

## Survey questionnaire on pest management in yard long bean / leafy mustard production in Cambodia

Good morning/afternoon. My name is \_\_\_\_\_ and I am from the Royal University of Agriculture (RUA) in Cambodia. We are doing a survey on farmers growing yardlong bean and leafy mustard around Kandal and in Savy Rieng province. **The purpose** of this interview is to better understand pest and disease problems in these crops and how farmers manage these. This information is important to us to develop better technologies to help farmers protect their crops while limiting the harmful effects of pesticides. It is for research only and will always be kept strictly confidential and never be revealed to any other people. I would like you to answer questions truthfully, in your best possible way, and to the best of your knowledge. If you don't know the answer to some of my questions, simply tell me.

**The following is to be filled out by the enumerator**

Survey ID: 

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Date: 

D	D	M	M	Y	Y
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Crop: 1.  Yard long bean  
2.  Leafy mustard

Province: \_\_\_\_\_

District: \_\_\_\_\_

Commune: \_\_\_\_\_

Village: \_\_\_\_\_

Enumerator: \_\_\_\_\_

**If the same household is interviewed for more than 1 crop then use 2 questionnaires.**

## SECTION A. General information about the household

**ASK THE FOLLOWING QUESTIONS TO THE MAIN PERSON RESPONSIBLE FOR YARDLONG BEAN/ MUSTARD PRODUCTION**

To start, I would like to ask for some general information about you and your household.

<b>A1</b>	a. Are you the main person in your household responsible for yardlong bean/leafy mustard* production?	1. <input type="checkbox"/> Yes	For confirmation. If negative, ask to change respondent.
	b. Is the person responsible for pest management in this crop also available for the interview?	1. <input type="checkbox"/> Yes	If negative, check if the respondent knows enough about it; otherwise stop the interview.
<b>A2</b>	What is your full name?	_____	
<b>A3</b>	Sex of respondent (do not ask)	1. <input type="checkbox"/> Male 2. <input type="checkbox"/> Female	
<b>A4</b>	What is your phone number?	_____	In case of clarifications.
<b>A5</b>	What year were you born?	_____	Year
<b>A6</b>	a. Are you the head of this household?	0. <input type="checkbox"/> No 1. <input type="checkbox"/> Yes	
	b. If [no], what is your relationship to the household head?	1. <input type="checkbox"/> Spouse 2. <input type="checkbox"/> Son/daughter	3. <input type="checkbox"/> Hired labor 4. <input type="checkbox"/> Other: _____
<b>A7</b>	How many people are there in your household?	_____	Persons regularly sharing meals and living in the same housing unit for the past 6 months.
<b>A8</b>	a. For how many years have you been in charge of farm decisions?	_____	Years
	b. For how many of those years have you grown yardlong bean/leafy mustard?	_____	Years
<b>A9</b>	a. How much agricultural land do you own?	_____	m <sup>2</sup>
	b. How much of this do you rent out?	_____	m <sup>2</sup>
	c. How much do you rent in?	_____	m <sup>2</sup>
<b>A10</b>	What are the 3 most important crops you cultivated in the most recent season?	1. _____ 2. _____ 3. _____	
<b>A11</b>	Roughly how much of your annual agricultural income you get from producing yardlong bean/leafy mustard?	_____	% (0-100)

\* **IMPORTANT:** For all questions containing “yardlong bean/leafy mustard”, ask for one crop only. For example, if this household is part of the yardlong bean sample then only ask for yardlong bean, and do not mention leafy mustard.

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**A12** Are you able to read and write Khmer? 0.  No  
1.  Yes

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**A13** What is your highest education level? \_\_\_\_\_ Grade

1.  Primary school  
2.  Lower-secondary  
3.  High school  
4.  Other, specify \_\_\_\_\_  
5.  Associate degree  
6.  Bachelor's degree  
7.  Master's degree  
8.  Doctoral

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**A14** a. Do other farmers regularly come to you for your advice on vegetable production? 0.  No  
1.  Yes

b. How keen are you to always use the latest technologies in vegetable production? 1.  Very keen  
2.  Not so keen, I prefer to wait and see  
3.  Not keen, I like the technology I am using now  
4.  Other: \_\_\_\_\_

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**A15** a. In the last 5 years, how many training courses on agriculture have you attended? \_\_\_\_\_ [If none, Go to **B1**]  
Number of training courses

b. If attended any, what were the subjects? 1.  Integrated pest management (IPM)  
2.  Good agricultural practices / GAP  
3.  Safe vegetable production  
4.  Safe pesticide handling  
5.  Organic production  
6.  Other: \_\_\_\_\_

(Tick as many as apply.)

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## Section B. Management of yard long bean / leafy mustard

Next, I would like to ask some specific questions about your most recent cultivation of yardlong bean/leafy mustard.

<b>B1</b>	a. How many plots of yardlong bean/leafy mustard did you grow this past season?	_____	Plots
	b. What was the total area?	_____	m <sup>2</sup>
	c. If more than 1 plot, what was the area of the biggest plot?	_____	m <sup>2</sup>
<b>B2</b>	a. In what month did you start planting this plot?	_____	Month (1-12)
	b. In what month did you finish harvesting this plot?	_____	Month (1-12)
<b>All subsequent questions refer to this recall period and the biggest plot</b>			
	c. How many times did you sow the same planting bed in this period?	_____	Times per planting bed
<b>B3</b>	a. What was the total harvest?	_____	kg
	b. What was the total marketable harvest?	_____	kg
	c. What was the marketable yield?	_____	kg/ m <sup>2</sup> ( <b>B3b/B1c</b> ) (Check if realistic)
	d. What is the average price you sold it for?	_____	KHR/kg
	e. What was the amount of money you received?	_____	KHR ( <b>B3b x B3d</b> ) (Confirm with respondent)
<b>B4</b>	a. What is the name of the variety you planted?	_____	<input type="checkbox"/> Tick if local variety (=1)
	b. How did you acquire the seed? (Tick as many as apply.)	1. <input type="checkbox"/> Bought 2. <input type="checkbox"/> Saved from a previous harvest	3. <input type="checkbox"/> Received from another farmer 4. <input type="checkbox"/> Other, specify: _____
	c. How much seed did you use on this plot?	_____	gram
	d. If [saved], once in how many years do you buy new seed?	_____	years
	e. If [bought], did it have a brand name?	0. <input type="checkbox"/> No 1. <input type="checkbox"/> Yes, what is the brand? _____	(brand)
	f. If [bought], how much money did you spent on it?	_____	KHR

**B5** a. What crop did you grow before this crop on this plot? \_\_\_\_\_  
b. What crop will you grow directly after this crop on this plot? \_\_\_\_\_

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**B6** What type of irrigation did you use on this plot? (Tick as many as apply.)  
0.  None (not irrigated, rain fed)      2.  Sprinkler  
1.  Furrow      3.  Hose  
4.  Other, specify: \_\_\_\_\_

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**B7** How many times did you fertilize this plot? \_\_\_\_\_ Times

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**B8** Who was the main person in your household responsible for ...

1. Preparing the land	
2. Building trellises (for yl. bean)	
3. Selecting the variety	
4. Sowing the seeds	
5. Pulling out weeds	
6. Applying fertilizers	
7. Scouting for pest problems	
8. Deciding when to spray	
9. Buying pesticides	
10. Preparing/mixing pesticides	
11. Spraying pesticides	
12. Cleaning the spraying equipment	
13. Harvesting the crop	
14. Sorting and cleaning the crop	
15. Selling the crop	
16. Receiving the money	
17. Participating in agricultural training	

Codes:  
0. Not practiced  
1. Respondent  
2. Spouse  
3. Respondent and spouse jointly  
4. Other adult male household member  
5. Other adult female household member  
6. Children (under 18)  
7. Hired labour  
8. Other, specify: \_\_\_\_\_  
(Choose one option only.)

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**B9** a. From the above, determine who is suitable to answer questions about pest management. (Do not ask.)  
1.  Respondent  
2.  Other person, name: \_\_\_\_\_

If [**other person**], change the respondent and ask for the following:

b. Relationship to the household head  
1.  Spouse      3.  Hired labor  
2.  Son/daughter      4.  Other: \_\_\_\_\_

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c. Sex  
1.  Male  
2.  Female

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d. Age \_\_\_\_\_ Years

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## Section C. Pests management knowledge

**CONTINUE THE QUESTIONNAIRE WITH THE PERSON IDENTIFIED IN [B9]**

**USE THE COLOR PRINTED PICTORIAL TOOL**

The next section of the interview is about insects.

- C1** The following photos shows insects that either damage or benefit your crop. Can you identify which insects can do damage and which insects are helpful?

Photo	Can do damage (1)	Helpful insect (2)	Don't know (0)
1.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- C2** The following photos show five adult insects in the left column and their larvae or nymphs in the right column. Can you find the matching pairs?

Left photo	Right photo (1-5)	Tick if respondent does not know the answer.
A		<input type="checkbox"/>
B		<input type="checkbox"/>
C		<input type="checkbox"/>
D		<input type="checkbox"/>
E		<input type="checkbox"/>

- C3** Can you explain the meaning of these six pictograms?

Pictogram	Incorrect or don't know (0)	Correct (1)	Correct answer for assessing
1.	<input type="checkbox"/>	<input type="checkbox"/>	Lock away and keep out of reach of children
2.	<input type="checkbox"/>	<input type="checkbox"/>	When preparing pesticides wear gloves and cover the eyes
3.	<input type="checkbox"/>	<input type="checkbox"/>	When spraying pesticides wear long-sleeved shirt and long trousers
4.	<input type="checkbox"/>	<input type="checkbox"/>	After spraying, wash hands
5.	<input type="checkbox"/>	<input type="checkbox"/>	Dangerous/harmful to fish
6.	<input type="checkbox"/>	<input type="checkbox"/>	Toxic

## Section D. Pests and diseases in yard long bean/leafy mustard


**CONTINUE THE QUESTIONNAIRE WITH THE PERSON IDENTIFIED IN [B9]**

The next section of the interview is about pests and diseases and their management. I would like to start with a few general questions.

<b>D1</b>	a. In which year did you start using chemical pesticides?		Year (indicate 0 if not using)
	b. Have you ever heard about "biopesticides"?	0. <input type="checkbox"/> No 1. <input type="checkbox"/> Yes	[→Go to D2]
	c. If [yes], in your opinion, what is a biopesticide?	0. <input type="checkbox"/> I don't know	3. <input type="checkbox"/> A pesticide derived from bacteria or other microbes
	(Do not read out the options. Tick as many aspects as the respondent mentions.)	1. <input type="checkbox"/> It is the same as a chemical pesticide	4. <input type="checkbox"/> A pesticide that is non-toxic to humans
		2. <input type="checkbox"/> A pesticide derived from plants or animals	5. <input type="checkbox"/> Other: _____
		d. If [yes], have you ever used biopesticides?	0. <input type="checkbox"/> No 1. <input type="checkbox"/> Yes
	e. If [used], in which year did you start using biopesticides?	_____	Year (indicate 0 if never used)
<b>D2</b>	Can you explain in your own words what the meaning of "integrated pest management" is?	0. <input type="checkbox"/> I have never heard of this term 1. <input type="checkbox"/> Monitoring pest problems 2. <input type="checkbox"/> Minimizing the number of sprays 3. <input type="checkbox"/> No preventive (calendar-based) spraying 4. <input type="checkbox"/> Avoiding broad spectrum/highly toxic pesticides 5. <input type="checkbox"/> Using biopesticides	6. <input type="checkbox"/> Not killing beneficial insects 7. <input type="checkbox"/> Using predator insects 8. <input type="checkbox"/> Using preventive cultural practices (e.g. rotation, trap crop, barrier crop, weeding) 9. <input type="checkbox"/> Balanced agro-ecosystems 10. <input type="checkbox"/> Personal safety while spraying 11. <input type="checkbox"/> Other:





	g. Which of the following did <b>[you]</b> wear while spraying pesticides? <b>(Read the options)</b> (Tick as many as apply.)	1. <input type="checkbox"/> Hat	5. <input type="checkbox"/> Raincoat	9. <input type="checkbox"/> Long-sleeved shirt			
		2. <input type="checkbox"/> Face mask	6. <input type="checkbox"/> Coverall	10. <input type="checkbox"/> Long trousers			
		3. <input type="checkbox"/> Glasses	7. <input type="checkbox"/> Rubber boots				
		4. <input type="checkbox"/> Gloves	8. <input type="checkbox"/> Respirator				
<b>D6</b>	a. After cleaning the spraying equipment, where does the waste water go? (Tick only one.)	0. <input type="checkbox"/> Do not clean	3. <input type="checkbox"/> Road				
		1. <input type="checkbox"/> Plot	4. <input type="checkbox"/> River or lake				
		2. <input type="checkbox"/> Drainage canal	5. <input type="checkbox"/> Other: _____				
	b. Do <b>[you]</b> wash hands with soap directly after spraying?	0. <input type="checkbox"/> No					
		1. <input type="checkbox"/> Yes					
	c. Do <b>[you]</b> take a bath directly after spraying?	0. <input type="checkbox"/> No					
		1. <input type="checkbox"/> Yes					
	d. Do <b>[you]</b> change clothes directly after spraying?	0. <input type="checkbox"/> No					
		1. <input type="checkbox"/> Yes					
	e. Do <b>[you]</b> eat or drink in the field when spraying?	0. <input type="checkbox"/> No					
		1. <input type="checkbox"/> Yes					
	f. What do <b>[you]</b> usually do with empty pesticide containers? <b>(Read the options)</b> (Tick as many as apply.)	1. <input type="checkbox"/> Throw into a dedicated disposal bin/container	5. <input type="checkbox"/> Burn				
		2. <input type="checkbox"/> Throw in general trash	6. <input type="checkbox"/> Keep it/take home				
		3. <input type="checkbox"/> Reuse on the farm	7. <input type="checkbox"/> Bury in the soil				
		4. <input type="checkbox"/> Leave in the field	8. <input type="checkbox"/> Other: _____				
<b>D7</b>	a. In the last season, did <b>[you]</b> practice any of the following pest control techniques?  (Tick as many as apply.)	1. <input type="checkbox"/> Resistant variety	1	2	3	4	5
		2. <input type="checkbox"/> Regular scouting of plants for pests and diseases	1	2	3	4	5
		3. <input type="checkbox"/> Pesticide spraying based on economic thresholds	1	2	3	4	5
		4. <input type="checkbox"/> Plastic mulch to control weeds	1	2	3	4	5
		5. <input type="checkbox"/> Biopesticides (e.g. neem, Bt, Metarhizium, Trichoderma)	1	2	3	4	5
		6. <input type="checkbox"/> Blue or yellow sticky traps	1	2	3	4	5
		7. <input type="checkbox"/> Pheromone trap	1	2	3	4	5
		8. <input type="checkbox"/> Rotating with non-host crop	1	2	3	4	5
		9. <input type="checkbox"/> Release or promote natural enemies	1	2	3	4	5
		10. <input type="checkbox"/> Trap crop	1	2	3	4	5
		11. <input type="checkbox"/> Barrier crop	1	2	3	4	5
		12. <input type="checkbox"/> Insect net (protected cultivation)	1	2	3	4	5
		13. <input type="checkbox"/> Raise seedlings in nethouse	1	2	3	4	5
		14. <input type="checkbox"/> Purchase healthy seedlings	1	2	3	4	5
		15. <input type="checkbox"/> Pick and destroy insects by hand	1	2	3	4	5
	b. How satisfied are <b>[you]</b> with the level of control offered by these techniques?						
							
			1=very satisfied 2=satisfied 3=neutral 4=not so satisfied 5=not satisfied at all				

## Section E. Pesticide use and pesticide risk

**THE FOLLOWING QUESTIONS REFER TO THE FARMER'S BIGGEST PLOT AND MOST RECENT SEASON (IDENTIFIED IN B2)**

**ASK THESE QUESTIONS TO THE PERSON DOING THE PESTICIDE SPRAYING**

**ASK TO SEE THE CONTAINER IF POSSIBLE**

Next, I would like to ask you some detailed questions about the quantity of pesticides you used in your yardlong bean/leafy mustard in the most recent season. Could you please start by telling me the names of the all pesticide products you used (include insecticides, fungicides, herbicides, biopesticides, etc.)?

### E1. Pesticide use

A. Pesticide		B. % active ingredient  (if possible)	C. Type 0=biopesticide 1=insecticide 2=fungicide 3=herbicide 4=other (Tick as many as apply)	D. How many times did you apply it in the cropping cycle?	E. Average quantity per one time application (undiluted in gram or CC)	F. (=D x E) Total quantity applied (undiluted in gram or CC)	G. Total expenditure (KHR)
Product name	Code						
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							

After spraying pesticides, **[you]** might have experienced certain effects on your health. In the following, I will give a list of possible effects. Please tell me if **[you]** experienced them immediately after spraying or not.

<b>E2. Symptoms</b>	<b>Did experience (=1)</b>	<b>Did not experience (=0)</b>
1. Headache	<input type="checkbox"/>	<input type="checkbox"/>
2. Fatigue	<input type="checkbox"/>	<input type="checkbox"/>
3. Dizziness	<input type="checkbox"/>	<input type="checkbox"/>
4. Loss of appetite with nausea	<input type="checkbox"/>	<input type="checkbox"/>
5. Stomach cramps	<input type="checkbox"/>	<input type="checkbox"/>
6. Blurred vision	<input type="checkbox"/>	<input type="checkbox"/>
7. Excessive sweating and salivation	<input type="checkbox"/>	<input type="checkbox"/>
8. Slowed heartbeat	<input type="checkbox"/>	<input type="checkbox"/>
9. Diarrhea	<input type="checkbox"/>	<input type="checkbox"/>
10. Vomiting	<input type="checkbox"/>	<input type="checkbox"/>
11. Muscle twitching	<input type="checkbox"/>	<input type="checkbox"/>
12. Chest discomfort and tightness	<input type="checkbox"/>	<input type="checkbox"/>
13. Unable to walk	<input type="checkbox"/>	<input type="checkbox"/>
14. Unconsciousness	<input type="checkbox"/>	<input type="checkbox"/>

Next, I would like to understand your opinion about various aspects of pesticide use. I will present you with 15 statements. Please tell me if you agree or disagree with each statement.

E3. Statement	Agree (=1)	Disagree (=0)
1. Mixing different pesticides makes the spraying more effective than using a single pesticide	<input type="checkbox"/>	<input type="checkbox"/>
2. You can determine whether a pesticide is dangerous or not by its smell	<input type="checkbox"/>	<input type="checkbox"/>
3. Pesticides can enter the body through the skin	<input type="checkbox"/>	<input type="checkbox"/>
4. Using pesticides increases farm profits	<input type="checkbox"/>	<input type="checkbox"/>
5. Herbicides are not dangerous to humans	<input type="checkbox"/>	<input type="checkbox"/>
6. Empty pesticide containers can be reused for other purposes	<input type="checkbox"/>	<input type="checkbox"/>
7. Pesticides have negative effects on the health of children	<input type="checkbox"/>	<input type="checkbox"/>
8. Commercial vegetable production without pesticides is impossible	<input type="checkbox"/>	<input type="checkbox"/>
9. Drinking alcohol after spraying helps to eliminate side effects	<input type="checkbox"/>	<input type="checkbox"/>
10. You are concerned about pesticide residues when buying vegetables from the market	<input type="checkbox"/>	<input type="checkbox"/>
11. When spraying pesticides you are worried about getting cancer	<input type="checkbox"/>	<input type="checkbox"/>
12. Biopesticides are not as effective as chemical pesticides *	<input type="checkbox"/>	<input type="checkbox"/>
13. Good pesticides are those that kill all insects immediately	<input type="checkbox"/>	<input type="checkbox"/>
14. Some pesticides have a pleasant smell	<input type="checkbox"/>	<input type="checkbox"/>
15. Organic agriculture is a good alternative to conventional agriculture	<input type="checkbox"/>	<input type="checkbox"/>
16. If there are many pests in the field then one should make the spraying mixture stronger	<input type="checkbox"/>	<input type="checkbox"/>

\* IMPORTANT: Tick both agree and disagree if the farmer has never heard of biopesticide.

## Section F. Cost of other inputs in yard long bean/leafy mustard

**THESE QUESTIONS REFER TO THE FARMER'S BIGGEST PLOT AND MOST RECENT SEASON (IDENTIFIED IN B11)**

Please estimate how much you spent on the following inputs:

F1. Variable inputs (Excl. pesticides, which were recorded in Section E)	Total value (KHR)	If unable to tell, then ask:		
		Quantity	Unit 1=kg; 2=liter; 3=pieces; 4=bags; 5=other	Price (KHR/unit)
1. Chemical fertilizers				
- N				
- NPK				
-				
2. Hormones, plant growth regulators				
3. Lime				
4. Organic fertilizer/manure				
5. Bamboo sticks and ropes (for staking)				
6. Mulching material				
7. Plastic bags, trays or containers				
8. Land rental fees				
9. Rented farm machinery				
10. Electricity				
11. Gasoline				
12. Other:				

Please estimate how many working days you and others spent on the following tasks:

F2. Labor use	Own labor	Hired labor	
	Days worked	Days worked	Price/day
1. Land preparation and sowing			
2. Pruning, trellising, watering, fertilizing and weeding			
3. Applying pesticides			
4. Harvesting, cleaning, sorting, transporting, selling*			
5. Other:			

\* **IMPORTANT:** If buyers came to harvest the field with their own labor then enter "0" for own labor and enter "-1" for the two columns of hired labor.

- F3.** How much money did you borrow to produce this crop? \_\_\_\_\_ KHR
- F4.** What was the interest rate? \_\_\_\_\_%  per year  per month

Thank you very much for your participation in this survey. Your answers will be extremely useful for our research. Again, I assure you that all the answers you have provided in this survey will be kept strictly confidential and will never be revealed to any other person outside our research group.

## Section G. Interviewer debriefing question

TO BE ANSWERED BY THE ENUMERATOR

- G1** How do you judge the quality of the response based on the ability of the respondent to recall information and stay focused during the interview?
- Very good (1)
  - Good (2)
  - Moderate (3)
  - Poor quality (4)
  - Very poor quality (5)

Include a few details and qualifiers why you thought this.

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- G2** Can you make any observation about the household or the interview that might be relevant for interpreting the data?

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