We claim:

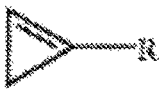
1. A granule formulation comprising

(a) a molecular complex of a volatile compound and a molecular encapsulating agent; and

(b) a carrier component having moisture content between 5% and 35%;

wherein chemical stability of the molecular complex is improved as compared to a control formulation without the carrier component having a moisture content between 5% and 35%, and

wherein the volatile compound comprises a cyclopropene compound of the formula:



wherein R is a substituted or unsubstituted alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkylalkyl, phenyl, or naphthyl group; wherein the substituents are independently halogen, alkoxy, or substituted or unsubstituted phenoxy.

2. The granule formulation of claim 1, wherein the moisture content is between 7% and 15%.

3. The granule formulation of claim 1 or 2, wherein the carrier component comprises clay.

4. The granule formulation of claim 1 or 2, wherein the carrier component comprises bentonite, limestone, or combinations thereof.

5. The granule formulation of claim 1 or 2, wherein the carrier component comprises sodium bentonite clay.

6. The granule formulation of any one of claims 1 to 5, wherein the granule formulation does not comprise a binder component.

7. The granule formulation of any one of claims 1 to 6, wherein the chemical stability of the molecular complex is improved at least two folds.

8. The granule formulation of any one of claims 1 to 7, wherein R is C_{1-8} alkyl.

9. The granule formulation of any one of claims 1 to 8, wherein the cyclopropene compound comprises 1-methylcyclopropene (1-MCP).

10. The granule formulation of claim 9, wherein the granule formulation comprises between 0.1% and 10% of the 1-MCP.

11. The granule formulation of claim 10, wherein the granule formulation comprises between 0.3% and 3% of the 1-MCP.

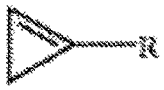
12. The granule formulation of any one of claims 1 to 11, wherein the molecular encapsulating agent is selected from the group consisting of alpha-cyclodextrin, beta-cyclodextrin, gamma- cyclodextrin, or combinations thereof.

13. The granule formulation of any one of claims 1 to 12, wherein the molecular encapsulating agent comprises alpha-cyclodextrin.

14. A method for stabilizing a molecular complex of a volatile compound and a molecular encapsulating agent, comprising preparing a granule formulation using a carrier component having moisture content between 5% and 35%,

wherein chemical stability of the molecular complex is improved as compared to a control formulation without the carrier component having a moisture content between 5% and 35%, and

wherein the volatile compound comprises a cyclopropene compound of the formula:



wherein R is a substituted or unsubstituted alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkylalkyl, phenyl, or naphthyl group; wherein the substituents are independently halogen, alkoxy, or substituted or unsubstituted phenoxy.

15. A method for preparing the granule formulation of any one of claims 1 to 13, comprising user a roller compaction process with the carrier component having a moisture content between 5% and 35%.

16. The method of claim 15, wherein no binder is used in the roller compaction process.

17. The method of claim 15, wherein no molecular sieve is used in the roller compaction process.

18. A method of yield increase and/or yield protection of a crop plant comprising applying the granule formulation of any one of claims 1 to 13 to a field cultivating the crop plant, wherein the crop plant is in a reproductive or ripening stage.

19. The method of claim 18, wherein the crop plant is selected from the group consisting of rice plant, maize plant, wheat plant, soybean plant, canola plant, and cotton plant.

20. The method of claim 18, wherein the granule formulation comprises 1-methylcyclopropene (1-MCP).

21. The method of claim 20, wherein the application rate of 1-MCP is between 10 g active ingredient (a.i.)/hectare and 100 g a.i./hectare.