

Using date palm biochar

Recommendations for Arid and Semi-Arid regions based on results on barley crop

1. Pay Attention to Pyrolysis Temperature

The properties of biochar change depending on how it is made, temperatures affect its structure and nutrient content:

Temp	Properties
<400°C	Available nutrients, low porosity
400-600°C	Good balance between adsorption capacity, chemical stability and water retention
>600°C	High stability, high porosity, few nutrients

2. Recommended Application Rate

Based on:

- Available palm grove biomass: 2.1 tons per hectare per year
- Biochar yield from pyrolysis: 33%

Recommended dose:

- 0.7 tons per hectare per year
- Or 3.5 tons per hectare every 5 years
(equivalent to 1% of soil volume)

How to Apply Biochar

- **Grind biochar** into small pieces (<5 mm) to ensure even mixing
- **Incorporate biochar into the top 10 cm of soil** to prevent wind erosion and loss due to irrigation

3. Benefits of Biochar



- ✓ Improves soil water retention (up to +80% available water capacity)
- ✓ Provides potassium to the soil (if not rinsed with water)
- ✓ Stores carbon in the soil (carbon sequestration)

4. Things to consider



- ✗ Low nitrogen and phosphorus contents (should be used with a supplement)
- ✗ Does not increase crop yield if used alone – best combined with fertilizers or compost.
- ✗ Can increase soil salinity if not rinsed properly with water