

# Selenium in the Environment: An In-Depth Look at its Impact on Soils, Plants, and Ecosystem

Selenium is an essential trace element that plays a crucial role in the health of both plants and animals. While it is required in small amounts for normal biological functions, excessive levels of selenium can be toxic to both the environment and human health. In this article, we will explore the presence of selenium in soils, its uptake by plants, and the impact it has on the surrounding ecosystem.

## Selenium in Soils

Soils act as the primary source of selenium in the environment. Selenium is naturally present in rocks, minerals, and organic matter. It can be found in varying concentrations in different soil types, with some regions having high selenium content due to geological factors.

The availability of selenium to plants is influenced by soil pH, organic matter content, and redox conditions. In certain environments, selenium can accumulate and become enriched in the soil over time, posing a potential risk of selenium toxicity.

## Selenium in the Environment (Books in Soils, Plants, and the Environment)

by Albert O. Aweto (1st Edition, Kindle Edition)

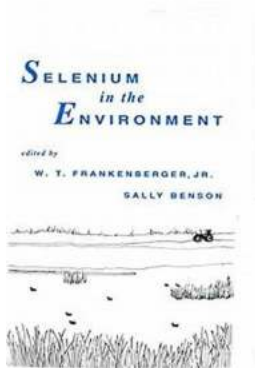
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Screen Reader : Supported

Print length : 480 pages





## Selenium Uptake by Plants

Plants absorb selenium from the soil through their root system. The uptake of selenium by plants is a complex process influenced by various factors such as soil selenium concentration, plant species, soil properties, and environmental conditions.

Selenium can be taken up by plants in different chemical forms, including selenate ( $\text{SeO}_4^{2-}$ ) and selenite ( $\text{SeO}_3^{2-}$ ). Once absorbed, the selenium can be metabolized and incorporated into organic compounds within the plant tissues.

While selenium is an essential nutrient for plants, high concentrations can be toxic. Some plants have developed mechanisms to tolerate or exclude excess selenium, while others can accumulate selenium in their tissues without any apparent toxic effects.

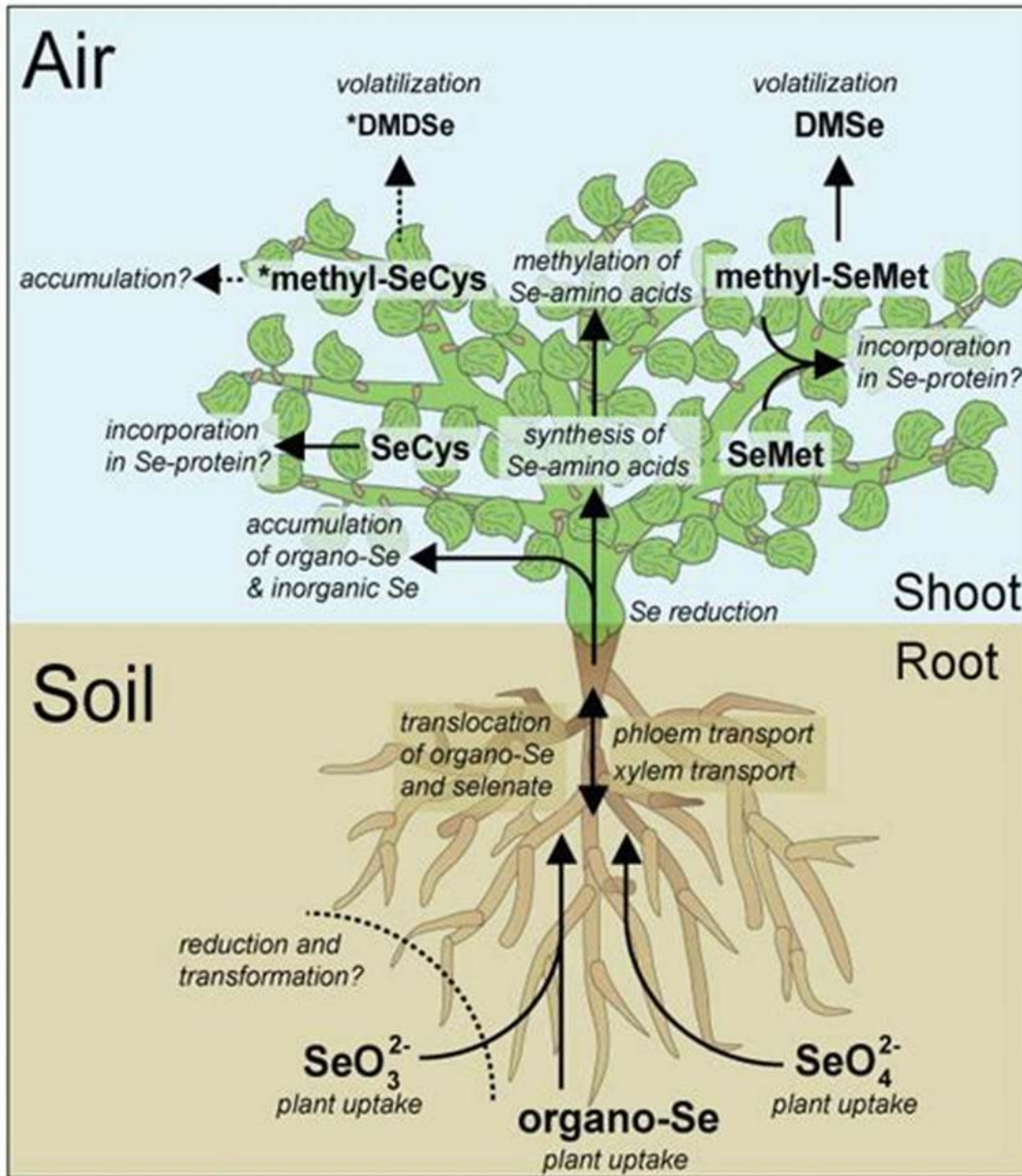
## Selenium's Impact on the Environment

Selenium has both beneficial and detrimental effects on the environment. In aquatic ecosystems, selenium plays an essential role in the health of fish and other aquatic organisms. It is a vital micronutrient required for their growth and reproduction. However, excessive selenium levels can lead to selenosis, a condition where selenium becomes toxic and harmful to aquatic life.

Terrestrial ecosystems can also be affected by high selenium concentrations. Selenium can bioaccumulate in plants, which may then be consumed by grazing animals. This can lead to selenium toxicity in animals, causing deformities, reproductive issues, and even death.

Furthermore, selenium contamination in agricultural soils can affect crop yields and quality. It is crucial to monitor selenium levels in soils and properly manage its application to avoid adverse effects on both the environment and human health.

Selenium is a trace element that plays a crucial role in the environment, primarily in soils, plants, and the surrounding ecosystem. While it is essential for the growth and development of living organisms, excessive selenium can have toxic effects on both plants and animals. Understanding the behavior of selenium in the environment and its impact on various ecosystems is essential for effective environmental management and sustainable agriculture.



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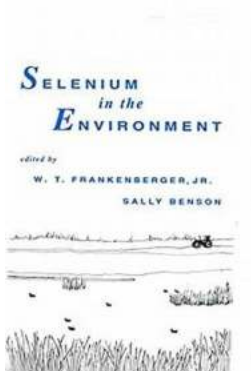
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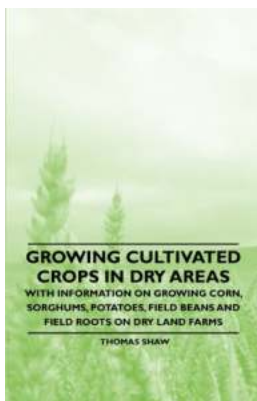
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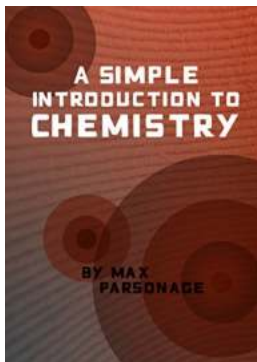


Discusses the biochemical and geological cycling of selenium (Se), its worldwide distribution, and the factors controlling its fate and transport within and between major environmental media, presenting a global assessment of selenium's complex environmental behaviour. The focus of this work is upon Se management and remediation strategies.



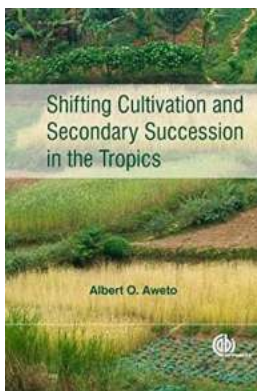
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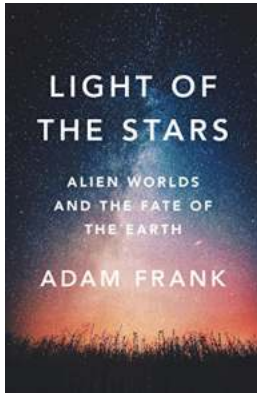
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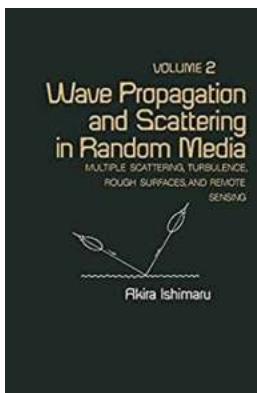
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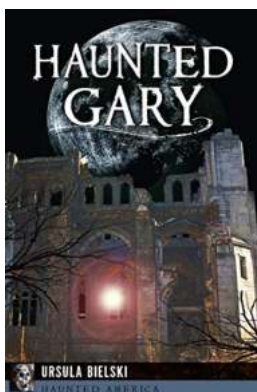
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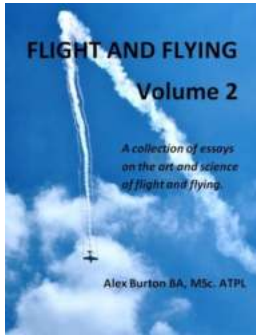
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