

Neem de-oiled cake (DOC) is the by-product obtained after extracting neem oil from the seeds of the neem tree (*Azadirachta indica*). It is a valuable product with multiple uses, primarily in agriculture and environmental management. Here's a detailed look at the uses of neem de-oiled cake:

Agricultural Uses

1. **Organic Fertilizer:**
 - **Nutrient-Rich:** Contains essential nutrients such as nitrogen, phosphorus, and potassium, which promote plant growth.
 - **Soil Enrichment:** Enhances soil fertility and improves soil texture.
2. **Pesticide:**
 - **Natural Pest Repellent:** Effective against soil-borne pests such as nematodes, termites, and root grubs.
 - **Integrated Pest Management (IPM):** Used in combination with other pest control methods to reduce the reliance on chemical pesticides.
3. **Soil Amendment:**
 - **Soil Health:** Increases the organic matter content in the soil, promoting beneficial microbial activity.
 - **Improves Soil Structure:** Enhances soil aeration and water retention capacity.

Environmental Uses

1. **Eco-Friendly Pest Control:**
 - **Sustainable Alternative:** Provides a natural and environmentally friendly option for pest management, reducing the need for chemical pesticides.

Industrial Uses

1. **Biogas Production:**
 - **Feedstock:** Can be used as a substrate for biogas production due to its high organic content.
2. **Composting:**
 - **Compost Enhancer:** Used in composting to enhance the quality of compost by adding essential nutrients and organic matter.

Usage Guidelines

- **Application Rate:** The application rate depends on the crop and soil condition, typically ranging from 500 kg to 1 ton per hectare.
- **Method:** Can be applied directly to the soil or mixed with other organic fertilizers to enhance its effectiveness.

Benefits

1. **Nutrient Supply:** Provides a slow-release source of nutrients, ensuring sustained nourishment for plants.
2. **Pest Control:** Acts as a natural pest deterrent, protecting crops from various soil-borne pests.

3. **Soil Health:** Improves soil structure and fertility, leading to healthier and more productive plants.
4. **Eco-Friendly:** Reduces the reliance on chemical fertilizers and pesticides, promoting sustainable agricultural practices.