

PERSIST® PAF LIQUID PLANT AND SOIL ENHANCER

1) PRODUCT DESCRIPTION

Persist® PAF is produced in California from 100% pistachio shells using VGrid's proprietary biomass gasification technology. PAF is a blend of beneficial organic acids and phenols that may enhance plant growth, stress response, germination, and the bio-availability of macro and micronutrients.

Across a wide variety of crop and nursery trials, PAF has shown a significant positive impact on germination, root establishment, plant growth, and yield. Additionally, abundant academic research supports using pyroligneous acid, sometimes called wood vinegar, to improve plant and soil health.

Persist PAF is available from directly from VGrid Energy Systems and select distributors. The product is offered in 32-ounce bottles, 2.5-gallon bottles, and 275-gallon IBC totes. Contact VGrid for bulk pricing. Retail customers can also purchase the product online at <https://persistproducts.com/shop-for-persist/>.



2) CERTIFICATIONS AND APPROVALS



PERSIST

TECHNICAL DATA SHEET

PERSIST PAF LIQUID

VGrid Energy Systems, Inc.
513 Calle San Pablo
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+1 (805) 482-9040

3) APPLICATION RATES AND TIMING

Turfgrass - Warm Season Grasses

- **Rate:** 3-6 fl oz / 1,000 sq ft (1.0-2.0 gal / acre)
- **Dilution:** 1:200 (0.50%)
- **Timing:** Apply 6-8 times during the spring and summer growing season. Allow 2-4 weeks between applications.

Seasonal Crops - Leafy Greens, Brassicas

- **Rate:** 1.5-3 fl oz / 1,000 sq ft (0.5-1.0 gal/acre)
- **Dilution:** 1:300 (0.33%)
- **Timing:** Apply once at planting using half of the above rate. Follow up with three additional applications at the full rate. Allow 2-4 weeks between applications.

Seasonal Crop - Potato, Onion, Carrot, Beet

- **Rate:** 2-4 fl oz / 1,000 sq ft (0.67-1.33 gal/acre)
- **Dilution:** 1:300 (0.33%)
- **Timing:** Apply once at planting using half the above rate. Follow up with three additional applications at the full rate. Allow 2-4 weeks between applications.

Permanent Crop - Citrus

- **Rate:** 1.5-3 fl oz / 1,000 sq ft (0.5-1.0 gal/acre)
- **Dilution:** 1:300 (0.33%)
- **Timing:** Apply six times during the growing season. Allow 2-4 weeks between applications.

Flowers and Ornamental Plants

- **Rate:** 2-4 fl oz / 1,000 sq ft (0.67-1.33 gal/acre)
- **Dilution:** 1:300 (0.33%)
- **Timing:** Apply once at planting using half of the above rate. Follow up with two additional applications at the full rate. Allow 2-4 weeks between applications.

Turfgrass - Cool Season Grasses

- **Rate:** 3-6 fl oz / 1,000 sq ft (1.0-2.0 gal / acre)
- **Dilution:** 1:200 (0.50%)
- **Timing:** Apply 3-4 times during spring growing season and 3-4 times in the fall. Allow 2-4 weeks between applications.

Seasonal Crops - Strawberry, Pepper, Tomato

- **Rate:** 3-4.5 fl oz / 1,000 sq ft (1.0-1.5 gal / acre)
- **Dilution:** 1:200 (0.50%)
- **Timing:** Apply once at planting using half of the above rate. Follow up with three additional applications at the full rate. Allow 2-4 weeks between applications.

Seasonal Crops - Corn, Soybean, Oats, Wheat

- **Rate:** 3-4.5 fl oz / 1,000 sq ft (1.0-1.5 gal / acre)
- **Dilution:** 1:200 (0.50%)
- **Timing:** Apply once at planting using half the indicated rate. Make a second application about four to six weeks after planting. For best results, make a third application four weeks later.

Permanent Crop - Fruit and Nut Trees

- **Rate:** 1.5-3 fl oz / 1,000 sq ft (0.5-1.0 gal/acre)
- **Dilution:** 1:300 (0.33%)
- **Timing:** Apply six times during the growing season. Allow 2-4 weeks between applications.

Seed Treatment (pre-soak)

- **Rate:** 6 fl oz per hundredweight (CWT)
- **Dilution:** 1:600 (0.167%)
- **Timing:** Soak seeds in diluted PAF solution (six fluid ounces in about 30 gallons of water) for 4-6 hours before planting.

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4) INSTRUCTIONS FOR USE

Stir or shake well before use.

PAF liquid must be diluted prior to use (*refer to the previous page*). These are minimum dilution rates. Where higher water rates are required for good foliar coverage, do not exceed the maximum application rate.

The product can be applied through several different methods, including soil drenching, foliar spray, and injection into fertigation systems. The benefits are maximized when PAF is in the soil root zone, therefore appropriate soil applications are preferred.

Ensure suitable spray conditions (e.g. temperature, humidity, wind-speed), prior to foliar application.

PAF will stain clothing and certain surfaces. Spray away from buildings.

The product can be used together with pesticides/fungicides to improve efficacy.

Always conduct a jar test to ensure compatibility and spray test on a small area before wide-spread use.

For best results, use PAF in combination with Persist® Micronized Biochar. Add 1/2 cup of Micronized Biochar per gallon of PAF. Visit the Persist website for details.

(www.persistproducts.com/micronized-biochar)

5) CHEMICAL COMPATIBILITY

Always conduct a jar test to ensure compatibility and spray test on a small area before wide-spread use.

Incompatible materials: chlorine; certain acids; ozone; liquid oxygen. (*This list is NOT exhaustive. Please contact VGrid for specific questions regarding compatibility*)

6) STORAGE AND HANDLING

DO NOT CONSUME. Store in a sealed container and away from foodstuff. Do not allow pets or livestock access to this material. Always transport in sealed containers. Avoid use in confined and non-ventilated spaces. Adequate ventilation required.

Personal Protective Equipment: Overalls, gloves and covered footwear are recommended when loading, mixing or applying this product.

Keep containers tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Do not store in direct sunlight.

PAF may be disposed at an authorized waste management facility. Appropriate volumes may be applied onto a vegetated land area away from drainage zones or waterways.

Refer to the MSDS Sheet for complete requirements.

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7) LABORATORY ANALYSIS

Water Content: 85%

Acetic Acid: 7.0%

Other Organic Acids: ~1.0%

Including: Butyric, Succinic, Malic, Citric, Lactic, Pyruvic Acids

Phenols: 1,300 mg/kg

Bulk Density: 1.05 g/cm³

pH: ~3.0

* Not a significant nutrient source.

8) PRODUCT AVAILABILITY

PAF is offered through a network of distribution partners in 275-gallon IBC totes, 55-gallon drums, and 2.5-gallon bottles.

Your Local Distributor

PAF is also available directly to consumers through www.persistproducts.com and from popular online retailers, including Amazon.

Disclaimer: This information contained herein is accurate to the best of V-Grid's knowledge. V-Grid Energy System makes no suggestion or guarantees that any information listed herein is the only ones that exist. V-Grid Energy Systems makes no warranty of any kind, expressed or implied, concerning the safe use of this material within the purchaser's process or combination with any other substances. Other materials can aggravate effects, and/or this material may aggravate or add to the effects of other materials. This material may be released from gas, liquid, or solid materials made directly or indirectly from it. The user has the sole responsibility to determine the suitability of the materials for any use and the manner of use contemplated. Users must meet all applicable safety and health standards.





CELERY *(Holden Research & Consulting (California), Q1 2024)*

↑159%

Persist™ PAF liquid increased celery yield by 159% in fusarium-infected soil. (production trial)



SOYBEAN *(SynTech Research Group (Iowa), Q4 2023)*

↑7%

Persist™ PAF liquid and biochar tea blend yields 7% more soybean plants per acre and a 4% increase in plant height.



PEPPER *(Holden Research & Consulting (California), Q3 2023)*

↑15%

15% increase in number of peppers produced per acre and 13% increase in average weight with Persist™ PAF and biochar.



STRAWBERRY *(Holden Research & Consulting (California), Q4 2022)*

↑14%

Persist™ PAF Liquid and biochar regimen provided a 14% yield increase in marketable strawberries per acre.



BROCCOLI *(Holden Research & Consulting (California), Q2 2023)*

↑61%

Persist™ PAF foliar treatments resulted in a 61% increase in total plant weight in nursery trials.



CELERY *(Holden Research & Consulting (California), Q1 2023)*

↑72%

Persist™ PAF liquid produced 72% greater new root growth and a 31% increase in plant weight in nursery trials.