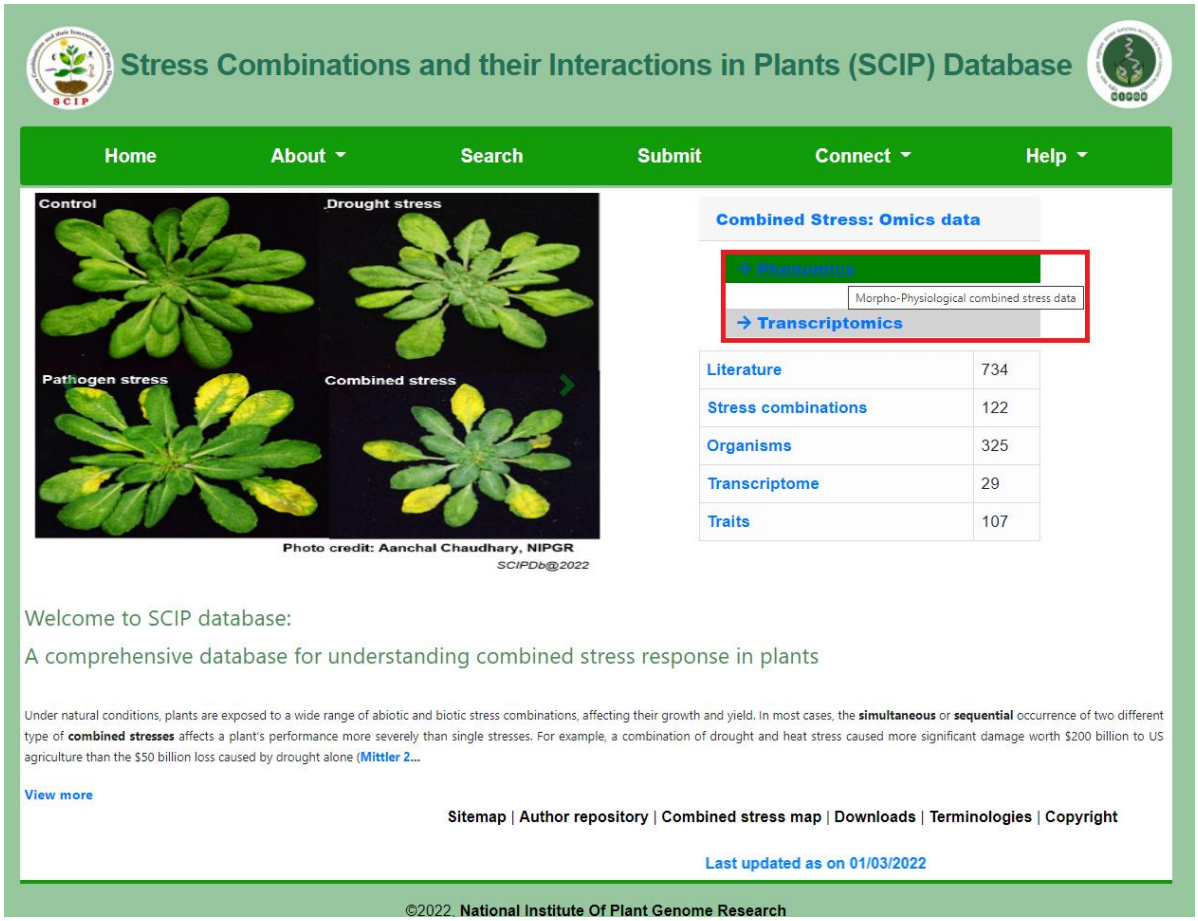
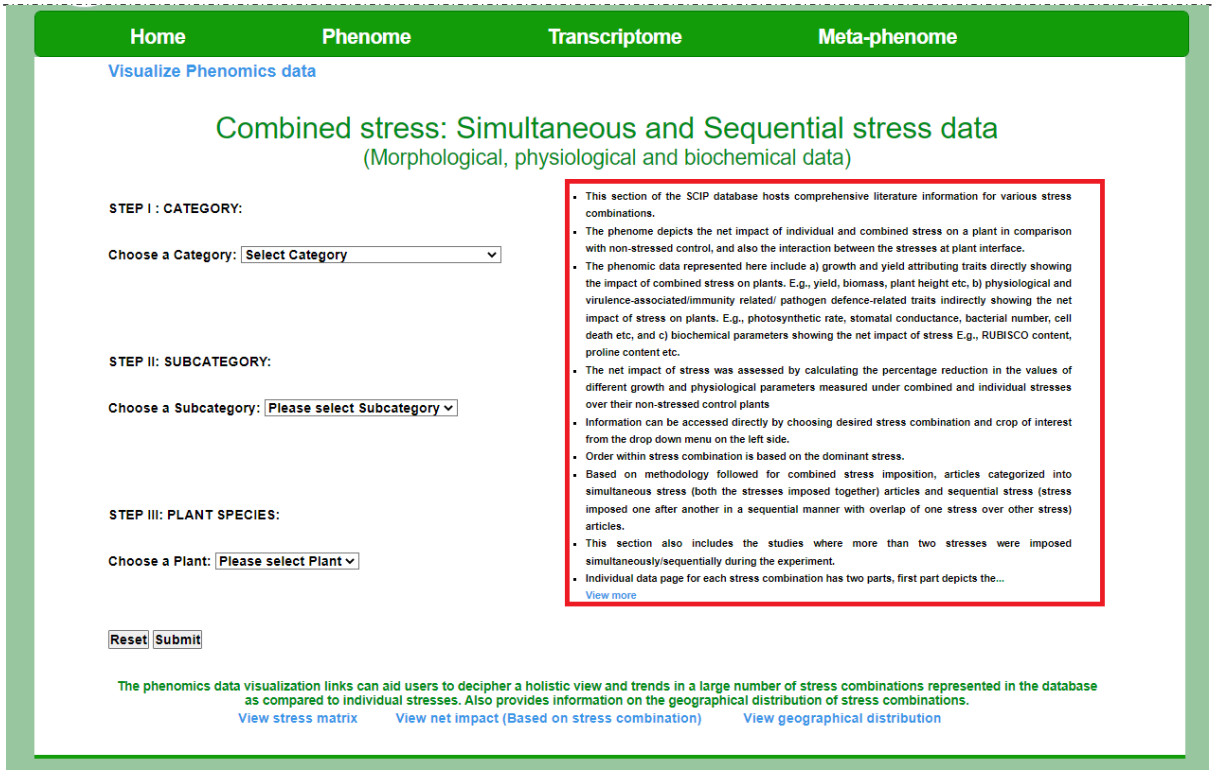


1. Searching phenomics data

a) Home page provides the user with two major menus, namely Phenomics and Transcriptomics.

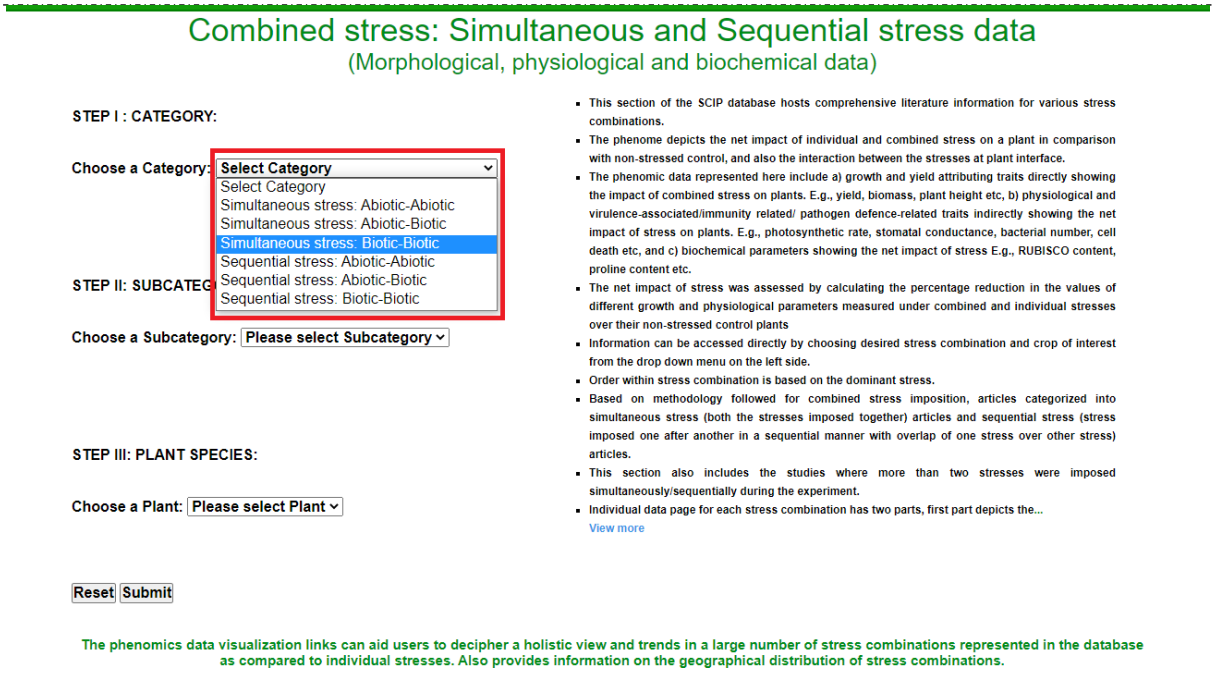
b) To mine phenomics data, user's need to click the Phenomics button as shown in above screenshot.

c) Once Phenomics tab is selected the user will be redirected to the Phenomics section which is shown below. The highlighted portion describes about the data hosted in this section in detail.



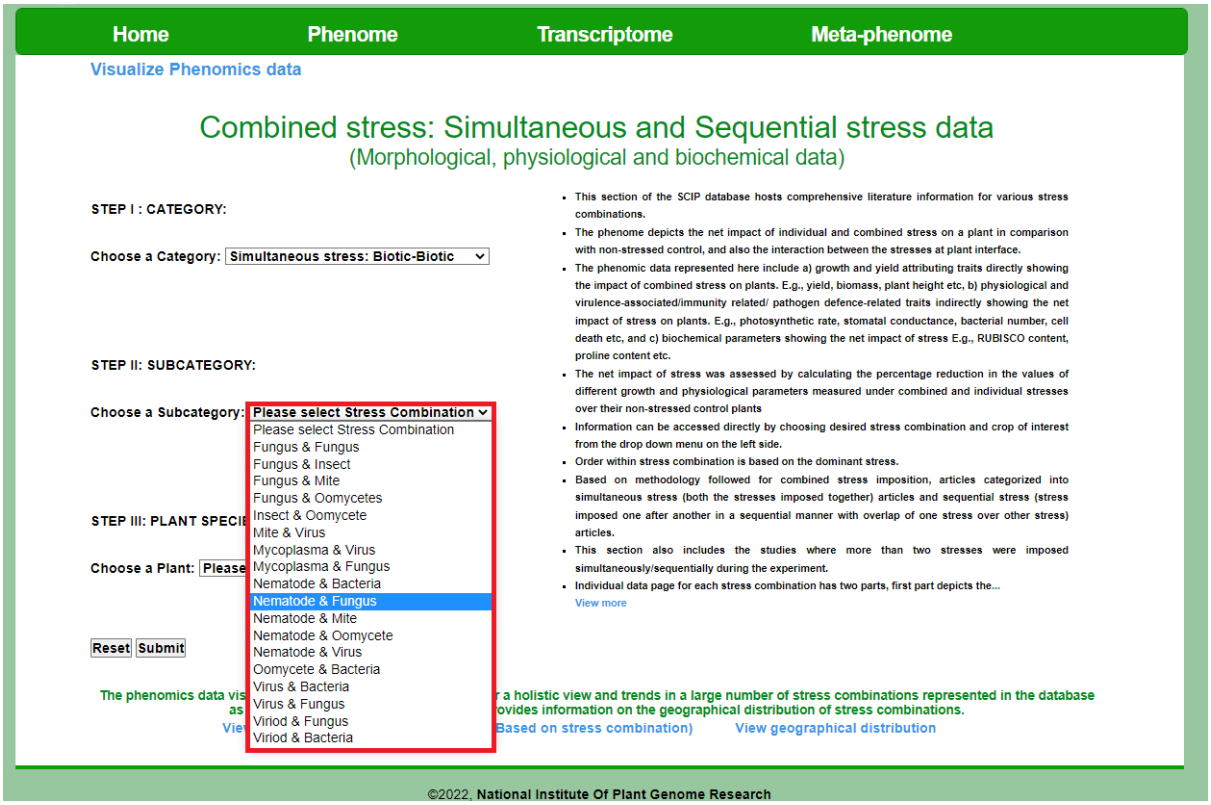
d) A three-level dropdown-based selection is required to mine the data from present section as explained below.

e) Select desired combined stress category (first level) from the drop-down menu highlighted.

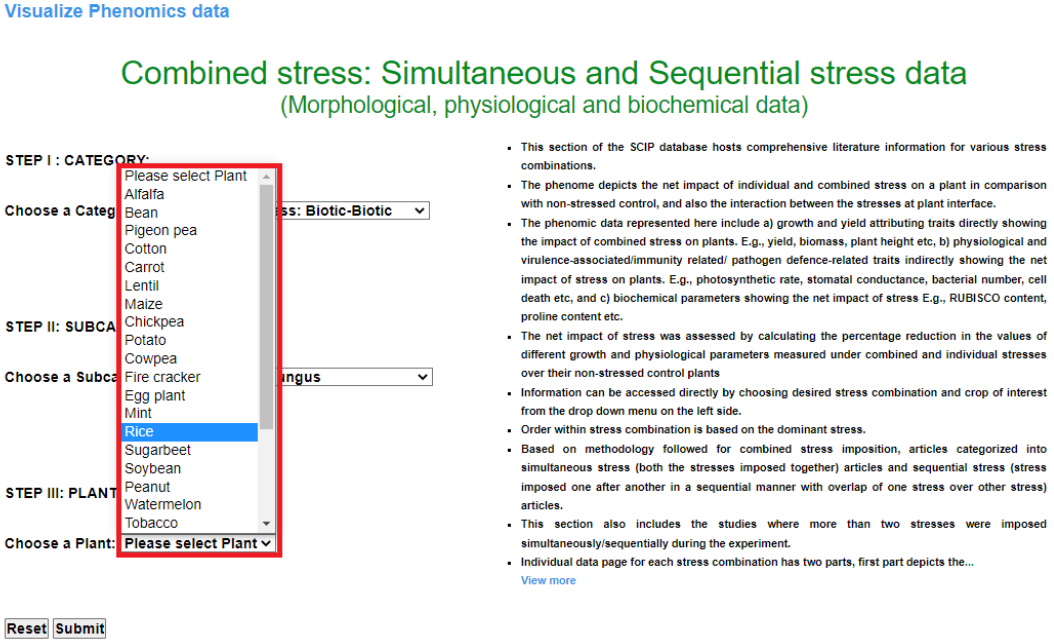


f) All the corresponding stress combinations under the above chosen category will be presented, in the second level of dropdown.

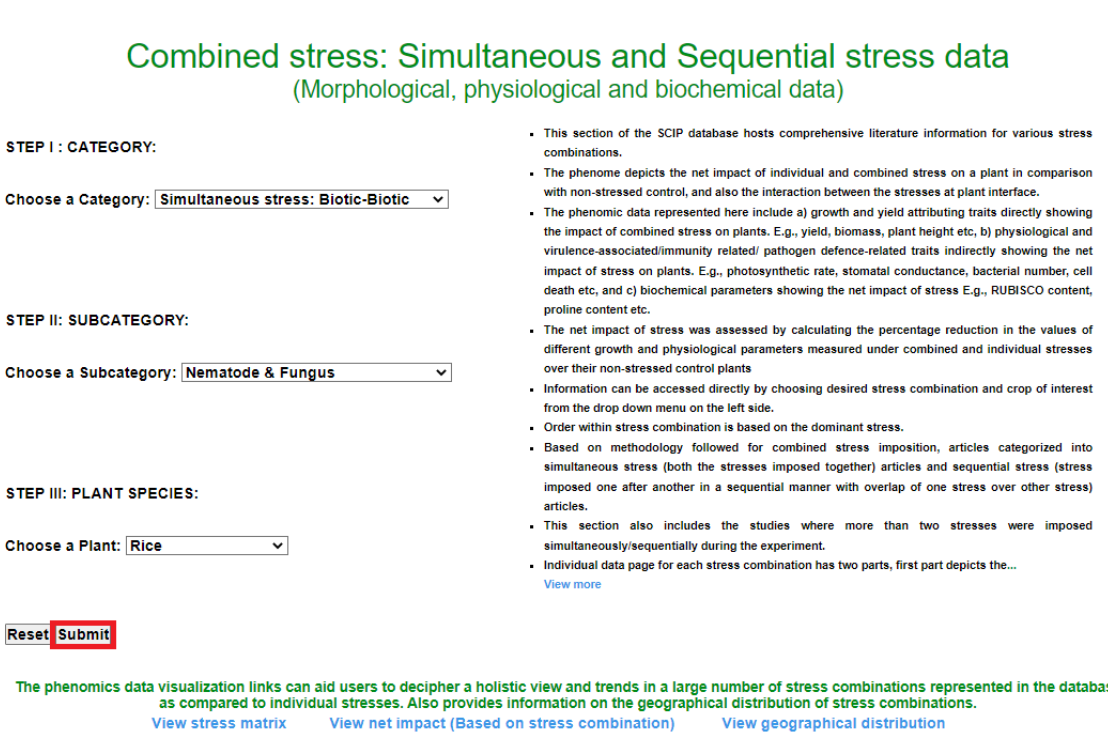
g) Select a desired combined stress sub category from the drop-down menu highlighted.



h) All the corresponding plant species under the above chosen subcategory will be presented, in the third level of dropdown. Select a desired plant species from the drop-down menu, as shown in highlighted section below.



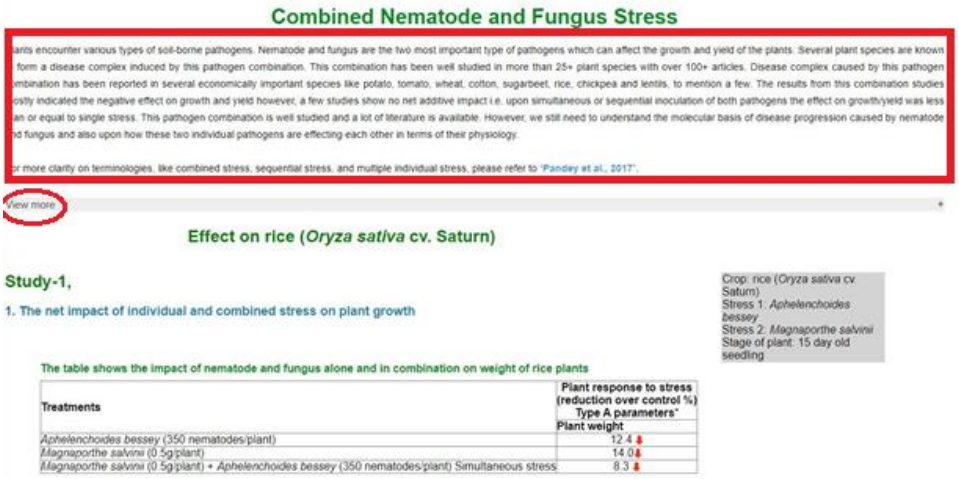
i) On clicking the submit button, the webpage containing the phenomics data pertaining to the user-based selection is presented.



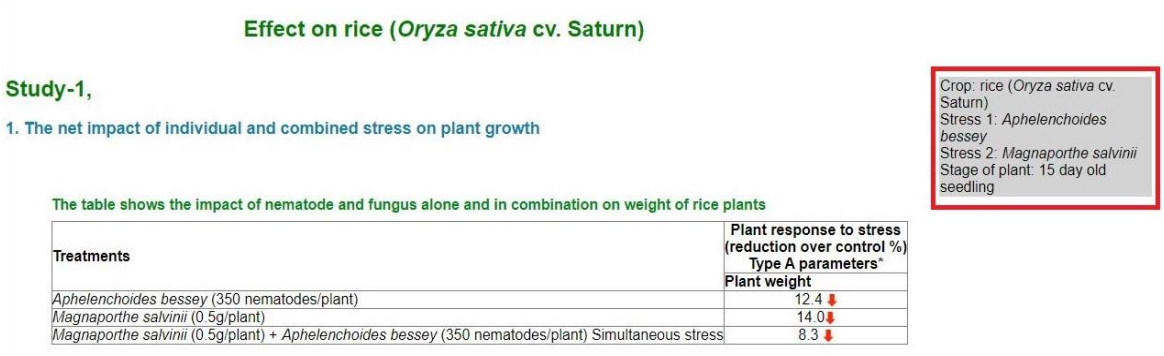
2. Understanding phenomics data

The user will be redirected to the webpage containing the phenomics details of the species selected for particular stress combination. The image shown below is the phenomics data from **Nematode and Fungus** stress combination for **rice (Oryza sativa).**

a) Any phenomics data starts with a brief introduction as shown in highlighted section of the below screenshot. On clicking view more button, a representative image (wherever possible) is also presented.



b) The highlighted grey box, provides the summary about the plant species, stresses imposed in the current study, and also about the stage of the plant.



c) After this, a tabular depiction of the treatment given in current study, is presented to the user. The values here indicate percentage reduction over control, under two individual stresses and also combined stress and reflects the net impact of individual and combined stress on plant growth.

Effect on rice (*Oryza sativa* cv. Saturn)

Study-1,

Crop: rice (*Oryza sativa* cv. Saturn)
Stress 1: *Aphelenchoides bessey*
Stress 2: *Magnaporthe salvinii*
Stage of plant: 15 day old seedling

1. The net impact of individual and combined stress on plant growth

The table shows the impact of nematode and fungus alone and in combination on weight of rice plants

Treatments	Plant response to stress (reduction over control %) Type A parameters*
	Plant weight
Aphelenchoides bessey (350 nematodes/plant)	12.4 ↓
Magnaporthe salvinii (0.5g/plant)	14.0 ↓
Magnaporthe salvinii (0.5g/plant) + *Aphelenchoides bessey* (350 nematodes/plant) Simultaneous stress	8.3 ↓

d) The percent change values are shown here along with arrows in red and green color, for an easy interpretation of results. A red-colored downward arrow indicates the parameter is affected under stress, and the higher the positive value greater the damage to the parameter under stress. Green-colored upward arrow indicated parameters are not affected under stress conditions as compared to control.

e) **Type A parameter,** highlighted in above screenshot implies**,** those that includes growth (plant height, biomass, leaf area, leaf number, root length, shoot weight, root weight, etc.) and yield (seed weight, seed number, test weight, etc.), attributing parameters that directly reflect the impact of stress.

f) **Type B parameters** includes physiological (photosynthesis, stomatal conductance, transpiration, chlorophyll content, etc.) and pathogenesis (disease index, pathogen load, disease score, etc.) related parameters which indirectly reflect the impact of stress.

g) **Type C parameters** includes biochemical parameters such as proline content, MDA content, nutrient composition, ROS content, etc., which also explains the impact of stress but to a lesser extent compared to the other two classes of parameters.

In cases where interaction between two stresses occur at plant interface, a second table is also presented depicting the same.

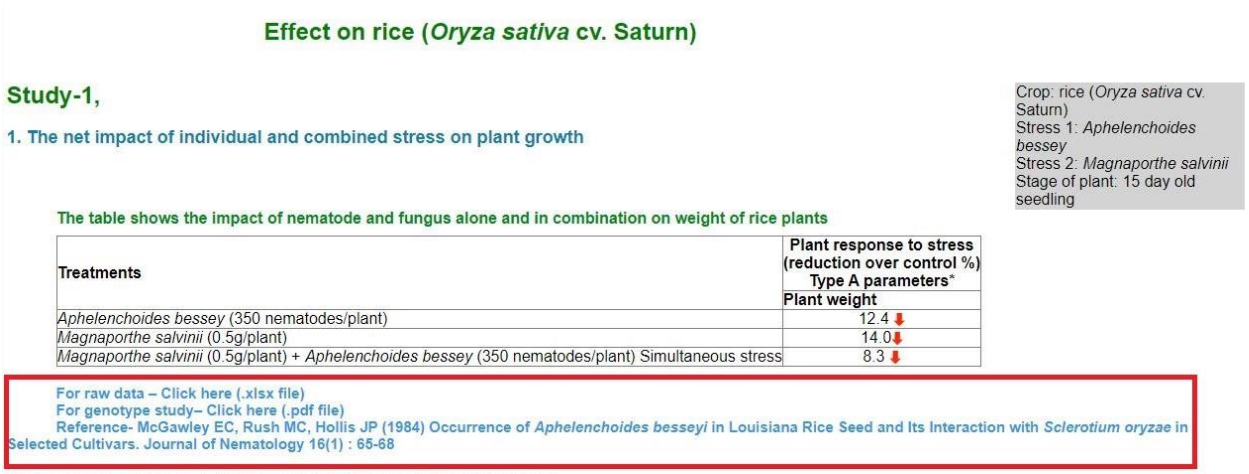
2. The interaction between nematode and fungal pathogen under combined stress at plant interface

The table shows the effect of the fungal pathogen on nematode population per plant and the effect of the nematode on fungus induced disease index under combined stress treatment

Treatments	Response to combined stress** Type B parameters*	
	M. salvinii (disease index)	*A. bessey* (no./plant)
Aphelenchoides bessey (350 nematodes/plant)	0	1540
Magnaporthe salvinii (0.5g/plant)	1-2	N/A
Magnaporthe salvinii (0.5g/plant) + *Aphelenchoides bessey* (350 nematodes/plant) Simultaneous stress	2	1365

For raw data – Click here (.xlsx file)
For genotype study– Click here (.pdf file)
Reference- McGawley EC, Rush MC, Hollis JP (1984) Occurrence of *Aphelenchoides besseyi* in Louisiana Rice Seed and Its Interaction with *Sclerotium oryzae* in Selected Cultivars. Journal of Nematology 16(1) : 65-68

h) The corresponding raw data, genotype/cultivar/variety/species study data (if present) and the link to the journal is available beneath the corresponding table which is highlighted below.



Effect on rice (*Oryza sativa* cv. Saturn)

Study-1,

1. The net impact of individual and combined stress on plant growth

Crop: rice (*Oryza sativa* cv. Saturn)
Stress 1: *Aphelenchoides bessey*
Stress 2: *Magnaporthe salvinii*
Stage of plant: 15 day old seedling

The table shows the impact of nematode and fungus alone and in combination on weight of rice plants

Treatments	Plant response to stress (reduction over control %) Type A parameters*
	Plant weight
Aphelenchoides bessey (350 nematodes/plant)	12.4 ⬇
Magnaporthe salvinii (0.5g/plant)	14.0⬇
Magnaporthe salvinii (0.5g/plant) + *Aphelenchoides bessey* (350 nematodes/plant) Simultaneous stress	8.3 ⬇

For raw data – Click here (.xlsx file)
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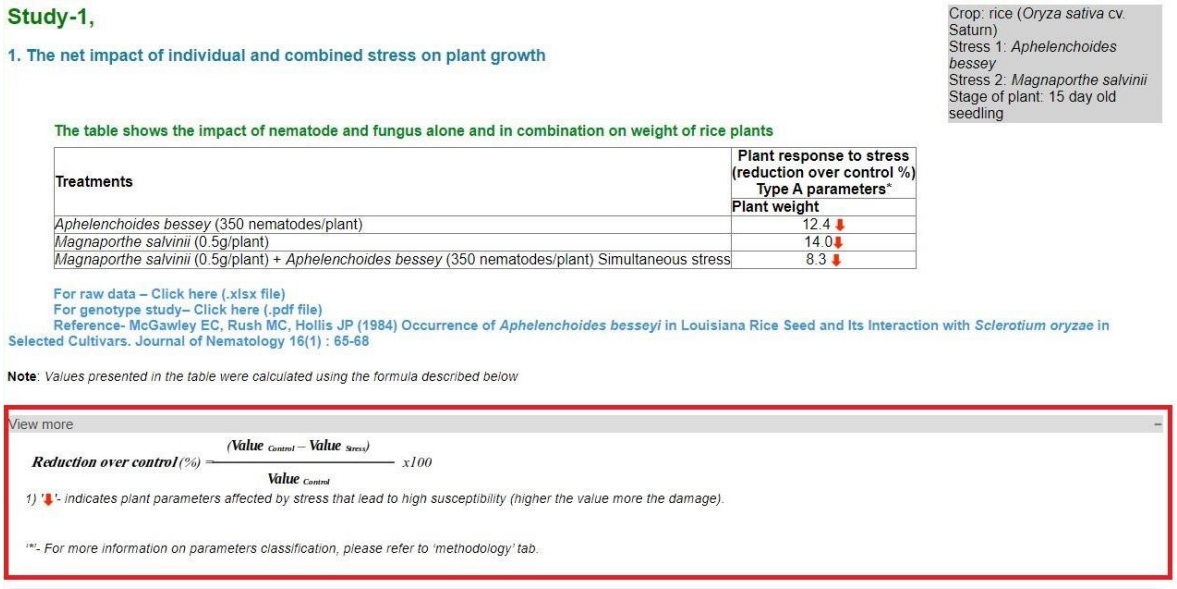
Reference- McGawley EC, Rush MC, Hollis JP (1984) Occurrence of *Aphelenchoides besseyi* in Louisiana Rice Seed and Its Interaction with *Sclerotium oryzae* in Selected Cultivars. Journal of Nematology 16(1) : 65-68

i) The view more section which is highlighted below, depicts the formula with which the values for the column "Plant response to the stress" is calculated for each treatment.



Study-1,

1. The net impact of individual and combined stress on plant growth

Crop: rice (*Oryza sativa* cv. Saturn)
Stress 1: *Aphelenchoides bessey*
Stress 2: *Magnaporthe salvinii*
Stage of plant: 15 day old seedling

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Magnaporthe salvinii (0.5g/plant) + *Aphelenchoides bessey* (350 nematodes/plant) Simultaneous stress	8.3 ⬇

For raw data – Click here (.xlsx file)
For genotype study– Click here (.pdf file)
Reference- McGawley EC, Rush MC, Hollis JP (1984) Occurrence of *Aphelenchoides besseyi* in Louisiana Rice Seed and Its Interaction with *Sclerotium oryzae* in Selected Cultivars. Journal of Nematology 16(1) : 65-68

Note: *Values presented in the table were calculated using the formula described below*

View more

$$\textit{Reduction over control}\,(\%) = \frac{(\textit{Value}_{\textit{Control}} - \textit{Value}_{\textit{Stress}})}{\textit{Value}_{\textit{Control}}} \times 100$$

1) '⬇'- indicates plant parameters affected by stress that lead to high susceptibility (higher the value more the damage).

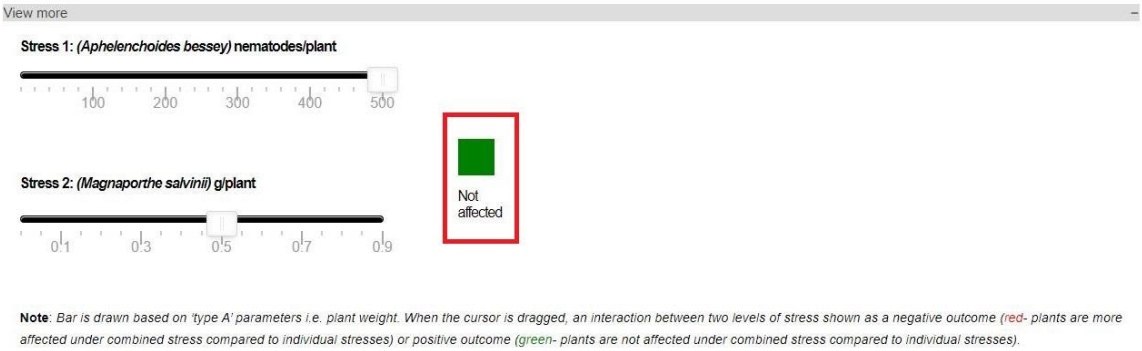
''- For more information on parameters classification, please refer to 'methodology' tab.*

j) The next view more tab depicts an interactive scroll bar which on scroll depicts, an interaction between two levels of stress shown as a negative outcome (red- plants are more affected under combined stress compared to individual stresses) or positive outcome (green- plants are not affected under combined stress compared to individual stresses).

Bar is drawn based on 'type A' parameters (in the depiction below for eg. plant weight).

h) In the depiction shown below, the first stress is ***Aphelenchoides bessey*** (a nematode) and the second stress is ***Magnaporthe salvinii (***a fungus).

i) The user can scroll over the scales for both the individual stresses and check whether a particular combination of concentrations of both the stresses is detrimental to the plant or not compared to the individual stresses. If it is not detrimental a small square box having green color with a text "**Not affected**" will be shown as highlighted below. If a particular stress combinations concentrations are deleterious to the host plant, then a red box will be show with a text "**Affected**", which means more detrimental compared to each of the individual stresses.



j) The phenomics data ends with a brief inference for each study, which summarises the major finding of the article.