

Product: Hazelnut shells (S3-21)

Source: Oregon

Date received: 2/17/2026

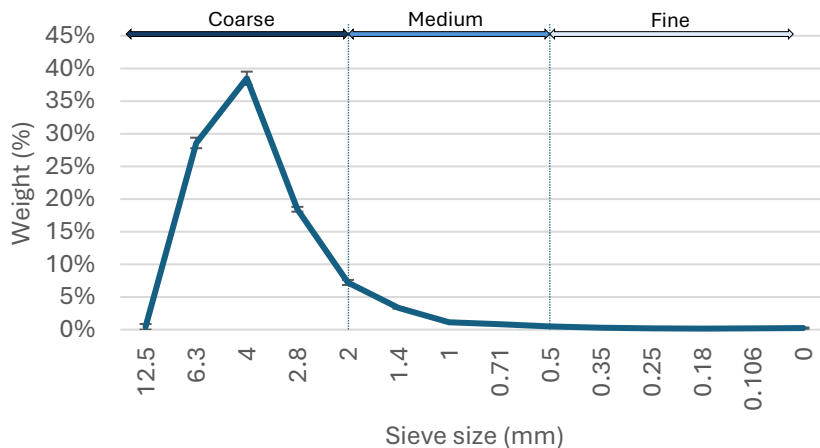
Moisture content upon receipt: 15.6%

Plant species: *Corylus avellana*

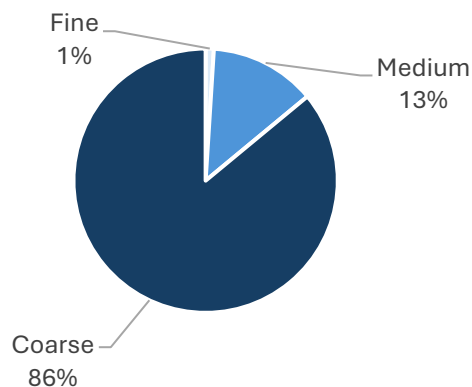
Processing equipment: shells are “cracked” to remove the kernel, then separated via airflow and screening for disposal.



Particle size distribution



Particle size classification

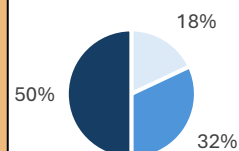


Particle size distribution:

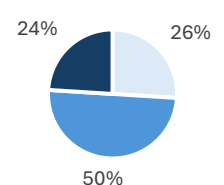
This material is primarily composed of coarse particles. It has been traditionally used as a mulch in nursery crops, but is currently being used to increase drainage for some Oregon substrates.

When analyzed by particle size class, it is virtually free of fine particles and overwhelmingly composed of coarse particles. This may be due to the cracking and aspiration process in hazelnut processing.

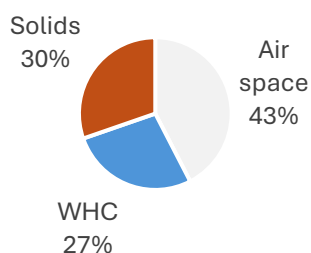
Pine bark



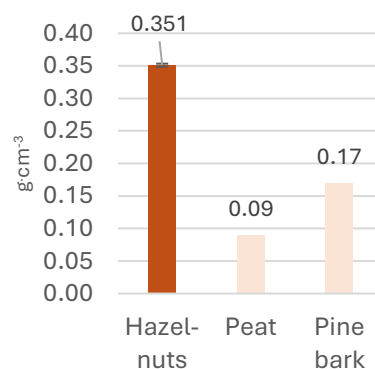
Peat



Physical properties



Bulk density

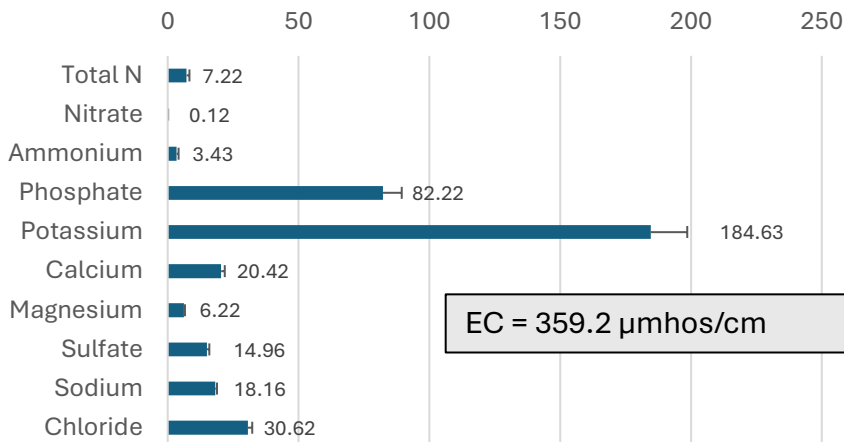


Physical properties:

Total porosity is 70%. Of that, this substrate has very high air space. This substrate would be most ideal as an amendment in crops where drainage is needed.

Bulk density is much higher than other organic substrate components.

Water extractable nutrients (mg·L⁻¹)



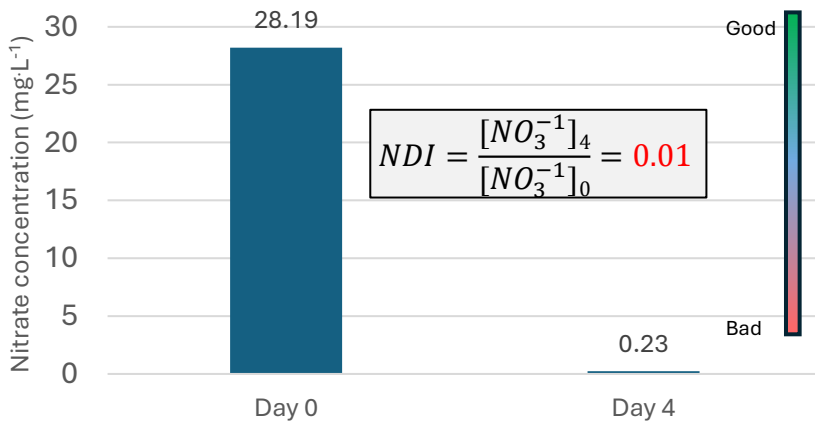
Water extractable nutrients:

Extractable nutrients are generally low, which is expected from a material this coarse.

Ca and Mg are within an acceptable range with a reasonable Ca:Mg ratio.

Na and Cl are sufficiently low.

Nitrogen draw-down

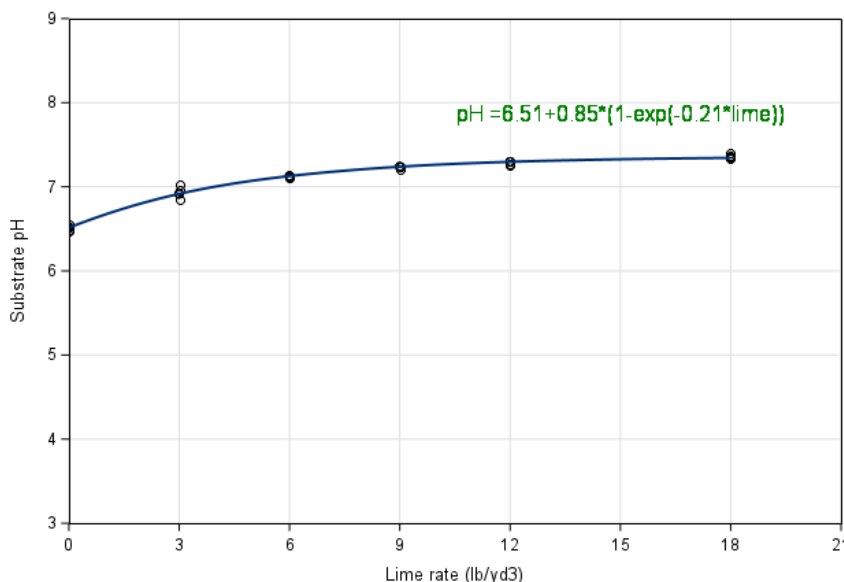


Nitrogen draw down index:

Nitrogen draw-down index (NDI) is 0.01, indicating a high rate of N immobilization. This substrate will require additional N for optimum plant growth.

This value is based on 121.8 g dry mass and 0.351 g·cm⁻³ bulk density.

Substrate pH response to lime rate



Lime rate titration:

Lime calibration curve shows non-amended shells with a pH of 6.51. The pH can be raised slightly with addition of dolomitic lime. This particular lime calibration curve may have little practical consequence considering the coarseness of the sample. Conversely, using these shells as an amendment should have little impact on substrate pH.