Journal Name:	Journal of Experimental Agriculture International
Manuscript Number:	**Ms_JEAI_42322**
Title of the Manuscript:	**Estimation of general and specific combining ability between two groups of tomato for the production of hybrids resistant to bacterial wilt**
Type of the Article	**Original Research Article**

General guideline for Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty'**, provided the manuscript is scientifically robust and technically sound.
To know the complete guideline for Peer Review process, reviewers are requested to visit this link:

(http://www.sciencedomain.org/page.php?id=sdi-general-editorial-policy#Peer-Review-Guideline)

SDI Review Form 1.6

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)*
Compulsory REVISION comments	**Peer review on May 30-31, 2018 and the suggested corrections by peer reviewer for the article were incoporated below for the author.** **Title**: Estimation of general and specific combining ability between two groups of tomato for the production of hybrids resistant to bacterial wilt Suggested correction for Title: The title can be written as " Estimation of general and specific combining ability between two groups of tomato to identify the best genotypes and hybrids wiht resistance to bacterial wilt" **Abstarct** Aim and objectives are clearly mentioned. Provided information that is not required in abstract. Abstract requires a definite objective, scope, purpose and a brief summary of results with definite conclusion and future line of research at the end. Abstract is incomplete with scattered information and does not match with the rest of the article due to errors in presenting parameters studied It is not required to mention the method of estimating GCA and SCA in the abstract , but requires its description and details in methods. Please correct the errors when using GCA and SCA as well as LP 50, author used "PL-50, ACS, CEC and CGC" in place of these two terms through the manuscript. Key words: need to add one more word, might be "hybrids" **Introduction** The introduction is brief and clearly discussed with an aim. Minor corrections identified are listed below. Line 19: Please delete "in natura" Line 23: Please delete "carried out" Line 23-25: Please rewrite the sentence or replace with " It is an immense need to develop genetically improved cultivars of tomato with disease resistance for cultivation in the humid tropics of Brazil [2]". Line 27-30: Please divide the sentence into two simple sentences. Line 32-35: Please check the sentence rewritten, suggest to include. "Seed companies provide producers with cultivars resistant to bacterial wilt, but without desirable commercial characteristics, indicating their use as rootstock. Despite the existence of these materials, some authors affirm that the use of resistant rootstocks does not dispense complete resistance." **Current investigation is not on root stocks, kindly justify the inclusion of this paragraph in the introduction. Please also clarify the meaning of word "materials" does it mean tomato seeds or cultivars or root stocks or tissue culture samples? Please check reference "4".** **Line 37-41:** Please delete "in the last years" from line 37 and replace "resistant" with "with resistance". **Line 43-45:** Please replace " the identification of genitor lineages with good combinatorial capacity" with " to identify the genetic lineages with good combining capacity". Please delete "obtaining" Line 51: please replace "in" with "to previous". Line 52: Please replace "is" with "was" Line 55: Please delete "was" Line 56: Please replace " resistant hybrids " with "hybrids with resistance" Line 57: Please insert "other related" before "genetic" 2. **Materials and Methods** Line 64: Please delete the word "cultivars" before"bacterial" and insert it after "the word "resistant" to make a sentence like "The bacterial wilt resistant cultivars," and place a "," after the words "cultivars" and "Yoshimatsu". Line 67: If it is a cross between line and tester, there should be 20 hybrids Line 77: Please delete "of" after the word "collection".	

Line 75-76: Please check the ratio of pollinator to female plant.
Line 81: Please clarify "The plants were conducted with tutoring", what does this tutoring means?
Line 85-88: please rewrite the paragraph as suggested below. It is alwasy a best practice to indicate the time, day the emasculations were done, pollen collected from male parent and crosses made in breeding trials.
"The essential activities of removal of sepals, emasculation of flowers on the female parents (ten lines) and collection of pollen from male parents (testers) were done prior to hybridization. Hybridization was performed manually, by brushing the pollen grains on the surface of the stigma of the emasculated flower, repeating the process for two consecutive days. The pollinated flowers were marked with appropriate label with date, time and name of corresponding male parent."
Line 90-91: Please include the details of time it took from pollination to maturity of the fruit with percentage of pollinations for successful fruit set.
Line 93-95:Please check for suggested sentence corrections:
"Seeds of the hybrids and the parents were again planted following the same methodology as described above for lines and testers. The germinated seedlings were transplanted within 21 days to plastic pots of 500 ml with commercial substrate and soil containing earthworm, humus and coconut powder in the ratio of 1: 1"
Line 97-98: please check this sentence thoroughly for required correction in the name of the culture medium, preservation method, as they were mistyped. If not the entire part of this research need to be repeated using the correct procedure.
Line 99-101: please incorporate the corrected sentence. "The concentration of bacterial suspension was adjusted to $5X10^8$ cfu (colony forming units) per ml in photocolorimeter).
please provide the correct details of the equipment in the parenthesis.
Line 101: Please delete the word "used" after "isolates".
always remember to use abbreviations in second time use in text, first time it is required to describe the term with expansion in a research manuscript"
For example the terms like IPA - 6, TZC, CFU, NYDA? why they were used?
Reasons for using only one susceptible cultivar IPA-6 for testing pathogenicity were missing?
Lines 103-110: The paragrpah has mixed information for two subjects, one for isolation of inoculated samples of IPA-6 and second one for statistical design of the experiment. Please separate the subjects.
Part one: Isolation and growth of bacterial culture
Please check for the edition.
"Isolation of bacteria from IPA-6: After a week of inoculation, when the roots developed symptoms of disease expression and when roots were distributed through the vase, a half-moon cut, about two centimeters above the transition zone between the root and the stem of the plant was excised with the aid of a stylus. A liquid (water) suspension of 15 ml was added to the infected tissue samples to collect bacterial suspension."
Part II: Statistical Design:
"The experiment design is completely randomized with factorial split plot (3X10X2X2), with three replications, with 10 strains, two susceptibile cultivars (IPA-6 and Santa Clara), two resistance cultivars (Hawaii 7996 and Yoshimatsu) and the 24 hybrids inoculated with the two bacterial isolates CRM 74 and CRM 77. Each plot consisted of four pots with one plant each."
Line 117-129: Please capitalise the initials of the parameters studied. For example : Bacterial Wilt Index (BWI).
Line 139: Please correct the last sentence "Statistics genetics....[16]." It has incomplete terms and with comibined information for statistical analysis and genetic analysis.
The same sentence can be written as " A free online software (http://www.ufv.br/dbg/genes/genes.htm or http://www.ufv.br/dbg/biodata.htm) was used for biometric data analysis of present plant breeding trial involving genetic analysis.

Over All

- The breeding method employed was mentioned in the key words "top cross" for disease resistance or to transfer the resistant genes, but it was not described in the methods or introduction with any supportive literature.

- Need to include details on the type of cross made along with female and male parents used. For example is it a test cross or top cross or back cross and how many years the study was conducted to generate these hybrids. Usually backcross method of breeding is more common to transfer resistance and takes minimum about six years. Were the lines and testers are pure in genetically expressing the traits of interest "disease resistance"? Please incorporate the details for selection of the specific lines and methods employed for selection of lines and breeding to generate 24 hybrids with resistance.
- Bacterial culture storage media, isolation, preservation methods, cell suspension and plating were not described correctly.
- Statistical design is split plot and required to include main plot, sub plot and sample information. Statistical desing and method analysis of the data collected should be at the end of the "materials and methods" section.
- Entire materials and methods section of the article was with mixed information of incomplete details about the experiment conducted.
- Requires organisation of the topics with separate subheadings for each objective investigated

Strength:
Followed technical standards in designing and analysis and description of the variables and methods.
Subject selection is good with valid and reliable methods.
Major Weakness:
Sufficient details of the methods/process should be provided
Definign source of variables and variance components
Only Diallel mating design provides the GCA and SCA information, other crosses Top cross and line X tester crosses provides specific information either GCA or SCA.
Results and Discussion
Results and discussion are written with care and indepth details by lisitn geach and every minute observation made and data collected during the experiment.
Suggested corrections are listed below:
Lines 152-154: Please insert Group I and Group II in parenthesis for testers and female parents as described before in methods., though it is repetition, it is required to be consistent with contents of table. Other wise, it is required to change the contents of table by inserting the testers and female parents against Group I and II respectively.
"Estimates of GCA mean squares for the group of testers (group I) with the CRM 74 isolate were significant for all variables, except for INC. For the female parents (Group II) only the variable LP 50 did not present significance. Using the isolate CRM 77 the GCA mean squares of the testers (group I) were significant only for AUDPC and for the GCA of the female parents (group II) were significant for INC and AUDPC (Table 1)"
Line 158: Please replace "ACS" with "SCA"
Line 157-160: Please check the sentence from the reference [17] and has information in the parenthesis (underlined in bold) that is not described in methods and is related to the current investigation. " GCA **(ĝi),** associated with additive gene effects, and between the effects of **SCA (Ŝii and Ŝij**").
Line 170: Please insert "," after the word "isolate" and replace the word "characters" with "parameters"
Line 172: Please delete "control"
Line 172-173: Please replace the phrase " However, the gene actions favored more the manifestation of non-additive gene effects of the studied characters" with " The results favored the non additive gene effects of studied parameters"

Line 180: Please replace "hands" with "words"
Lines 186-188: Please note the edited sentences
"Previous authors observed similar results with very high coefficients in identifying tomato progenies with resistance to bacterial wilt with a LP 50 of 34.55% [13] and a coefficients of variation from 18.76% to 29.00% for INC when studying the adaptability and stability of tomato in soil infested with R. solanacearum [2]."
Line 191: Please replace "PL" with "LP", Also please explain the reasons for High GCA estimates of PL 50 value has significance in selection of hybrids.
Line 194 and 195: Please insert "2 suscpetible female parents," before the number "12" and replace "CGC" with "GCA" and replace "IMB" with "BWI" in line 195
<u>What is missing from results:</u>

- No tables for ANOVA for GCA, SCA, reciprocal, error components, if the desing is Diallel. If it is Top cross, missing some information in ANOVA table of information with males, females and within plot and total source of variations (Table 1).

- Incomplete data in Tables and Figures; information in the legend (T: testers; F: female parents) is not present in the contents of table 1 as well as missing legends for group I and II.

For example, Table 1: Please check degress of freedom.
Table 1 provided legend for testers and female parents; missing information for parental genotypes (2 resistant cultivars as testers and 10 Lines) If the mating desing is diallel, then we supposed to have the information about self and reciprocal F1 which is lacking here (only total 40); If it is test cross, then we should have ANOVA information on replication (3-1=2), lines (10-1=9),testers (2-1=1),LineXTester[(10-1)X(2-1)=9], Error (2X19=38). I understand it is a top cross with LinexTester mating design to analyze combining ability. Please check for the consistency through the manuscript.
Table 2, 3: Please delete the " Recife, UFRPE, 2017" from the title of the table, instead incorporate the number of years or seasons the data was collected. For example: for a period of two season or years or during 2017 spring and summer.
Table 4: Please shorten the title of the table by removing the parameters. For example "Estimates of heritability and variance components for bacterial wilt resistance in tomato"; Please incorporate as legends below the table 4 for the details of the symbols used for heritability and variance components in the contents of table 4.
Line 203-208: Please replace "characters" with "parameters".
Line 203-204: Please replace the phrase " potential to contribute in the reduction of the characters when used in crossings" with " highest positive potential of the investigated disease resistance trait contribution to progenies when used in crossing".
Line 204: Please delete "Therefore," and replace "the" with "The"
Line 205: Please delete "the" before "BWI" and replace "characters" with "parameters"
Line 206: Please place a period "." after "isolates." and delete "and" and begin a new sentence with "The L04".
Line 210: Please replace "PL" with "LP," and delete "were".
Line 214: Please replace "CGC" with "GCA"
Line 218: Please replace "The same occurs" with "Similar observations made"
Line 219: Please delete " can be indicated in crosses, since these are extremely important characters in" and replace it with "indicating that the crosses made with these lines are important in contributing"
Line 222: Please replace "Still in relation to the" with "The" and insert "for" before "the lines"
Line 223: Please delete " the effects of" and replace "PL" with "LP"
Line 224-225: Please replace " In the same way they occur with the" with "Similar results were observed for".
Line 227-230: Not clearly written, please revise this paragraph.
Line 232: Please insert "," after "[8]"
Line 233: Please replace "characteristic of interesting" with "traits of interest".
Line 234: Please delete "of"

	Line 250: Please insert "observed" in place of "observe" Line 254: Please replace " at the crosses between" with " for the crosses " Line 256: Please replace "IMB" with "BWI" Line 257: Please replace "among" with "with" Line 262: Please replace "of" with "to" Line 263: Please delete "presenting" Line 270: Please insert "was" in front of "no significant" and replace "the average" with "mean" Line 268-274: Please rewrite the paragraph by using simple sentences. Line 276-278: Please rewrite these lines as suggested below "According to [7], tomato hybrids with high SCA and the parents with low or negative GCA estimates were observed due to the major role of non-additive gene effects in determination of the characteristic in relation to the additive gene effects." Line 280: Please replace "Regarding" with "With respect to" Line 288:Please place a period"." after "superior values" and delete "because" Line 289: Please begin new sentence with "In" Line 290: Please insert "in these crosses" after "desirable" Line 295 and 296: Second sentence is incomplete and repeated twice. Please clarify the difference in four resistance components and additive -non additive gene effects. Only four resistance components are studied with two isolates. Line 311: Please delete " breeding for the studied trait and " which is repeated twice. Line 312: Please replace "since that" with "indicating" Line 316: The phrase "within the blocks" requires description in methods and in discussion during final revisions by author to incorporate the details on experimental design. Line 327: Please follow consistency in presenting the variables in text and in table For example Author used "CVg / CVe" with lower case "g" and "e" in text and upper case "E and G" alphabets in table 4. Line 333: Please replace the phrase "value for the CVg / CVe ratio was 1.58, found" with "ratio of CVg / CVe (1.58) was observed" Line 334: Please delete "also this variable that obtained" Line 340: Please insert "indicated" in place of "indicate" Line 350: Please replace "more" with "values" Line 352: Please replace "relation" with "comparison" Line 355: Please replace "since" with "because" and "materials" with "genotypes" Line 356: Please place a period "," after "genotypic value." and begin a new sentence with "The" by deleting " in such a way that" Line 357: Please delete "besides" Line 364: Please replace "since" with "because" Line 367: Please replace "relation" with "comparison" and delete "as well as and begin a new sentence with "The" Line 368: Please delete "was highlighted in" and insert "with highest" and delete "and" The last two paragraphs can go to the conclusion. Please make sure to avoid repetitions. 4. **Conclusion:** Line 373: Please replace "CGC" with "GCA" Line 374: Please replace 'the" with "The" and delete "having" and replace "CEC" with "GCA" Over All The data is well controlled, but robust requires thorough indepth revision for breeding procedures, stastical design followed for all the calculations and summary of results with supportive literature. Lot of errors in while using the term GCA, author used "characters" in place of "biometrical paramters", please avoid use of since, relation, regarding, materials etc as these are not recommended language for this research article. **References** **References are relevant, recent and cited in both text and refernce section correctly covering key studies.** Line 390: Reference 4 is not found in open database. Please check the references for missing titles of the articles: Example "Reference 15 is missing and has only half of the title "adaptive models" followed by journal name.	

	Overall Requires organisation of the contents in materials and methods as well as in Results and discussion with sub headings and thorough edition for errors identified Description of missing variables as necessary for statistical design and experiments conducated by listing down the number of objectives and measures taken to achieve those Abstarct, all the sections of manuscript including Tables , entire text and references requires to be thoroughly reviewed by the author following peer reviewer suggestions and to include the complete experimental details before final submission There are no major flaws identified and the article is consistent within itself **Weaknesses** • Sufficient details of the methods/process should be provided • Defining source of variables, variance components and mating design • Please explain "type G2" estimation method in methods section with detailed procedure describing the formulas and steps in the investigation conducted • Raising the same seedlings in different growth media, need justification of use of different media for the same species of tomato.	
Minor REVISION comments		
Optional/General comments		

Reviewer Details:

Name:	***Satya S Narina***
Department, University & Country	***Virginia State University, USA***