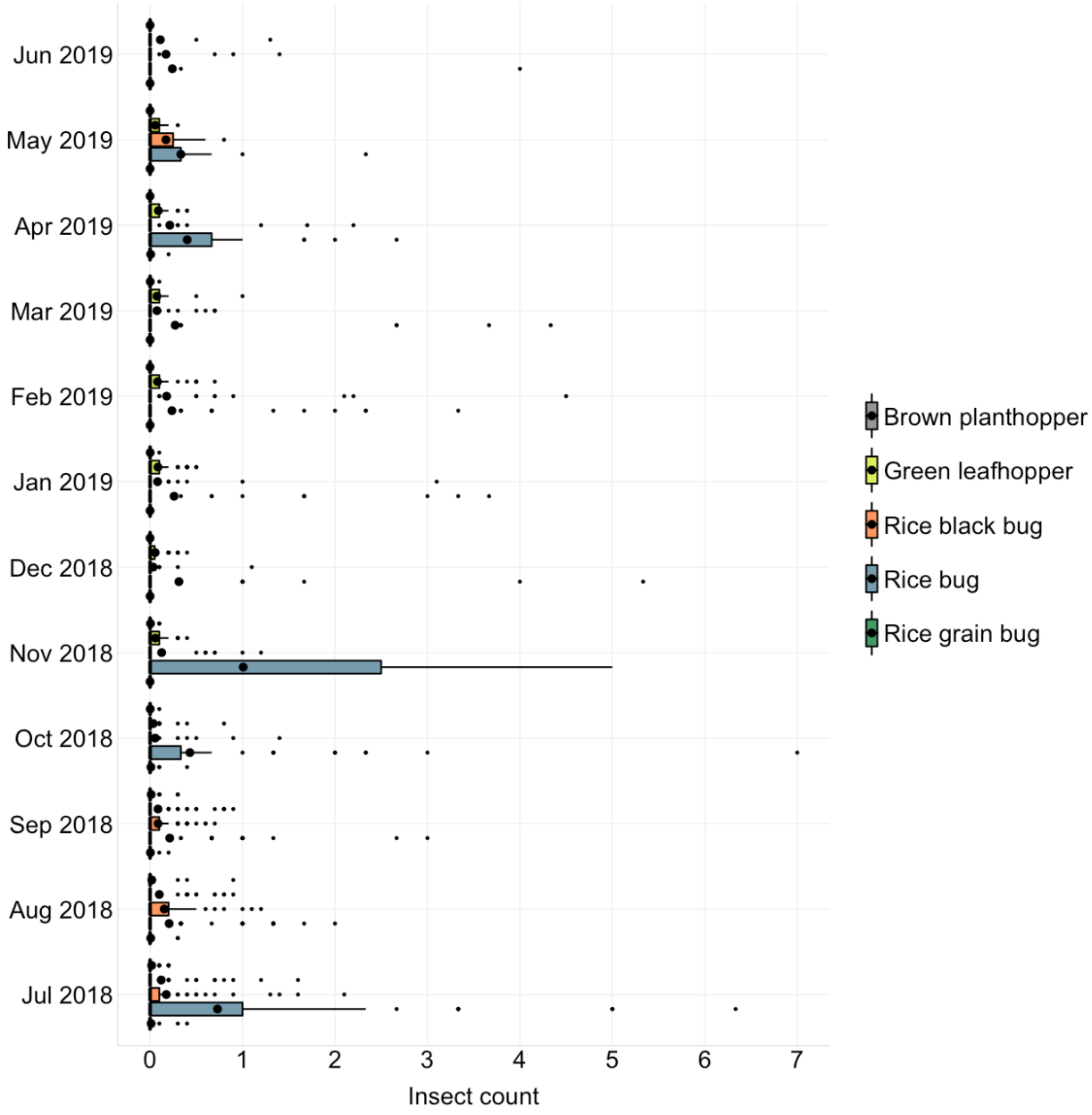

Figure 6. Count of insect pests in RegionXI, July 2018 to June 2019.

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F. Rat injury

The incidence of rat injury was negligible during the year (Figure 7).

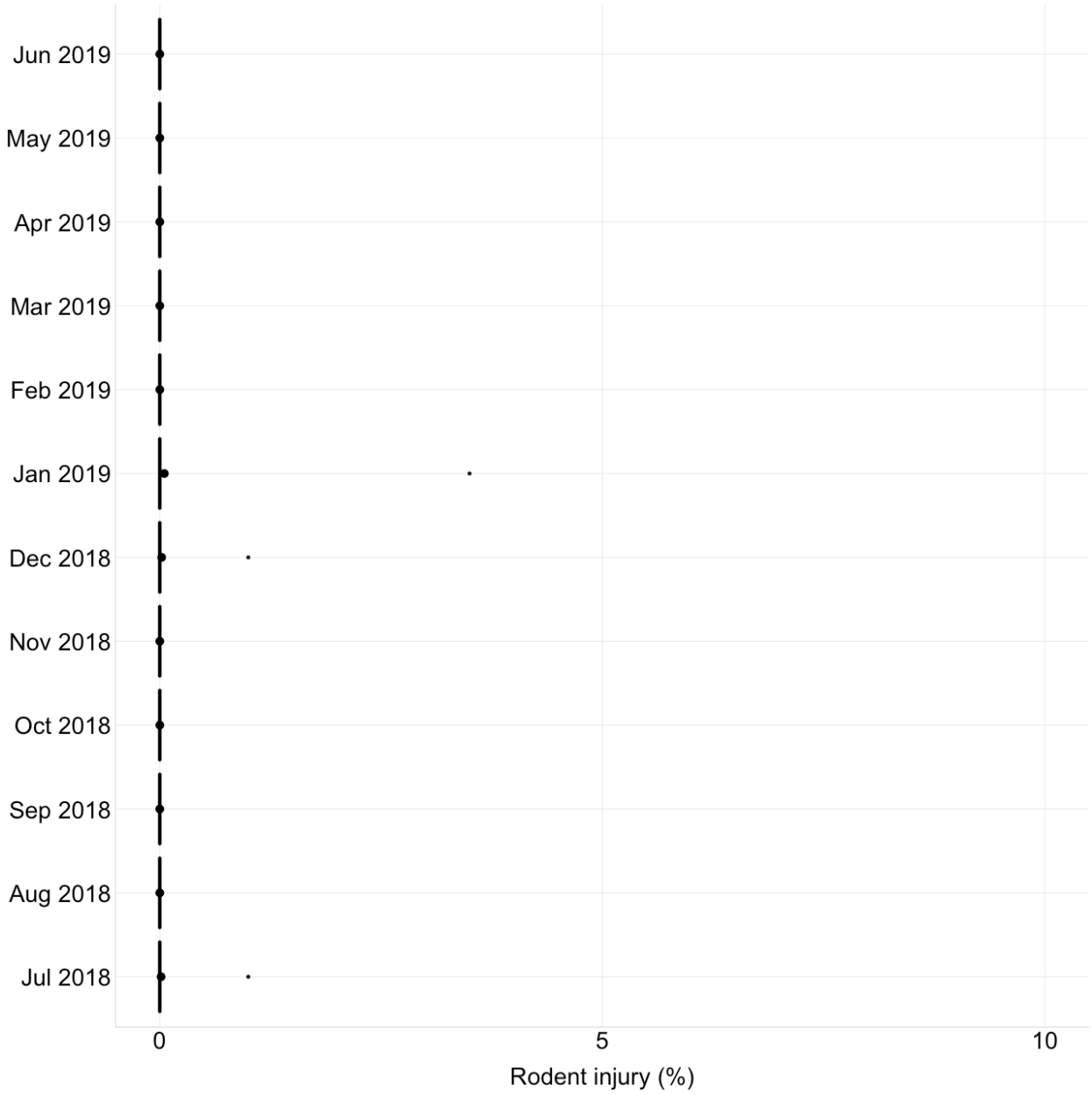

Figure 7. Incidence of rat injury in Region XI, July 2018 to June 2019.

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G. Weed cover

The mean and median percentage of weed cover was 27% in November 2018 and 21% and 16%, respectively, in May 2019 (Figure 8). The mean percentage ranged from 4% to 9% in September and October 2018 and in February and March 2019. Although some fields had more than 20% of weed cover, the median ranged from 0 to 2% in the other months,

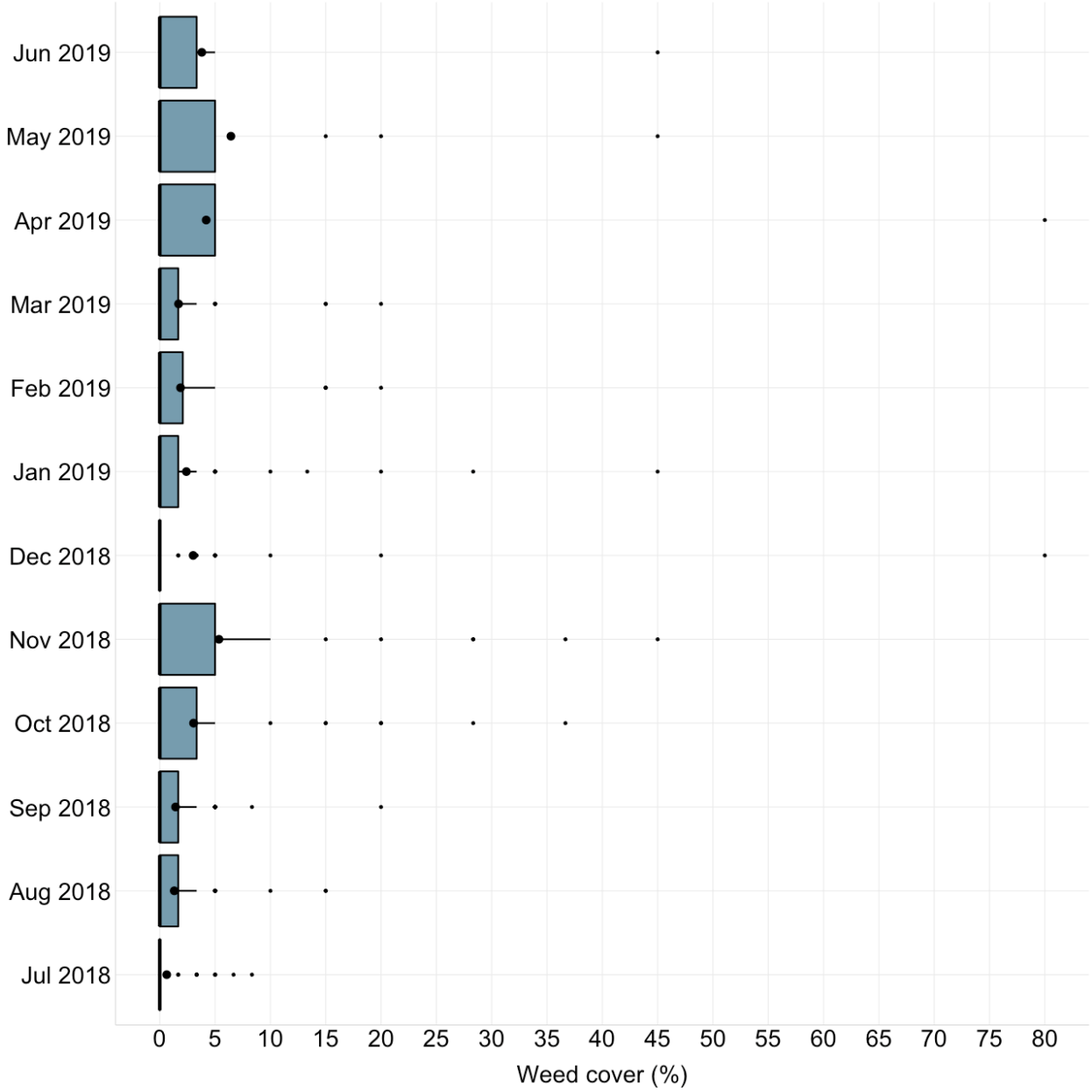

Figure 8. Percentage of weed cover in Region XI, July 2018 to June 2019.

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Management of major pests

This section describes the management of the most important pests during the reporting period. A pest is operationally considered important if the mean incidence of injury (for insect pests and diseases) or percentage of cover (for weeds) in at least one month was at least 5%, or in the case of insect pests, the count was at least 5 per square meter.

Bacterial leaf blight

1. The most practical and economical approach to manage bacterial blight is to grow a resistant variety. Rotate varieties with different levels of resistance because a resistant variety may later become susceptible if grown continuously across several cropping seasons.
2. Use optimum seeding rate (80 kg per hectare) for direct-seeded rice and optimum plant spacing (e.g., 20cm x 20cm) for transplanted rice. A dense plant canopy reduces sunlight penetration, increases leaf wetness duration and lowers temperature in the plant canopy, creating a favorable microclimate for disease development.
3. Apply only the recommended amount of nitrogen. Aside from creating a dense plant canopy, excessive amount of nitrogen makes the plant tissues softer and facilitates the entry of the pathogen into the plant.
4. Manage the application of nutrient fertilizers. Apply the required amount of nitrogen in splits instead of applying all the required amount at the start of the cropping season.
5. Apply potassium and other required nutrients in addition to nitrogen. Potassium reduces the amount of most rice diseases.
6. Apply calcium silicate fertilizer or silicon fertilizer when feasible.
7. Remove weeds from the field because the pathogen can survive and cause disease on several weed species.
8. Use copper fungicides as last resort in controlling the disease. Copper fungicides should be applied with caution because copper accumulates in the soil surface (does not leach easily) and in the roots. Copper toxicity deforms roots and may eventually reduce yield.
9. Avoid using antibiotics because bacteria easily develop resistance to antibiotics. IRRI plant pathologists have observed that several strains of isolates collected from farmers' fields in the Philippines are resistant to antibiotics.
10. If plants had severe disease, cut the stubbles close to the ground and remove them from the field. A less laborious option is to immediately plow or rotavate the field after harvest to incorporate infected stubbles and crop residues in the soil. Avoid ratooning because the pathogen can survive on ratoon. Keep the field dry during the fallow period to control the pathogens in infected stubbles.

Brown spot

1. The most practical and economical approach to manage brown spot is to grow a resistant variety.
2. When feasible, improve soil fertility by regularly monitoring nutrients in the soil. and the application of required fertilizers.
3. If possible, determine the occurrence of Akiochi, a nutritional disorder, in the field. Brown spot develops on plants affected by Akiochi and has, in fact, been used as its indicator. It is caused by excessive concentration of hydrogen sulfide in the soil and results in reduced nutrient uptake. Akiochi occurs in irrigated fields that are poorly drained and have excessive organic matter. Low decomposition of stubbles, which usually occurs in areas with short fallow period, results in high organic matter.

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4. Use certified seeds or clean seeds. Brown spot is a seedborne disease which means that growing an infected seed will result in diseased plants during the cropping season. Seeds can be cleaned manually using flotation method which consists of the following steps:
   a. Dissolve 1.5 kg salt in 40 liters of water.
   b. Soak seeds in the salt solution.
   c. Stir to float diseased, unfilled and broken seeds.
   d. Remove floating seeds by hand or with a sieve.
   e. Wash seeds 3 to 4 times with clean water.
   f. Dry in the shade thoroughly before sowing.
5. The pathogen in the seeds can be eliminated by hot water seed treatment. This treatment is not recommended if seeds had been chemically treated or primed (pre-soaked to promote germination). It consists of the following steps:
   a. Soak seeds for 1 to 3 hours in tap water.
   b. Preheat water bath. To ensure uniform temperature in the container, the amount of water should allow seeds to move freely and constantly stir the mixture. Maintain temperature by adding room temperature water.
   c. Prepare packets made of cheese cloth or nets and fill half of each packet with seeds.
   d. Transfer and soak seeds in hot water bath (52 to 57°C) for 15 mins. Put weights to keep the seeds submerged. Constantly check the temperature.
   e. Immediately remove and cool the seeds by washing with room temperature water.
   f. Spread and dry the seeds in the shade completely before sowing.

   A disadvantage of the hot water seed treatment is that it requires careful handling. However, it is more effective than fungicide treatment because fungicides may not penetrate the seed coat.
6. Use optimum seeding rate (e.g., 80 kg per hectare) for direct-seeded rice and optimum plant spacing (e.g., 20 cm x 20 cm) for transplanted rice. A dense plant canopy reduces sunlight penetration, increases leaf wetness duration and lowers temperature in the plant canopy, creating a favorable microclimate for disease development.
7. Apply potassium and other required nutrients in addition to nitrogen. Potassium reduces the amount of most rice diseases.
8. Apply calcium silicate fertilizer or silicon fertilizer before crop establishment if the soil is deficient in silicon.
9. Apply fungicides, such as azoxystrobin, ready mixture of azoxystrobin and difenoconazole, and propiconazole, as foliar spray. Seeds may also be treated with fungicides, such as carbendazin and benomyl. Use fungicides as a last resort in controlling the disease. Pathogens become resistant to chemical pesticides if these are not used properly. Avoid repetitive use of a single active ingredient and mix or alternate an active ingredient with an appropriate partner. Integrate the use of chemical pesticides with cultural practices or non-chemical methods. Wherever feasible, several strategies should be used together.
10. If possible, irrigate the field continuously until one week before harvest. Do not drain the field for long periods because drought stress favors brown spot.
11. Remove alternate hosts in the field, such as *Echinochloa* spp. and weedy rice.
12. If harvested plants had severe disease, immediately plow or rotavate the field after harvest to incorporate infected stubbles and crop residues in the soil.
13. Dry grains immediately after harvest to moisture content of at least 14% .
14. Store grains in sealed containers with moisture content of at least 14%.

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Whitehead caused by stemborer

1. Monitor the peak of yellow stem borer population in the area. This can be done using light traps. Do not transplant or sow seeds when insect population is high.
2. Consider the use of pheromones to control stemborers.
3. The most practical and economical approach to manage whitehead is to grow a resistant variety. Rotate varieties with different levels of resistance because a resistant variety may later become susceptible if grown continuously across several cropping seasons.
4. Practice planting synchrony with defined fallow period in your area. Asynchronous planting results in overlapping generations of stemborer throughout the year. If this is not possible, a farmer who intends to grow a susceptible variety should not establish his crop later than most farmers' fields.
5. Raise level of irrigation water periodically to submerge the eggs on the lower parts of the plant.
6. Remove egg masses manually in the nursery and field.
7. Manage the application of nutrient fertilizers. Apply the required amount of nitrogen in splits instead of applying all the required amount at the start of the cropping season. Nitrogen makes the plant tissues softer and facilitates penetration of stemborer larvae.
8. Remove alternate hosts during the cropping season and fallow period.
9. If high infestation occurred, cut stubbles close to the ground and dry or remove stubbles from the field. A less laborious option is to plow the field during fallow to bury stubbles.
   Do not apply insecticides during the early vegetative stage. Systemic insecticides may be applied after the vegetative stage. Systemic insecticides were found to be more effective than contact insecticides because the larvae and pupae stay inside the stem. Insecticides should be used with extreme caution. Monitor the population of stemborers and intensity of deadheart or whitehead prior to the application of insecticides because its efficacy is low when generations of stemborer overlap and when damage is already severe. Apply the insecticide according to the instructions in the product label including the pre-harvest interval (wait time between a pesticide application and when a crop can be harvested). Insecticides should be used as the last resort and should be integrated with other methods to conserve natural enemies.

Rice bug

1. Practice planting synchrony with defined fallow period. Rice bugs have been reported to mainly feed on rice at milk stage but may also feed at soft and hard dough stages. Different growth stages of neighboring fields therefore provide rice bugs with continuous source of food.
2. Ensure that land levelling, fertilizer application, and water management is uniform within a field so that all plants have the same growth stage.
3. Capture rice bugs in the early morning or late afternoon using sweep nets or sticky materials. Capturing insects may reduce the population if rice bugs are still at low density.
4. Remove weeds in the field (including levees) and surrounding areas to prevent the multiplication of rice bugs during fallow period and infestation in the succeeding cropping season. Rice bug primarily feeds on plants belonging the grass family, such as sugarcane, wheat, and *Echinochloa crus-galli.*
5. Flood the field to submerge eggs on the lower part of the plant and drive nymphs and adults to the upper part where they could be easily targeted during spraying.

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6. Place attractants, such as dead snail, dead fish or decaying meat, near the field. Because these attractants do not kill or trap insects, collect and burn insects that are lured to attractants.
7. Apply insecticides judiciously to conserve natural enemies. Wasps, grasshoppers and spiders are some of the predators that feed on adults, nymphs, and eggs.
8. Apply *Beauveria bassiana,* an entomopathogen, if available.
9. To determine whether application of insecticides is necessary, monitor the population of rice bugs from heading to hard dough stages by walking diagonally in the field in the early morning or late afternoon. Spray insecticide if 10 rice bugs are found in every 20 hills. Apply the insecticide according to the instructions in the product label including the pre-harvest interval (wait time between a pesticide application and when a crop can be harvested). Insecticides should be used as the last resort and should be integrated with other methods to conserve natural enemies. Avoid repetitive use of a single active ingredient and mix or alternate an active ingredient with an appropriate partner. Integrate the use of chemical pesticides with cultural practices or non-chemical methods. Wherever feasible, several strategies should be used together.

Weeds

1. Plow and harrow the field several times before crop establishment. If feasible, start land preparation 3−4 weeks before planting.
2. If weedy rice is a problem, apply glyphosate before land preparation or seeding. The application of pretilachlor with fenchlorim during final land preparation or levelling has also been reported to reduce weedy rice.
3. Practice stale seedbed technique. According to the IRRI Knowledge Bank (http://www.knowledgebank.irri.org/step-by-step-production/growth/weed-management/stale-seedbed-technique), this technique is done as follows:
   a. Perform tillage operations. Plow, harrow, and level the field.
   b. Stimulate weed emergence by light irrigation.
   c. Irrigate the field at least two weeks before sowing.
   d. Maintain enough soil moisture to allow weeds to germinate.
   e. Kill the emerged seedlings using non-selective herbicides (e.g., glyphosate) or light cultivation.
   f. If the soil condition is suitable for sowing, broadcast seeds without further tillage operations. Tillage could bring more weed seeds near the soil surface, thus promoting weed germination.
4. Level the field to ensure a constant water level. Avoid high spots where weeds can grow.
5. Apply pre-emergence herbicide (e.g., pretilachlor + fenclorim) 2−3 days after sowing. Follow recommended amount and timing of product and water condition in the field as indicated in the label. Do not use the same herbicide over long periods to prevent herbicide resistance.
6. If grass weeds are the main weed problem, apply early post-emergence herbicide.
7. Maintain a 2-5 cm water level in the field to minimize weed emergence. If water is sufficient, flood the fields until closure of the plant canopy.
8. Apply nitrogen fertilizer just after weeding to minimize rice-weed competition for nitrogen.
9. If feasibile, consider the use of biological control agents to suppress growth or reduce population of weeds.

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10. If feasible, plow the field during fallow to kill weeds and prevent the build-up of weed seeds in the soil.

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Region XI

July 2018	n	min	max	Pest incidence (%) 0 <1 1-5 >5
A. FOLIAR DISEASES				
Bacterial leaf blight	25	0.00	4.17	
Bacterial leaf streak	25	0.00	3.81	
Brown spot	25	0.00	2.07	
Leaf blast	25	0.00	1.15	
Red stripe	25	0.00	1.13	
B. DISEASE OR PEST INJURY ON TILLERS				
Deadheart	25	0.00	8.86	
Sheath Blight	25	0.00	39.45	
C. DISEASE OR PEST INJURY ON PANICLES				
Neck Blast	0	0	0	
Whitehead	0	0	0	
D. SYSTEMIC DISEASE OR PEST INJURY				
Bugburn	25	0.00	0.00	
Hopperburn	25	0.00	0.00	
Tungro	25	0.00	0.00	
E. INSECT COUNT				
Brown Plant Hopper	25	0.00	0.70	
Green Leaf Hopper	25	0.00	0.30	
Rice Black Bug	25	0.00	0.50	
Rice Bug	25	0.00	1.00	
Rice Grain Bug	25	0.00	0.00	
F. RODENT INJURY	25	0.00	1.00	
G. WEED COVER	25	0.00	5.00	

Annex Figure 1. Incidence of pest injuries, count of insect pests, and weed cover in July 2018. Horizontal bar shows the proportion of fields in each range of pest injury incidence, insect count, or weed cover.

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Region XI

August 2018	n	min	max	Pest incidence (%) 0	<1	1-5	>5
A. FOLIAR DISEASES							
Bacterial leaf blight	41	0.00	8.56				
Bacterial leaf streak	41	0.00	6.92				
Brown spot	41	0.00	3.62				
Leaf blast	41	0.00	2.87				
Red stripe	41	0.00	0.91				
B. DISEASE OR PEST INJURY ON TILLERS							
Deadheart	41	0.00	7.28				
Sheath Blight	41	0.00	2.86				
C. DISEASE OR PEST INJURY ON PANICLES							
Neck Blast	13	0.00	2.03				
Whitehead	13	0.00	1.34				
D. SYSTEMIC DISEASE OR PEST INJURY							
Bugburn	41	0.00	1.33				
Hopperburn	41	0.00	0.00				
Tungro	41	0.00	2.67				
E. INSECT COUNT							
Brown Plant Hopper	41	0.00	67.60				
Green Leaf Hopper	41	0.00	2.30				
Rice Black Bug	41	0.00	1.20				
Rice Bug	41	0.00	2.33				
Rice Grain Bug	41	0.00	0.00				
F. RODENT INJURY	41	0.00	1.00				
G. WEED COVER	41	0.00	80.00				

Annex Figure 2. Incidence of diseases and pest injuries, count of insect pests, and weed cover in August 2018. Horizontal bar shows the proportion of fields in each range of pest injury incidence, insect count or weed cover.

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Region XI

September 2018	n	min	max	Pest incidence (%) 0	<1	1-5	>5
A. FOLIAR DISEASES							
Bacterial leaf blight	31	0.00	8.33				
Bacterial leaf streak	31	0.00	14.98				
Brown spot	31	0.00	4.03				
Leaf blast	31	0.00	0.90				
Red stripe	31	0.00	0.31				
B. DISEASE OR PEST INJURY ON TILLERS							
Deadheart	31	0.00	13.51				
Sheath Blight	31	0.00	6.19				
C. DISEASE OR PEST INJURY ON PANICLES							
Neck Blast	11	0.00	13.10				
Whitehead	11	0.00	20.72				
D. SYSTEMIC DISEASE OR PEST INJURY							
Bugburn	31	0.00	0.00				
Hopperburn	31	0.00	0.00				
Tungro	31	0.00	8.00				
E. INSECT COUNT							
Brown Plant Hopper	31	0.00	0.90				
Green Leaf Hopper	31	0.00	1.90				
Rice Black Bug	31	0.00	2.00				
Rice Bug	31	0.00	3.33				
Rice Grain Bug	31	0.00	0.00				
F. RODENT INJURY	31	0.00	1.00				
G. WEED COVER	31	0.00	36.67				

Annex Figure 3. Incidence of diseases and pest injuries, count of insect pests, and weed cover in September 2018. Horizontal bar shows the proportion of fields in each range of pest injury incidence, insect count or weed cover.

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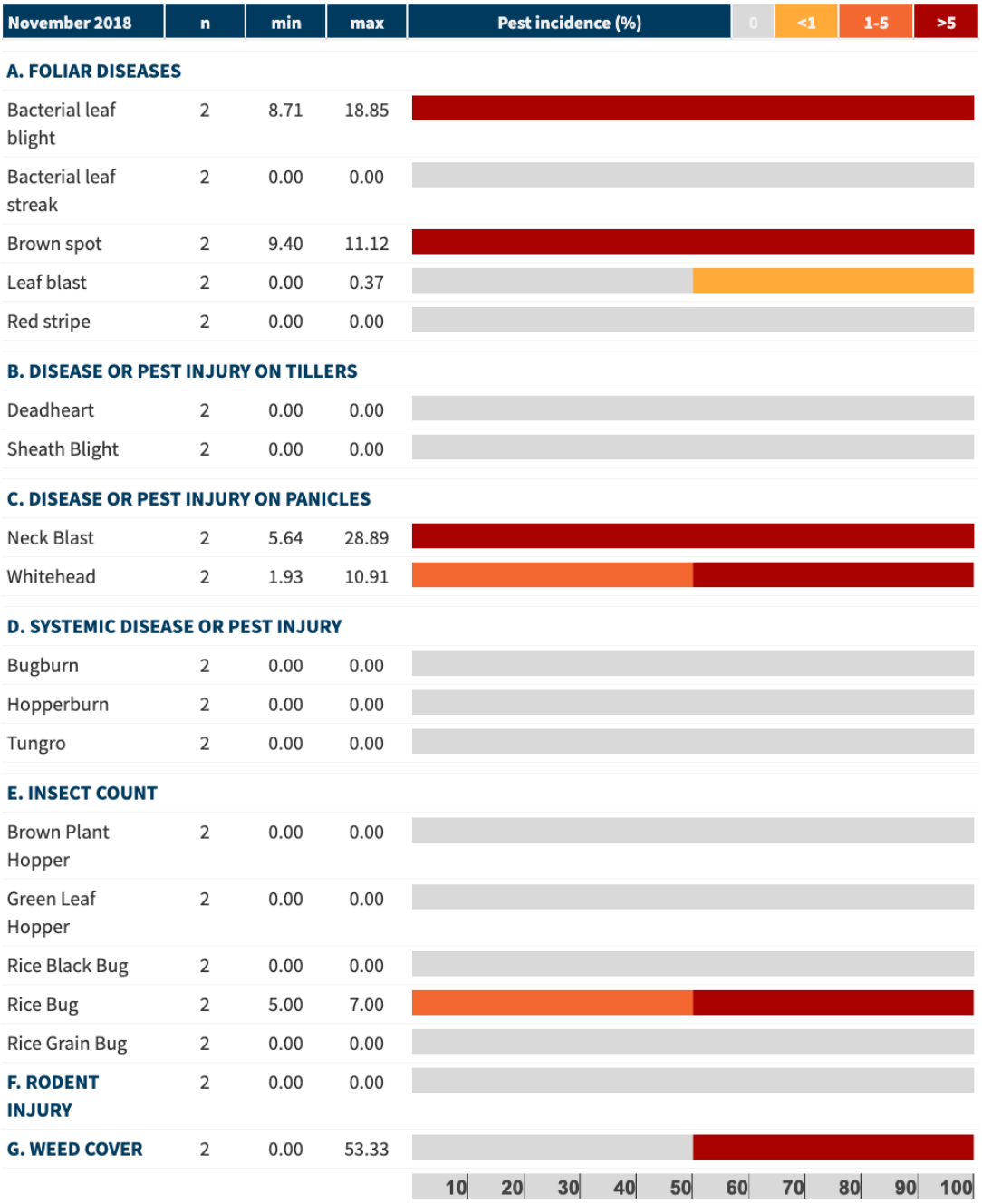
Region XI

October 2018	n	min	max	Pest incidence (%) 0 <1 1-5 >5
A. FOLIAR DISEASES				
Bacterial leaf blight	21	0.00	9.83	
Bacterial leaf streak	21	0.00	7.87	
Brown spot	21	0.00	8.84	
Leaf blast	21	0.00	1.58	
Red stripe	21	0.00	4.82	
B. DISEASE OR PEST INJURY ON TILLERS				
Deadheart	21	0.00	11.44	
Sheath Blight	21	0.00	13.91	
C. DISEASE OR PEST INJURY ON PANICLES				
Neck Blast	20	0.00	20.00	
Whitehead	20	0.00	19.94	
D. SYSTEMIC DISEASE OR PEST INJURY				
Bugburn	21	0.00	0.00	
Hopperburn	21	0.00	0.00	
Tungro	21	0.00	0.00	
E. INSECT COUNT				
Brown Plant Hopper	21	0.00	0.60	
Green Leaf Hopper	21	0.00	0.60	
Rice Black Bug	21	0.00	0.90	
Rice Bug	21	0.00	7.33	
Rice Grain Bug	21	0.00	0.00	
F. RODENT INJURY	21	0.00	1.00	
G. WEED COVER	21	0.00	60.00	

Annex Figure 4. Incidence of diseases and pest injuries, count of insect pests, and weed cover in October 2018. Horizontal bar shows the proportion of fields in each range of pest injury incidence, insect count or weed cover.

Disclaimer: All the data presented in this report are based on the monthly monitoring of farmers' fields by regional data collectors of PRIME.

Region XI



Annex Figure 5. Incidence of diseases and pest injuries, count of insect pests, and weed cover in November 2018. Horizontal bar shows the proportion of fields in each range of pest injury incidence, insect count or weed cover.

Disclaimer: All the data presented in this report are based on the monthly monitoring of farmers' fields by regional data collectors of PRIME.

Region XI

December 2018	n	min	max	Pest incidence (%) 0	<1	1-5	>5
A. FOLIAR DISEASES							
Bacterial leaf blight	17	0.00	0.16				
Bacterial leaf streak	17	0.00	0.00				
Brown spot	17	0.00	0.00				
Leaf blast	17	0.00	0.00				
Red stripe	17	0.00	0.00				
B. DISEASE OR PEST INJURY ON TILLERS							
Deadheart	17	0.00	0.00				
Sheath Blight	17	0.00	2.58				
C. DISEASE OR PEST INJURY ON PANICLES							
Neck Blast	0	0	0				
Whitehead	0	0	0				
D. SYSTEMIC DISEASE OR PEST INJURY							
Bugburn	17	0.00	26.67				
Hopperburn	17	0.00	0.00				
Tungro	17	0.00	0.00				
E. INSECT COUNT							
Brown Plant Hopper	17	0.00	0.00				
Green Leaf Hopper	17	0.00	0.10				
Rice Black Bug	17	0.00	1.50				
Rice Bug	17	0.00	0.00				
Rice Grain Bug	17	0.00	0.00				
F. RODENT INJURY	17	0.00	0.00				
G. WEED COVER	17	0.00	0.00				
				10 20 30 40 50 60 70 80 90 100			

Annex Figure 6. Incidence of diseases and pest injuries, count of insect pests, and weed cover in December 2018. Horizontal bar shows the proportion of fields in each range of pest injury incidence, insect count or weed cover.

Disclaimer: All the data presented in this report are based on the monthly monitoring of farmers' fields by regional data collectors of PRIME.

Region XI

January 2019	n	min	max	Pest incidence (%) 0 <1 1-5 >5
A. FOLIAR DISEASES				
Bacterial leaf blight	39	0.00	11.98	
Bacterial leaf streak	39	0.00	7.67	
Brown spot	39	0.00	3.64	
Leaf blast	39	0.00	2.82	
Red stripe	39	0.00	0.00	
B. DISEASE OR PEST INJURY ON TILLERS				
Deadheart	39	0.00	7.14	
Sheath Blight	39	0.00	7.57	
C. DISEASE OR PEST INJURY ON PANICLES				
Neck Blast	5	0.00	0.00	
Whitehead	5	0.00	0.00	
D. SYSTEMIC DISEASE OR PEST INJURY				
Bugburn	39	0.00	6.67	
Hopperburn	39	0.00	0.00	
Tungro	39	0.00	0.00	
E. INSECT COUNT				
Brown Plant Hopper	39	0.00	44.00	
Green Leaf Hopper	39	0.00	2.50	
Rice Black Bug	39	0.00	0.40	
Rice Bug	39	0.00	0.00	
Rice Grain Bug	39	0.00	0.00	
F. RODENT INJURY	39	0.00	3.50	
G. WEED COVER	39	0.00	28.33	

Annex Figure 7. Incidence of diseases and pest injuries, count of insect pests, and weed cover in January 2019. Horizontal bar shows the proportion of fields in each range of pest injury incidence, insect count or weed cover.

Disclaimer: All the data presented in this report are based on the monthly monitoring of farmers' fields by regional data collectors of PRIME.

Region XI

February 2019	n	min	max	Pest incidence (%) 0	<1	1-5	>5
A. FOLIAR DISEASES							
Bacterial leaf blight	39	0.00	44.35				
Bacterial leaf streak	39	0.00	6.81				
Brown spot	39	0.00	8.71				
Leaf blast	39	0.00	4.02				
Red stripe	39	0.00	0.00				
B. DISEASE OR PEST INJURY ON TILLERS							
Deadheart	39	0.00	7.44				
Sheath Blight	39	0.00	20.61				
C. DISEASE OR PEST INJURY ON PANICLES							
Neck Blast	22	0.00	0.00				
Whitehead	22	0.00	21.93				
D. SYSTEMIC DISEASE OR PEST INJURY							
Bugburn	39	0.00	0.00				
Hopperburn	39	0.00	0.00				
Tungro	39	0.00	1.33				
E. INSECT COUNT							
Brown Plant Hopper	39	0.00	0.40				
Green Leaf Hopper	39	0.00	1.60				
Rice Black Bug	39	0.00	1.10				
Rice Bug	39	0.00	12.33				
Rice Grain Bug	39	0.00	0.00				
F. RODENT INJURY	39	0.00	1.00				
G. WEED COVER	39	0.00	80.00				

Annex Figure 8. Incidence of diseases and pest injuries, count of insect pests, and weed cover in February 2019. Horizontal bar shows the proportion of fields in each range of pest injury incidence, insect count or weed cover.

Disclaimer: All the data presented in this report are based on the monthly monitoring of farmers' fields by regional data collectors of PRIME.

Region XI

March 2019	n	min	max	Pest incidence (%) 0 <1 1-5 >5
A. FOLIAR DISEASES				
Bacterial leaf blight	24	0.00	37.06	
Bacterial leaf streak	24	0.00	9.75	
Brown spot	24	0.00	14.42	
Leaf blast	24	0.00	6.43	
Red stripe	24	0.00	1.42	
B. DISEASE OR PEST INJURY ON TILLERS				
Deadheart	24	0.00	2.74	
Sheath Blight	24	0.00	11.18	
C. DISEASE OR PEST INJURY ON PANICLES				
Neck Blast	21	0.00	4.76	
Whitehead	21	0.00	8.75	
D. SYSTEMIC DISEASE OR PEST INJURY				
Bugburn	24	0.00	0.00	
Hopperburn	24	0.00	0.00	
Tungro	24	0.00	0.00	
E. INSECT COUNT				
Brown Plant Hopper	24	0.00	1.60	
Green Leaf Hopper	24	0.00	2.40	
Rice Black Bug	24	0.00	1.70	
Rice Bug	24	0.00	5.00	
Rice Grain Bug	24	0.00	0.30	
F. RODENT INJURY	24	0.00	0.00	
G. WEED COVER	24	0.00	80.00	

Annex Figure 9. Incidence of diseases and pest injuries, count of insect pests, and weed cover in March 2019. Horizontal bar shows the proportion of fields in each range of pest injury incidence, insect count or weed cover.

Disclaimer: All the data presented in this report are based on the monthly monitoring of farmers' fields by regional data collectors of PRIME.

Region XI

April 2019	n	min	max	Pest incidence (%) 0	<1	1-5	>5
A. FOLIAR DISEASES							
Bacterial leaf blight	10	0.00	9.35				
Bacterial leaf streak	10	0.00	0.42				
Brown spot	10	0.00	6.61				
Leaf blast	10	0.00	0.17				
Red stripe	10	0.00	0.00				
B. DISEASE OR PEST INJURY ON TILLERS							
Deadheart	10	0.00	0.59				
Sheath Blight	10	0.00	3.33				
C. DISEASE OR PEST INJURY ON PANICLES							
Neck Blast	8	0.00	5.99				
Whitehead	8	2.29	10.50				
D. SYSTEMIC DISEASE OR PEST INJURY							
Bugburn	10	0.00	0.00				
Hopperburn	10	0.00	0.00				
Tungro	10	0.00	0.00				
E. INSECT COUNT							
Brown Plant Hopper	10	0.00	0.30				
Green Leaf Hopper	10	0.00	2.40				
Rice Black Bug	10	0.00	0.50				
Rice Bug	10	0.00	4.33				
Rice Grain Bug	10	0.00	0.00				
F. RODENT INJURY	10	0.00	1.00				
G. WEED COVER	10	0.00	10.00				

Annex Figure 10. Incidence of diseases and pest injuries, count of insect pests, and weed cover in April 2019. Horizontal bar shows the proportion of fields in each range of pest injury incidence, insect count or weed cover.

Disclaimer: All the data presented in this report are based on the monthly monitoring of farmers' fields by regional data collectors of PRIME.

Region XI

May 2019	n	min	max	Pest incidence (%) 0 <1 1-5 >5
A. FOLIAR DISEASES				
Bacterial leaf blight	4	0.00	7.39	
Bacterial leaf streak	4	0.00	0.00	
Brown spot	4	0.00	21.22	
Leaf blast	4	0.00	3.21	
Red stripe	4	0.00	0.00	
B. DISEASE OR PEST INJURY ON TILLERS				
Deadheart	4	0.00	7.66	
Sheath Blight	4	0.00	19.10	
C. DISEASE OR PEST INJURY ON PANICLES				
Neck Blast	4	0.00	0.00	
Whitehead	4	0.00	10.86	
D. SYSTEMIC DISEASE OR PEST INJURY				
Bugburn	4	0.00	0.00	
Hopperburn	4	0.00	0.00	
Tungro	4	0.00	0.00	
E. INSECT COUNT				
Brown Plant Hopper	4	0.00	0.00	
Green Leaf Hopper	4	0.00	1.30	
Rice Black Bug	4	0.00	0.00	
Rice Bug	4	0.33	5.33	
Rice Grain Bug	4	0.00	0.00	
F. RODENT INJURY	4	0.00	0.00	
G. WEED COVER	4	0.00	53.33	
				10 20 30 40 50 60 70 80 90 100

Annex Figure 11. Incidence of diseases and pest injuries, count of insect pests, and weed cover in May 2019. Horizontal bar shows the proportion of fields in each range of pest injury incidence, insect count or weed cover.

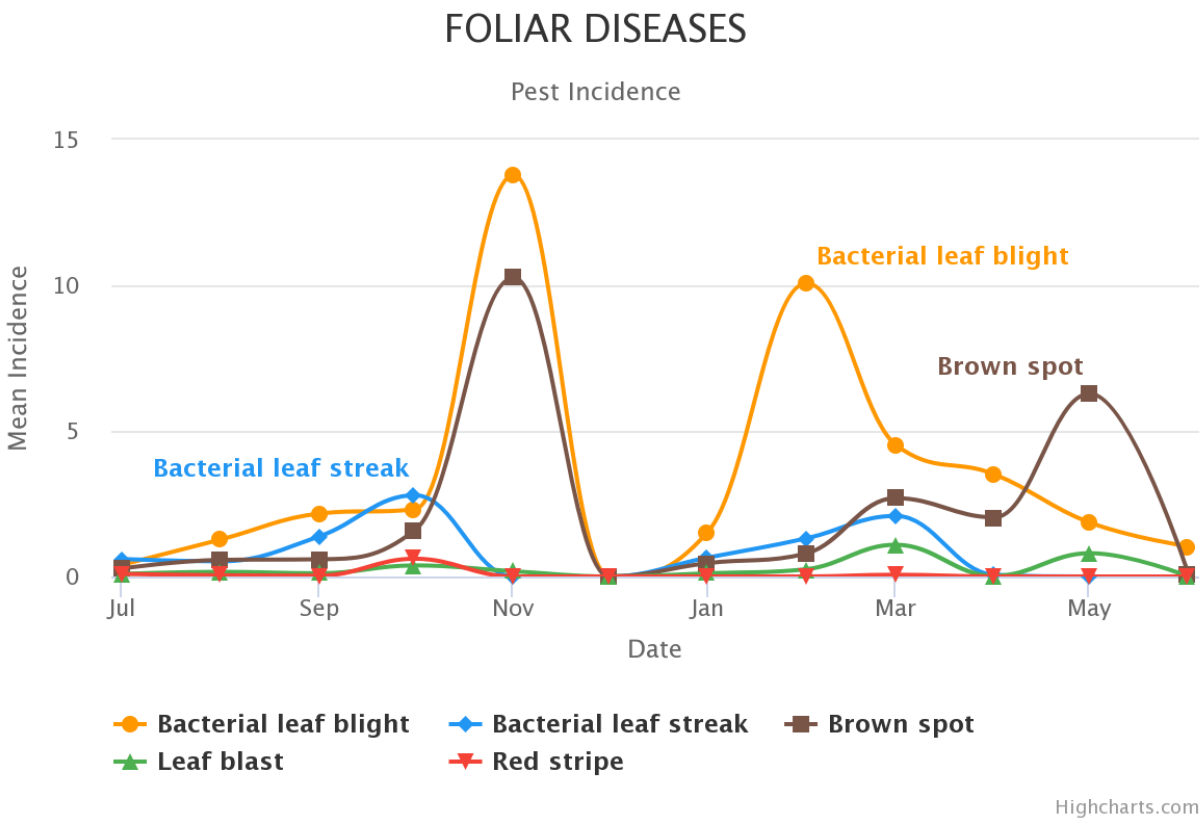
Disclaimer: All the data presented in this report are based on the monthly monitoring of farmers' fields by regional data collectors of PRIME.

Region XI

June 2019	n	min	max	Pest incidence (%) 0	<1	1-5	>5
A. FOLIAR DISEASES							
Bacterial leaf blight	6	0.00	3.80				
Bacterial leaf streak	6	0.00	0.00				
Brown spot	6	0.00	0.48				
Leaf blast	6	0.00	0.00				
Red stripe	6	0.00	0.00				
B. DISEASE OR PEST INJURY ON TILLERS							
Deadheart	6	0.00	2.78				
Sheath Blight	6	0.00	0.00				
C. DISEASE OR PEST INJURY ON PANICLES							
Neck Blast	1	0.00	0.00				
Whitehead	1	6.75	6.75				
D. SYSTEMIC DISEASE OR PEST INJURY							
Bugburn	6	0.00	0.00				
Hopperburn	6	0.00	0.00				
Tungro	6	0.00	0.00				
E. INSECT COUNT							
Brown Plant Hopper	6	0.00	0.00				
Green Leaf Hopper	6	0.00	0.90				
Rice Black Bug	6	0.00	0.60				
Rice Bug	6	0.00	11.00				
Rice Grain Bug	6	0.00	0.00				
F. RODENT INJURY	6	0.00	1.00				
G. WEED COVER	6	0.00	6.67				

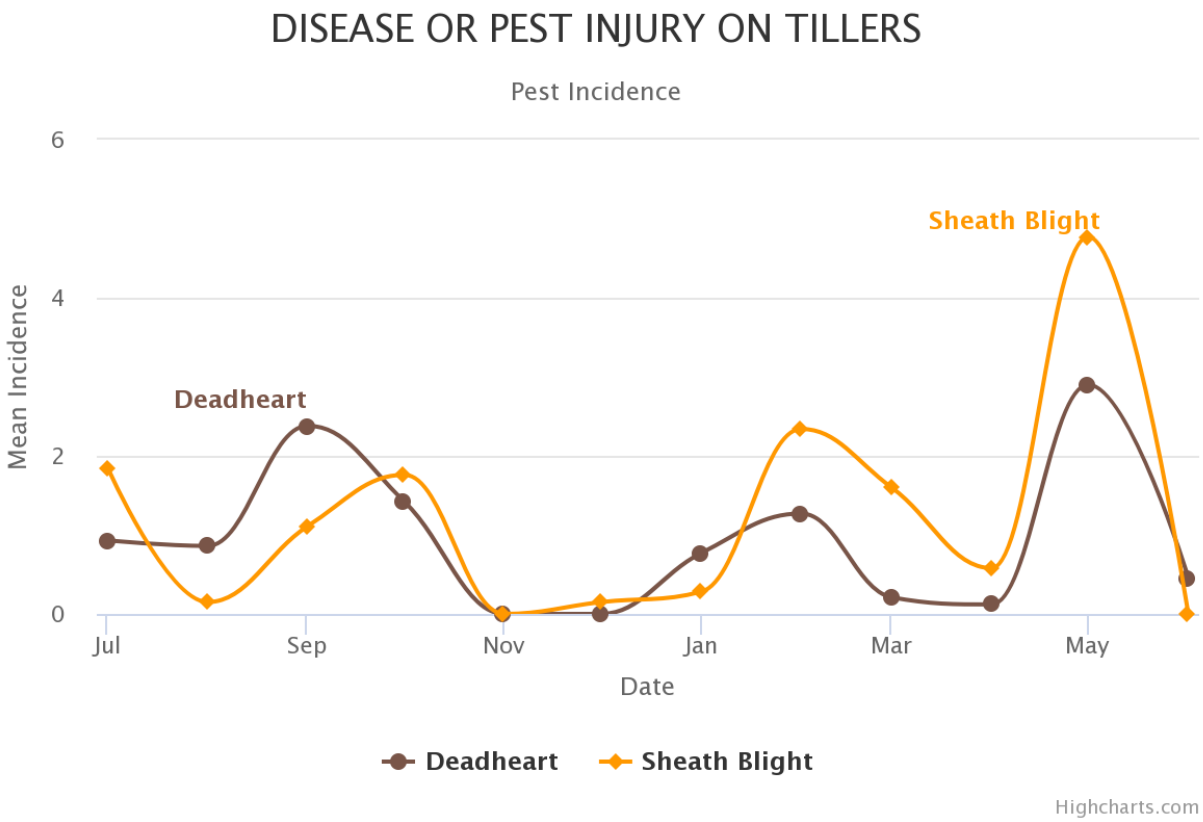
Annex Figure 12. Incidence of diseases and pest injuries, count of insect pests, and weed cover in June 2019. Horizontal bar shows the proportion of fields in each range of pest injury incidence, insect count or weed cover.

Disclaimer: All the data presented in this report are based on the monthly monitoring of farmers' fields by regional data collectors of PRIME.



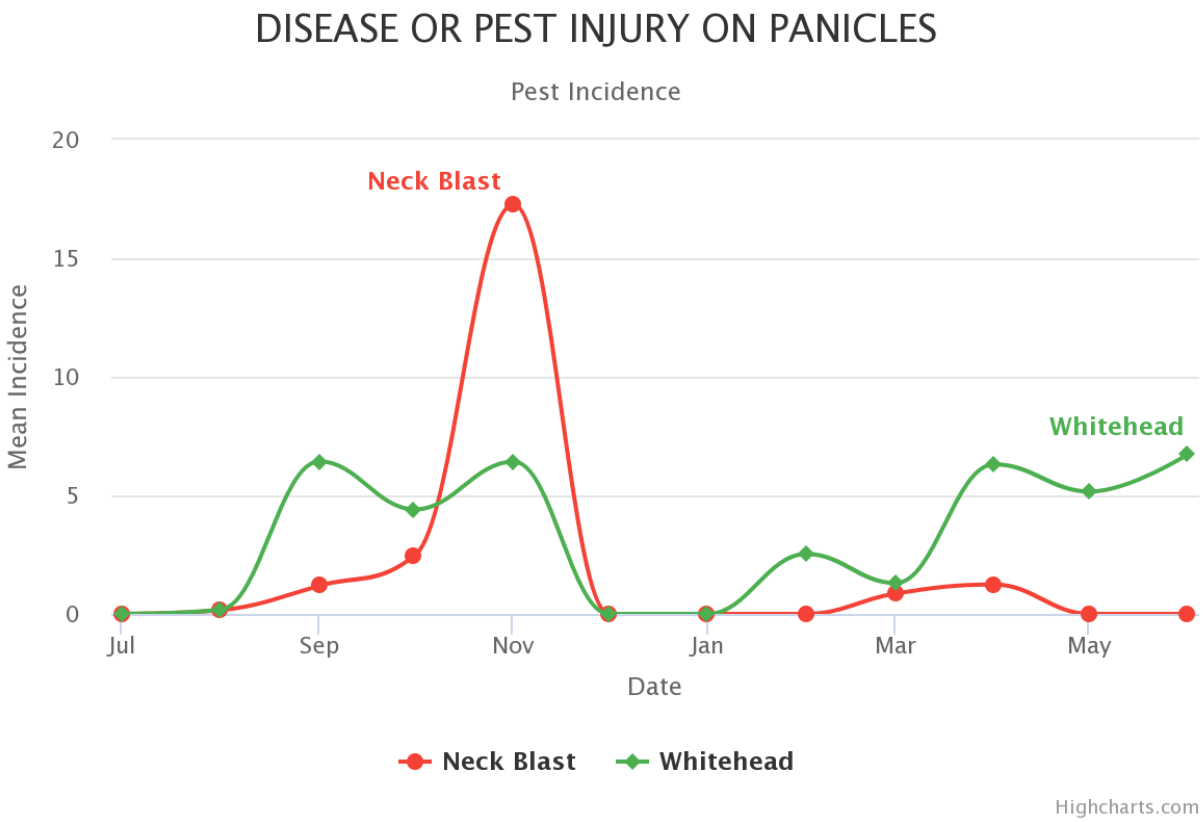
Annex Figure 13. Mean incidence of foliar diseases in Region XI, July 2018 to June 2019.

Disclaimer: All the data presented in this report are based on the monthly monitoring of farmers' fields by regional data collectors of PRIME.



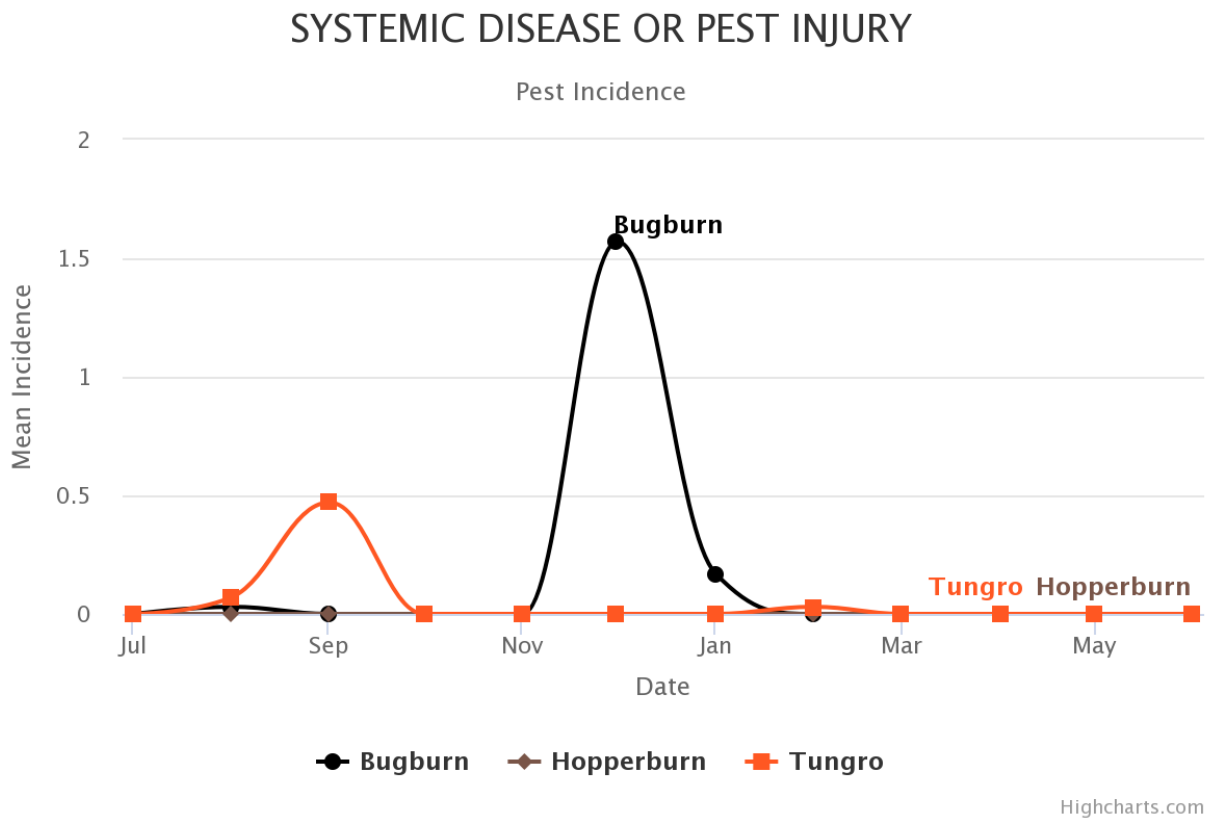
Annex Figure 14. Mean Incidence of deadheart and sheath blight in Region XI, July 2018 to June 2019.

Disclaimer: All the data presented in this report are based on the monthly monitoring of farmers' fields by regional data collectors of PRIME.



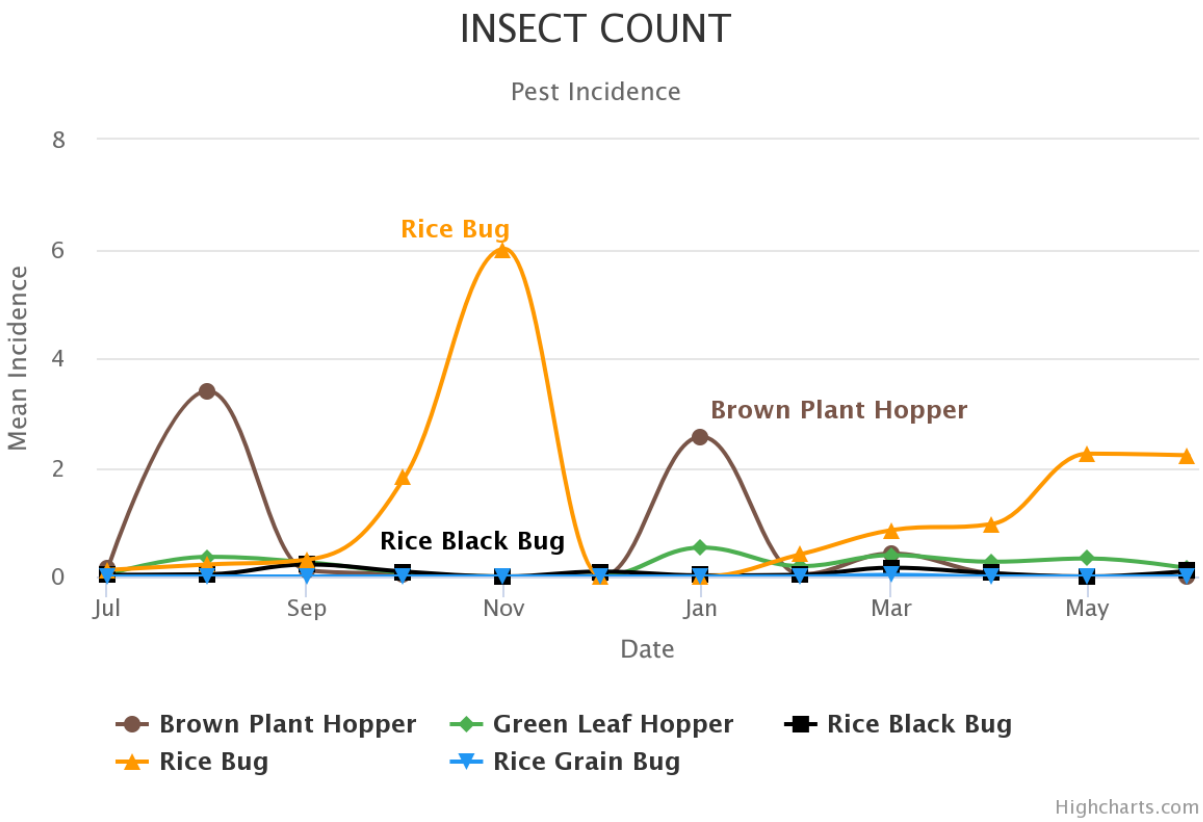
Annex Figure 15. Mean incidence of neck blast and whitehead in Region XI, July 2018 to June 2019.

Disclaimer: All the data presented in this report are based on the monthly monitoring of farmers' fields by regional data collectors of PRIME.



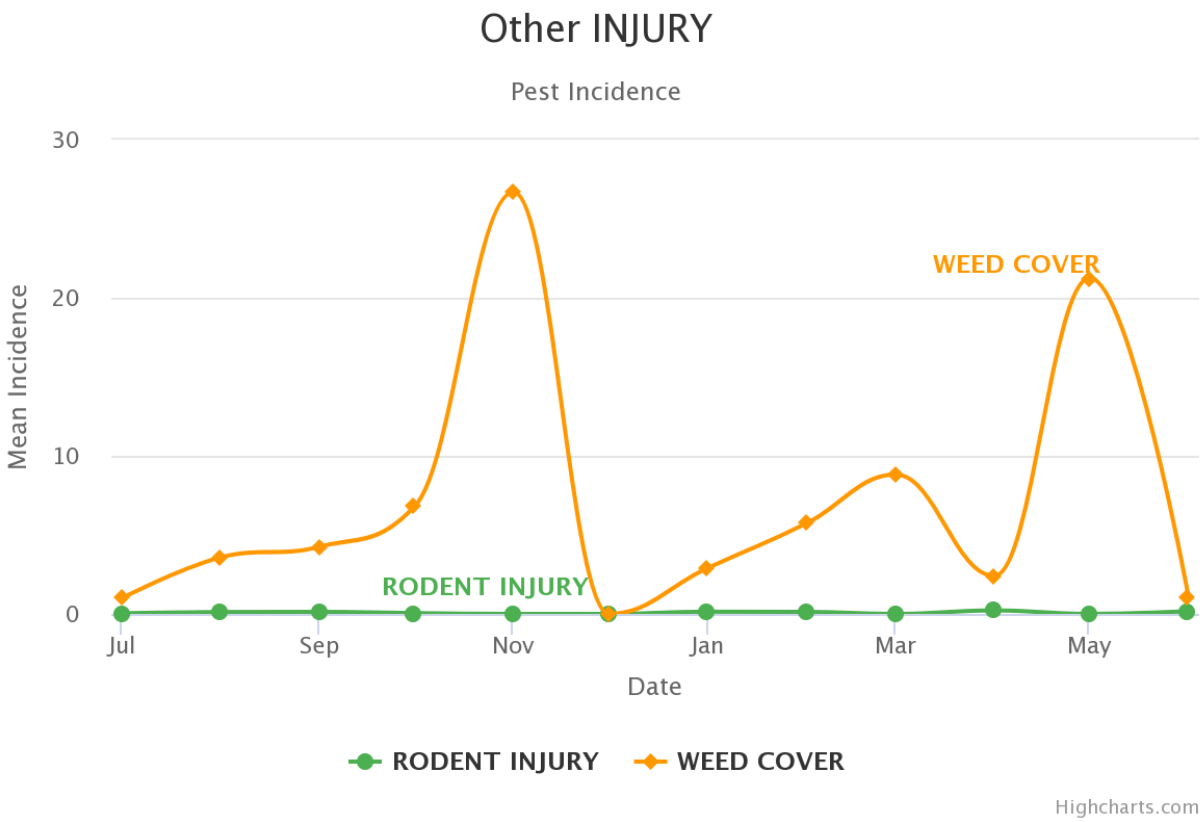
Annex Figure 16. Mean incidence of bugburn, hopperburn and tungro in Region XI, July 2018 to June 2019.

Disclaimer: All the data presented in this report are based on the monthly monitoring of farmers' fields by regional data collectors of PRIME.



Annex Figure 17. Mean count of insect pests in Region XI, July 2018 to June 2019.

Disclaimer: All the data presented in this report are based on the monthly monitoring of farmers' fields by regional data collectors of PRIME.



Annex Figure 18. Mean incidence of rat injury and weed infestation in Region XI, July 2018 to June 2019.

Disclaimer: All the data presented in this report are based on the monthly monitoring of farmers' fields by regional data collectors of PRIME.