

IPM Fact Sheet Series

*UMass Extension Fruit Team
Fact Sheet #*

Kaolin Clay

Kaolin clay is a soft, white powder mainly comprised of the mineral kaolinite. Under a scanning electron microscope, kaolinite is composed of plate-like, somewhat hexagonal crystals generally ranging in size from about 0.1 micrometer to 10 micrometers appearing as stacks that sometimes form worm-like arrangements; occasionally they form macroscopic structures, nearly large enough to constitute measurement by millimeter. Found in the natural world, kaolin usually contains other minerals; muscovite, quartz, feldspar, and anatase are some examples. Crude kaolin is sometimes stained yellow due to iron hydroxide pigments, so it is bleached to remove the pigments, and washed with water to remove the other minerals present.



The name kaolin is believed to be a corruption of Kau-Ling, which is the name of the hill in China kaolin clay was primarily mined from for centuries. Since then, it has also been mined in France, England, Germany, the Czech Republic, and the United States (mostly the southeastern states). It can be seen clearly in striated patterns with other geologic material in Providence Canyon State Recreation Area in Georgia, USA. Global

production of kaolin in 2021 was estimated to be 45 million tonnes, the market value of which is about US\$4.24mil. It is used in the manufacturing of many products, mainly paper, but also china, porcelain, rubber, paint, toothpaste, and cosmetics. Large-scale kaolin mining operations weren't established in the US until the 1950s, but it has been mined and used by indigenous peoples prior to colonization, and traded internationally as early as the 1700s.

Kaolin clay is employed in fruit production as a pesticide and disease management agent, while also offering some protection against heat stress. It is sprayed as a powdered suspension, coating the leaves and fruit with white dusty film, which adheres to insects and acts as an irritant, greatly reducing their capacity to cause damage to the

crop. It is known to repel many insects, including Japanese beetles, a highly problematic pest in orchard fruit production, and the United States Environmental Protection Agency states that kaolin has no ill effects on beneficial insects.



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Additional information available on the MYIPM app: <https://apps.bugwood.org/apps/myipmseries/>

Note: This information is for educational purposes only and is reviewed regularly for accuracy. References to commercial products or trade names are for the reader's information. No endorsement is implied, nor is discrimination intended against similar products.

For pesticide products please consult product labels for rates, application instructions and safety precautions. The label is the law. Users of these products assume all associated risks.

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References: (not formatted.... should I include these in the final draft?)

<https://www.britannica.com/science/kaolin>

https://www3.epa.gov/pesticides/chem_search/reg_actions/registration/fs_PC-100104_01-Jun-99.pdf

<https://earthobservatory.nasa.gov/images/147689/kaolin-capital-of-the-world>

<https://www.gardeningknowhow.com/plant-problems/pests/pesticides/kaolin-clay-insect-control.htm>