

Review Form 1.7

Journal Name:	International Journal of Environment and Climate Change
Manuscript Number:	Ms_IJECC_115594
Title of the Manuscript:	Green Approaches to Mosquito Control: A Comprehensive Review
Type of the Article	Review

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PART 1: Review Comments

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
<p>Compulsory REVISION comments</p> <p>1. Is the manuscript important for scientific community? (Please write few sentences on this manuscript)</p> <p>2. Is the title of the article suitable? (If not please suggest an alternative title)</p> <p>3. Is the abstract of the article comprehensive?</p> <p>4. Are subsections and structure of the manuscript appropriate?</p> <p>5. Do you think the manuscript is scientifically correct?</p> <p>6. Are the references sufficient and recent? If you have suggestion of additional references, please mention in the review form.</p> <p><u>(Apart from above mentioned 6 points, reviewers are free to provide additional suggestions/comments)</u></p>	<p>1. Yes. The manuscript is very interesting and bring a lot new information</p> <p>2. Yes. The title is suitable.</p> <p>3. Yes. The abstract is clead and comprehensive</p> <p>4. Yes. But it could be improved, including the methodology used.</p> <p>5. Yes. It is scientifically correct.</p> <p>6. Partially. There is some references that could be added and some must be reviewed.</p>	<p>Peer review process is excellent, provided in detailed comments which will be helpful for the good quality paper</p>
<p>Minor REVISION comments</p> <p>1. Is language/English quality of the article suitable for scholarly communications?</p>	<p>The article is very interesting bringing ideas and strategies for mosquito's control. Some ideas of improvement are necessary.</p> <ul style="list-style-type: none">• The author should introduce a brief methodology section, explaining how the review was conducted.• Some references could be updated. As WHO, 2020, WHO, 2014. The WMR 2023 is available with more recent data.• In introduction there is that: Mosquitoes are one of the deadliest insects in the world, with 404 species and subspecies. This phrase needs to be reviewed. There are over 3,500 species of mosquito on earth... Review the phrase. It seems be the number of mosquitos in India, once is repeated in another phrase bellow.• Some phrases need to be referred. There is a lot of data and statements to be referred.• The tables are not referred on the body of text and the localization need to be reviewed. An example, the table 3 is in a middle of a paragraph. <p>Some other suggestions to improve the language:</p> <p>ABSTRACT</p> <ul style="list-style-type: none">• Traditional methods of mosquito control often rely heavily on chemical pesticides, which not only harm the environment but also lead to the development of pesticide-resistant mosquito populations → Traditional mosquito control methods often rely heavily on chemical pesticides, which harm the environment and lead to the development of pesticide-resistant mosquito populations.• Additionally, highlight the importance of integrated pest management → Additionally, it highlights the importance of integrated pest management... <p>INTRODUCTION</p> <ul style="list-style-type: none">• Vectors are living organisms that can spread infections or diseases → Vectors are	

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	<p>organisms that can spread infections or diseases</p> <ul style="list-style-type: none">• Vector control tactics have historically concentrated on killing mosquitos with a variety of insecticides → Vector control tactics have historically concentrated on killing mosquitos with various insecticides• Insecticide resistance in mosquitos is endangering the efficiency and sustainability of malaria control efforts around the world → Insecticide resistance in mosquitos is endangering the efficiency and sustainability of malaria control efforts worldwide.• Biological approaches present interesting alternatives to chemical control → Biological approaches present exciting alternatives to chemical control.• They include natural mosquito killers, plant-based insecticides → They include natural mosquito killers and plant-based insecticides;• Temperature determines the life cycle from 1 to 20 days. Its life cycle consists of four main stages: Eggs last 2-3 days, larvae 8-9 days, pupae 1-2 days, and adults 10 days. → Temperature determines the life cycle from 1 to 20 days. Its life cycle consists of four main stages: Eggs last 2-3 days, larvae 8-9 days, pupae 1-2 days, and adults ten days. Please refer this phrase.• The reference in the body t must be standardized. There are cases of [Carvalho et al., 2015]. and (Carvalho et al., 2015.). The authors should have the same procedures, in according with the journal guidelines.• Present day vector control programmes are focused on spraying chemicals. Despite the environmental and health problems, mosquitoes develop resistance to chemicals. In order to encompass these adversities it is better to choose eco-friendly green approaches. The green approaches include biological control (pathogens and predators), botanical insecticides, insect sterile techniques, physical methods and mechanical methods of control. → Present-day vector control programmes are focused on spraying chemicals. Despite environmental and health problems, mosquitoes develop resistance to chemicals. To overcome these adversities, it is better to choose eco-friendly green approaches. These approaches include biological control (pathogens and predators), botanical insecticides, insect sterile techniques, and physical and mechanical control methods. <p>GREEN METHODS TO COMBAT MOSQUITOES</p> <ul style="list-style-type: none">• B. thuringiensis (Bt) is a gram-positive, spore-forming, aerobic bacteria found in a wide range of environments → B. thuringiensis (Bt) is a gram-positive, spore-forming, aerobic bacteria in various environments.• aquatic, and other environments → aquatic, and different environments• body formed during sporulation and made up of four primary endotoxin proteins → body formed during sporulation and comprises four primary endotoxin proteins:• of activated toxic protein (granular formulation) of Bti was extremely toxic to Anopheles → of Bti's activated toxic protein (granular formulation) was highly toxic to Anopheles• B. sphaericus is a gram-positive, spore-forming, aerobic bacterium found in a wide range of soil and aquatic environments → B. sphaericus is a gram-positive, spore-forming, aerobic bacterium in various soil and aquatic environments.• B. sphaericus is completely safe for humans, animals, wildlife → B. sphaericus is entirely safe for humans, animals, wildlife• Mazigo et al. (2019) conducted an experiment to evaluate the time of application of a biolarvicide → Mazigo et al. (2019) experimented with evaluating the time of application of a larvicide• Recent research has highlighted the potential of entomopathogenic fungus in suppressing malaria vectors. These fungi do not induce immediate death, but instead have sublethal and late-life lethal effects on various phases of the mosquito life cycle. Because of these features, fungi have the potential to be utilized as "evolution proof" agents → Recent research has highlighted the potential of entomopathogenic fungi in suppressing malaria vectors. These fungi do not induce immediate death but have sublethal and late-life lethal effects on various phases of the mosquito life cycle. Because of these features, fungi have the potential to be utilized as "evolution-proof" agents• Conidiobolus are the most regularly reported genera to have an effect on mosquitos. → Conidiobolus are the most regularly reported genera to affect mosquitos.	
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	<ul style="list-style-type: none">• and pierce the respiratory siphon, releasing poisons by impeding the breathing mechanism (Lacey et al., 1988). When applied to water bodies, the hydrophobic conidia float on the surface and come into contact with mosquito larvae via the siphon's tip and head. When floating conidia come into touch with larvae, their peri spiracular valves allow them to breathe by breaking the water tension. Plugging the spiracles usually results in death before major invasion of the hemocoel occurs, therefore hyphal body production is limited. → and pierce the respiratory siphon, releasing poisons by impeding breathing (Lacey et al., 1988). When applied to water bodies, the hydrophobic conidia float on the surface and contact mosquito larvae via the siphon's tip and head. When floating conidia come into touch with larvae, their peri-spiracular valves allow them to breathe by breaking the water tension. Plugging the spiracles usually results in death before the significant invasion of the hemocoel occurs. Therefore, hyphal body production is limited.• One of the key components to the commercial success of a biological control agent is formulation → One key component to the commercial success of a biological control agent is formulation• A variety of aquatic creatures prey → Various aquatic creatures prey• Toxorhynchites adults are larger than Aedes and thought to be harmless to humans → Toxorhynchites adults are larger than Aedes and are considered harmless to humans.• feast on mosquito larvae, making them an essential component in reducing young mosquito populations → feast on mosquito larvae, making them essential in reducing young mosquito populations• Dragonfly larvae are known to eat significantly on bottom feeder mosquitoes, such as Aedes larvae → Dragonfly larvae eat significantly on bottom feeder mosquitoes• Labellula sp., full elimination of all A. aegypti larvae → Labellula sp., complete elimination of all A. aegypti larvae• Fish predation on mosquito larvae has been seen in a variety of habitats → Fish predation on mosquito larvae has been seen in various habitats• The greatest reduction in Anopheles larvae devoured by G. affinis was 100% after one month → The most significant reduction in Anopheles larvae devoured by G. affinis was 100% after one month.• Cytoplasmic incompatibility (CI) is a situation in which sperm and eggs are unable to produce viable progeny. The effect is caused by alterations in the gametes of Wolbachia-infected males. Wolbachia changes sperm prior to spermatogenesis and interferes with the parental chromosomes during the initial mitotic divisions, causing them to split out of sync → Cytoplasmic incompatibility (CI) is when sperm and eggs cannot produce viable progeny. Alterations in the gametes of Wolbachia-infected males cause the effect. Wolbachia changes sperm before spermatogenesis and interferes with the parental chromosomes during the initial mitotic divisions, causing them to split out of sync.• Because of the sensitive relationship between mosquito survival and vectorial capacity, interventions aimed at reducing adult mosquito daily survivorship, such as residual insecticide spraying in homes and insecticide-treated bed nets for malaria control, result in significant reductions in pathogen transmission rates. → Because of the sensitive relationship between mosquito survival and vectorial capacity, interventions aimed at reducing adult mosquitoes' daily survivorship, such as residual insecticide spraying in homes and insecticide-treated bed nets for malaria control, significantly reduce pathogen transmission rates• It has been hypothesized that life-shortening wolbachia strains, such as wMelPop, might be employed to shift the age structure of the mosquito population toward younger individuals, lowering pathogen transmission but not destroying the population. → It has been hypothesized that life-shortening wolbachia strains, such as wMelPop, might shift the mosquito population's age structure toward younger individuals, lowering pathogen transmission but not destroying the population• between infected males and uninfected females, to rapidly spread throughout insect communities. → between infected males and uninfected females, to spread throughout insect communities rapidly• Current simulations suggest that this method could lead to considerable reductions in disease transmission. → Current simulations suggest that this method could considerably reduce disease transmission.	
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	<ul style="list-style-type: none">• The current control measures are jeopardized by the actual or potential spread of resistance in the vector population → The current control measures are jeopardized by the vector population's actual or potential spread of resistance.• The current control measures are jeopardized by the vector population's actual or potential spread of resistance → The vector population's actual or potential spread of resistance jeopardises the current control measures.• The introduction of transgenic vectors may open up new avenues for lowering the density or vectorial capacity of vector populations → Introducing transgenic vectors may open new avenues for lowering vector populations' density or vectorial capacity• fewer viable offspring as a result of radiation-induced lethal mutations in their gametes → fewer viable offspring due to radiation-induced lethal mutations in their gametes• Although successful against certain agricultural pests, attempts against mosquitos have been less successful. This is due in part to the somatic damage and performance loss in sterile insects that unavoidably occurs with radiation sterilization. → Although successful against certain agricultural pests, attempts against mosquitos have failed. This is partly due to the bodily damage and performance loss in sterile insects that unavoidably occurs with radiation sterilization• In addition to minimizing the requirement for radiation, altering the timing of death can improve efficiency versus target populations with high density dependence. Simulation modeling reveals that such an approach could potentially be successful and economical against <i>Aedes aegypti</i> → In addition to minimizing the requirement for radiation, altering the timing of death can improve efficiency versus target populations with high-density dependence. Simulation modelling reveals that such an approach could be successful and economical against <i>Aedes aegypti</i>.• Sustained release of OX513A males has the potential to be a practical and efficient strategy → sustained release of OX513A males could be a practical and efficient strategy• The reported degree of suppression would probably be adequate to stop dengue epidemics → the reported degree of suppression is likely adequate to stop dengue epidemics• Over the last decade, nanocomposite (NCs) has gained popularity in a variety of commercial products due to its several advantages over nanoparticles. There are several types of NCs based on the combination, such as metal/polymer, metal/metal oxide, and Bio-NC, which combines a metal nanoparticle with bio-compounds as a solid supporting matrix → Over the last decade, nanocomposites (NCs) have gained popularity in various commercial products due to their advantages over nanoparticles. Several types of NCs are based on the combination, such as metal/polymer, metal/metal oxide, and Bio-NC, which combines a metal nanoparticle with bio-compounds as a solid supporting matrix• Despite the fact that a wide range of solid supportive matrixes, such as porous carbon material → Although a wide range of solid supportive matrixes, such as porous carbon material,• As a result, the development of novel biodegradable → As a result, developing novel biodegradable,• and impregnated them on the surface of rice husk, which was then molded into a clay coin for the steady-state release → They impregnated them on the surface of rice husk, which was then moulded into a clay coin for the steady-state release• Lantana oil and crude extract are natural fumigants that repel a variety of insects and mosquitos → Lantana oil and crude extract are natural fumigants that repel insects and mosquitos.• Kokila et al. (2016) investigated the insecticidal and biological effects of three plant extracts on the dengue vector → Kokila et al. (2016) investigated three plant extracts' insecticidal and biological effects on the dengue vector, <i>Aedes aegypti</i>.• In comparison to <i>A. aegypti</i>'s III and IV instars, the pupae were more sensitive. (Kokila et al. 2016). → The pupae were more sensitive than <i>A. aegypti</i>'s III and IV instars.• which have larvicidal effect against mosquitos → which have larvicidal effects against mosquitos;• <i>T. patula</i> extract had a little greater death rate when compared to → <i>T. patula</i> extract had a slightly greater death rate when compared to...• In <i>A. aegypti</i>, the full protection period (CPT; 14.2 h) → In <i>A. aegypti</i>, the entire protection	
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	<p>period (CPT; 14.2 h).</p> <ul style="list-style-type: none">• Isofuranodiene synthesized in ME 750 was effective against C. quinquefasciatus → Isofuranodiene synthesized in ME 750 effectively against C. quinquefasciatus at an LC50 of 18.6 µL L-1; <p>PHYSICAL METHODS</p> <ul style="list-style-type: none">• It is the change of physical components in the environment to reduce or eliminate mosquito populations, which includes changing the water in birdbaths, pools, fountains, and rain barrels once a week. Screening doors and windows to defend against mosquito attacks. Mosquito net These nets are regarded as more protective than coils and other repellents because their use poses no health risk (Peterson and Coats, 2001). There are two types of nets: medicated and non-medicated (Impoinvil et al., 2007). → It is the change of physical components in the environment that reduces or eliminates mosquito populations, which includes changing the water in birdbaths, pools, fountains, and rain barrels once a week. Screening doors and windows to defend against mosquito attacks. Mosquito nets are regarded as more protective than coils and other repellents because their use poses no health risk (Peterson and Coats, 2001). There are two types of nets: medicated and non-medicated (Impoinvil et al., 2007).	
Optional/General comments	There is a good article with good vision about the Approaches to Mosquito Control. But the language need to be updated and the write to be improved.	

PART 2:

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
Are there ethical issues in this manuscript?	(If yes, Kindly please write down the ethical issues here in details)	