Journal of Insect Science

Decision Letter (JIS-2020-0049)

From: jurgenziesmann@gmail.com

To: hywei@jxau.edu.cn

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BCC:

Subject: Journal of Insect Science - Decision on Manuscript ID JIS-2020-0049

Body: 06-Mar-2020

Dear Prof. Wei,

Manuscript ID JIS-2020-0049 entitled "Interfering the mating of Chilo suppressalis (Walker): A new role of sex pheromones ((Z)-11-Octadecen-1-ol and (Z)-13-Octadecen-1-ol) from Cnaphalocrocis medinalis Guenée" which you submitted to the Journal of Insect Science, has been reviewed and will be reconsidered for publication after the completion of the major revisions as noted. The comments of the reviewer(s) are included at the bottom of this letter.

Your revised manuscript should be uploaded within 45 days. Please let us know if you will require an extension. The due date is 20-Apr-2020.

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• Please delete any outdated files (e.g., the original manuscript, any outdated figures, etc.) before uploading the revised files.
• Figures should be submitted as separate files and not inserted into the main document. Figures should be submitted as at least 300 dpi (600 dpi for line graphs) and in one of the following file types: tif, eps, rtf, ppt/pptx, xls/xlsx, editable PDF, ps, psd, ai, gif, or png.

Once again, thank you for submitting your manuscript to the Journal of Insect Science and I look forward to receiving your revision.

Sincerely,
Dr. Jurgen Ziesmann
Editor, Journal of Insect Science
jurgenziesmann@gmail.com
ESA Editorial Office: 3 Park Place, Suite 307, Annapolis, MD 21401-3722, USA. Editorial Office Phone: 1-301-731-4535.

Reviewer(s)' Comments to Author:

Reviewer: 1

Comments to the Author

This manuscript reports a series of laboratory and field experiments to assess whether the effect of using pheromones of C. suppresalis and C. medinalis affects the male captures of these moth species. Another objective of the study was to determine the underlying mechanism for the potential negative effect of the use of the two pheromones on the catches of moths studied. Although the manuscript provides some interesting information, I have several major concerns that prevent me from recommending it for publication.

1) The writing needs improvement. There are several awkward sentences that need to be re-written. I suggest that the authors seek assistance from a professional editing office or from an English-speaking colleague to review the manuscript.
2) The authors demonstrate that the pheromonal baits of C. medinalis interfere with the captures of males of C. suppressalis when the pheromonal baits of the two species are used together in a trap. However, it seems that authors determined a priori that the C. medinalis pheromone is the one that inhibits the attraction of the C. suppressalis males but not the other way around. Thus, they did not include the C. medinalis pheromone alone as a treatment in experiment 1. The results show that only 10 males of C. medinalis were captured by traps baited with pheromones of both species, suggesting that the pheromone of C. suppressalis also has an effect on the attraction of males of C. medinalis. As the manuscript mentions that both species are important rice pests and the study takes an applied approach, then the pheromone C. medinalis alone should have been included in experiment 1, otherwise, the story is incomplete.
3) I do not think that experiment 2 is needed because it does not contribute to the story, and therefore I would recommend eliminating it. Experiment 3 should have been done in a wind tunnel and not in the olfactometer used because the moths are strong-flying insects. Anyway, the authors should explain why they used two types of olfactometers and traps for their experiments. Experiments 4 and 5 should have been performed in only one experiment adding the compounds single, the binary blends or the tertiary blend of the pheromone compounds of C. medinalis to the C. suppressalis pheromone.

Specific comments:
Introduction
The authors could provide more details about the natural history of both moth species. For instance, if both are native from China, their distribution and host plants. This is important to understand why pheromone of C. medinalis inhibits the attraction of C. suppressalis males, and possibly vice versa.
Lines 42-43, to my knowledge semiochemicals are not biological control agents.
Line 48, I am not sure I understand the sentence "they have high biological activities"
Lines 50-53, I suggest deleting this paragraph as it does not contribute much to the story.
Line 74, the authors should provide a research question or hypothesis.

Methodology

Line 82, I am not sure I understand the sentence "A laboratory colonized population of C. suppressalis was collected from.."
Line 84, how was reared the larvae? Individually?
Line 89, please specify the size of bags
Line 100, how much water was added to traps?
Line 106, what does cubic reaction mean?
Line 118, 153, I consider that 3 replicates are not enough for the field trials because in my experience there is much variation in the males' catches
Lines 157-161, in my opinion, the field tests should be analyzed with a GLM. A GLM would also have the advantage that multiple combinations of testing can be included in one GLM. Now each combination is tested separately, thereby increasing the chance of finding something significant. The authors also mention that data were analyzed by ANOVA and Duncan test but I cannot find these analyses in results.

Results and Discussion sections should be improved.

Fig. 2 can be deleted (captures by dates). Simply report means and error or deviation standards for the number of C. suppressalis captured by traps baited with sex pheromone alone or combined with the pheromone of C. medinalis in the text.

Also, I do not think Figs 4a and 5a are needed. This is not the focus of the paper.

Fig. 3, what does the response mean? Please specify.

Reviewer: 2

Comments to the Author

The present work deals with experiments on the suitability of the combined use of the sex pheromones of two lepidopterans, Chilo suppressalis and Cnaphalocrocis medinalis. Given that these two insects coincide in the paddy fields, the combined use of their pheromones in monitoring traps may be convenient for the growers to reduce trap and hand labor costs. However, there are many examples of communication interferences, in which the presence of other pheromone blend in the same trap inhibits the captures of one or both of the species. As a consequence, it is worth confirming if this is the case of C. suppressalis when its pheromone (CCS) is combined with C. medinalis pheromone (CCM) in the same trap. For this purpose, authors performed field trials and behavioral laboratory assays to check the effect on male CS attraction of the combination of commercial lures, and also with the individual C. medinalis pheromone components.

The manuscript is well written in general. Experiments are well designed but some experimental details are missing. Conclusions are supported by the results. However, my first concern is in the title: "Interfering the mating of Chilo suppressalis (Walker): A new role…". I think it does not fit the conclusions drawn from the experiments. Authors prove that male C. suppressalis attraction to the traps is interfered with (Z)-11-Octadecen-1-ol and (Z)-13-Octadecen-1-ol, but their potential effect as mating inhibitors is not specifically demonstrated in the present work. I suggest changing the title.

There are a few sentences and spelling mistakes that need revision throughout the text and I also suggest considering the following points.

- In general, lures need to be better described: CCS and CCM are commercial pheromone dispensers (line 92)? Which kind? Rubber septa? Vials? or are they pure chemical blends that you formulate in dispensers or employ to impregnate materials? Which load? Any idea of their release rate? You should describe this in the appropriate section. Same with how you provide the compounds in the wind tunnel assays (line 127)… filter paper as in the olfactometer? Please add this information. And the same in the field trial with trap 2 (line 152).
- line 18-19: please C. medinalis in italics
- line 23: please change OH with ol in the complete names of the substances ((Z)-11-octadecen-1-ol and (Z)-13-octadecen-1-ol)
- lines 32 and 33: please insert taxonomic classification for both species (Order: Family)
- line 37: please add examples of active ingredients employed
- line 42: when talking about pheromones I suggest employing "biotechnological control" instead of "biological control".
- line 45: please delete "monitor and" because "flight monitoring" is already mentioned
- line 48: please correct capital letter "They"
- line 58: please delete "blends" and rewrite: "These three components (…) were found to be…"
- line 74: "is currently known", can this be cited? Or is it just popular knowledge?
- line 76: I suggest changing to "has negative effects in the IPM of C. suppressalis". I think it is not appropriate to talk about "these two pests" because the authors are not investigating if the combination of the pheromones affects C. medinalis attraction but only the effect on C. suppressalis. In this regarding, if you have any clue about the opposite effect (interfering C. medinalis attraction with C. suppressalis pheromone), I suggest including a comment.
- line 82: I would just say "Laboratory population" or "Laboratory colony"
- line 92: as commented above, do you have any information about the composition of the "Commercial sex pheromones"? Which compounds and composition? Are they mixtures of the active ingredients or are they formulated in dispensers such as rubber septa? which load or concentration? These details are essential to be added.
- line 100: I guess it is for preventing the escapes but please specify why you add the washing powder.
- line 103: why did you change trap design in the last experiment? Is there any special motivation? You could include a brief comment here or elsewhere in the manuscript.
- line 106: "cuboid reaction section" is not much clarifying for me… is it a cage? a box? Which material? Plexiglass? Glass?
- line 110: how was air purified? Activated carbon filters or is it coming from a purified air generator? Please specify.
- line 117: CCS and CCM are formulated in dispensers? please describe the lures somewhere, here or when you describe the chemicals.
- lines 124-126: I suggest including the description of the wind tunnel in the section of experimental devices and give additional operation parameters, such as the running flow, the time when you performed the assays (for example hours of scotophase) and the light conditions. These are very important parameters to get responses from moths in behavioral bioassays. Please also add this information for the olfactometer assays.
- line 126: pheromone source was a filter paper, a cotton wick, a dispenser? Please describe it.
- line 152: how did you release Z11-18:Ald, Z13-18:OH and Z11-18:OH with CCS, are they formulated in different dispensers? which load or concentration?

- line 158: did you check for data normality? Please specify.
- line 202: please replace Z11-18:OH with Z11-18:Ald, it is mistaken according to Figure 4.
- line 214: I suggest replacing "insect species" with "Lepidoptera species". I think insects is too broad and the cited reference is specifically about lepidopterans.
- line 215: add author after Tetanolita mynesalis and the same with other species throughout the text (lines 216,217,218…).
- line 230: I suggest adding a reference for examples of mating disruption using only one component of the pheromone blend, when it is multicomponent.
- line 240: delete "(Lepidoptera: Tortricidae)" as it is already mentioned in line 218, and abbreviate C. pomonella.
- line 244: I suggest replacing "demonstrated" with "suggested", as it is not specifically demonstrated by the experiments.
- line 250: "to control lepidopteran pests in rice" worldwide, so I suggest including references outside China.
- line 251: the control effects of mating disruption? Please specify
- line 255: "60% and 40%" refer to damage reduction? Please clarify
- line 256: I suggest including "and the number of monitoring traps"
- line 257: I suggest replacing "trap" with "capture"
- line 264: I suggest replacing "field" with "trap"; it is not recommended to use "…sex pheromones of these two species together in the same trap".
- line 266: I would say "the biotechnological control with" instead of "biological control in".
- References: revise format according to journal guidelines
- Figure 2: please delete "The" at the beginning. Add the type of trap employed and the type of commercial pheromone dispenser.
- Figure 3: "…except the two commercial sex pheromones", whose concentration or load is unknown? Please give details.
- Figure 4 (a): x axis cannot be read, dates? Please amend. Moreover, please delete "The" at the beginning.
- Figure 5: please delete "The" at the beginning.
- Table 1: Experimental purpose of Experiment 1 needs correction: "To determine whether mixing the sex pheromones of C. suppressalis and C. medinalis interfere the capture of C. suppressalis". Authors are not determining interference on C. medinalis captures because they did not include a trap baited only with CCM.
- Table 2: add in the footnote the description of CCS, dispenser?

Date Sent: 06-Mar-2020

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