Kachemak Kelp/Sea to Sprout
2026 Biostimulant Application Protocol/Recommendations - Peony (see p. 2)

Updated 6/2/26

Generalized application recommendations

- Dilute 1:100
- Standard application ½ quart/acre
- Apply at the recommended dilution every 1–4 weeks during active growth.
    - Every 1–2 weeks during establishment or periods of plant stress
    - Every 3–4 weeks in stable growing conditions
- Seeds: Soak 8–24 hours before planting to support strong germination.
- Transplants: Dip seedlings at transplant to help reduce shock.
- Sea to Sprout can be applied on its own or alongside regular fertilizer protocol as part of your regular plant care routine. Biostimulants and fertilizers have different modes of action, so will not overwhelm plant or soil biology, and can act synergistically. For best results, apply at the recommended dilution during key growth stages, especially during establishment and periods of environmental stress.

Expanded recommendations for frequent/regular use throughout the growing season:

- For sensitive crops or new trials: 7 teaspoons per gallon.
- For robust crops once you are confident: 7.5 teaspoons per gallon.
- Err on the side of a more dilute solution at first, a little goes a long way.

For home garden use - per 100 square feet

Using a normal watering volume (1-2 gallons), mix the recommended amount per gallon of kelp concentrate.

- Dilute 1:100 - (for home garden use = 7.5 teaspoons per gallon)
- Water normally at plant base,
- Adjust based on watering frequency
- Apply additional water as needed - it will not diminish the impact of the efficacy of the biostimulant.

Alternatively, for spray/foliar application on a 100 sq ft garden bed, mix at the same ratio and apply enough to cover leaf and stem surfaces.

GENERAL APPLICATION GUIDELINES

Timing Best Practices

- Apply early morning or late afternoon to minimize leaf burn and maximize absorption
- Avoid application during extreme heat (>85°F/29°C)
- Apply 3-5 days before anticipated stress events (drought, temperature extremes)
- Do not apply foliar spray within 7 days of harvest for food safety

Spray Volume Considerations

- Ensure adequate coverage: spray until runoff for optimal foliar uptake
- Use finer droplet size (200-300 microns) for better leaf adhesion
- Include non-ionic surfactant (0.1-0.25% v/v) to improve coverage if needed

Tank Mixing

- Compatible with most fertilizers and pesticides (conduct jar test first)
- Apply kelp biostimulant separately from highly alkaline materials
- Do not mix with copper-based products

Storage and Handling

- Store concentrate in cool, dark location
- Mix fresh spray solution for each application
- Use mixed solution within 24 hours for best results

Sea to Sprout 2026 field test application protocol - Peony:

Typical soil drench applications use 10-25 gallons per acre based on industry standards

Both foliar spray and root drench applications offer distinct advantages, with foliar application providing rapid nutrient delivery (see Frioni et al 2021) while root drench enhances soil biology and long-term plant resilience (see Ali et al 2021)

Peony

- Ideal study design: Two concentrations (e.g., 1:200 and 1:100), two delivery methods (foliar vs soil), untreated control plot
- Standard application ½ quart biostimulant/acre
- Industry standard soil drench applications 10-25 ga solution (mixed water + biostimulant)/acre

Concentration

- **Foliar**
  - 1:100 as a “high”/standard rate
  - 1:150–1:200 as a low/ “safety” rate
- **Soil drench / fertigate:**
  - 1:100 as standard
  - Optional 1:50 as a high rate banded near crowns, if you want a stronger rhizosphere signal

Volume

- **Foliar**
    - Target a light, even coverage (“to just before runoff”)
- **Soil drench**
    - Apply enough solution to wet the crown and feeder root zone, but not enough to leach beyond roots. Volume is lower per unit canopy area, but more focused.

Timing and protocol - (established field peony):

- **Soil drench**
    - Start at early shoot emergence or shortly after sprout elongation begins.
    - Apply every 2–4 weeks up to bud swell or early bloom (e.g., 3–4 applications total).
- **Foliar**
    - Start at closed bud / strong vegetative stage (leaf area present, but before bloom).
    - Spray every ~10–14 days, 2–3 times per season. Apply early morning or late afternoon to maximize stomatal uptake and minimize burn.
    - If you run combined treatments, keep the individual dose per event the same, but note that the **total seasonal dose** is higher by design (you can express that in your analysis).

Measurements and response variables

- **Vegetative growth**
    - Stem height, stem diameter, number of stems per plant.
    - Leaf area index (or a proxy such as average leaf length/width on a subsample).
- **Reproductive performance / market traits**
    - Number of buds per stem.
    - Bud size, flower diameter, stem length at harvest.
    - Harvestable stems per plant and per plot.
- **Root response (subset)**
    - On a subsample of plants (sacrificial), excavate portions of the root system and score root length, branching, and fine-root biomass; analogous to your mung bean assessment but at field scale.
- **Physiology (optional, for a more “paper-worthy” dataset)**
    - Chlorophyll index/SPAD, leaf greenness.
    - Phenology: days to bud break, days to harvest.
- **Root response (subset/optional/if possible)**
    - On a subsample of plants (sacrificial), excavate portions of the root system and score root length, branching, and fine-root biomass; analogous to your mung bean assessment but at field scale.

Summary - peony

	Foliar focus	Soil drench focus
Main target	Leaf and bud physiology, stress status	Root growth, nutrient uptake, vigor
Likely best timing	Mid–late vegetative, pre-bud/bud swell	Early emergence and vegetative establishment