

Friendly Plants that Help Each Other

Goal: Learn about plants
that help other plants
grow.

Grades 3-5



Master Gardeners

The University of California Cooperative Extension (UCCE) Master Gardener Program (MGP) is an educational program designed to teach and effectively extend information to address home gardening and non-commercial horticulture needs in California.

UCCE is the outreach arm of UC's division of Agriculture and Natural Resources (ANR). Master Gardener volunteers (MG volunteers) promote the application of basic environmentally appropriate horticultural practices through UCCE-organized educational programs that transfer research-based knowledge and information.



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Agriculture and Natural Resources

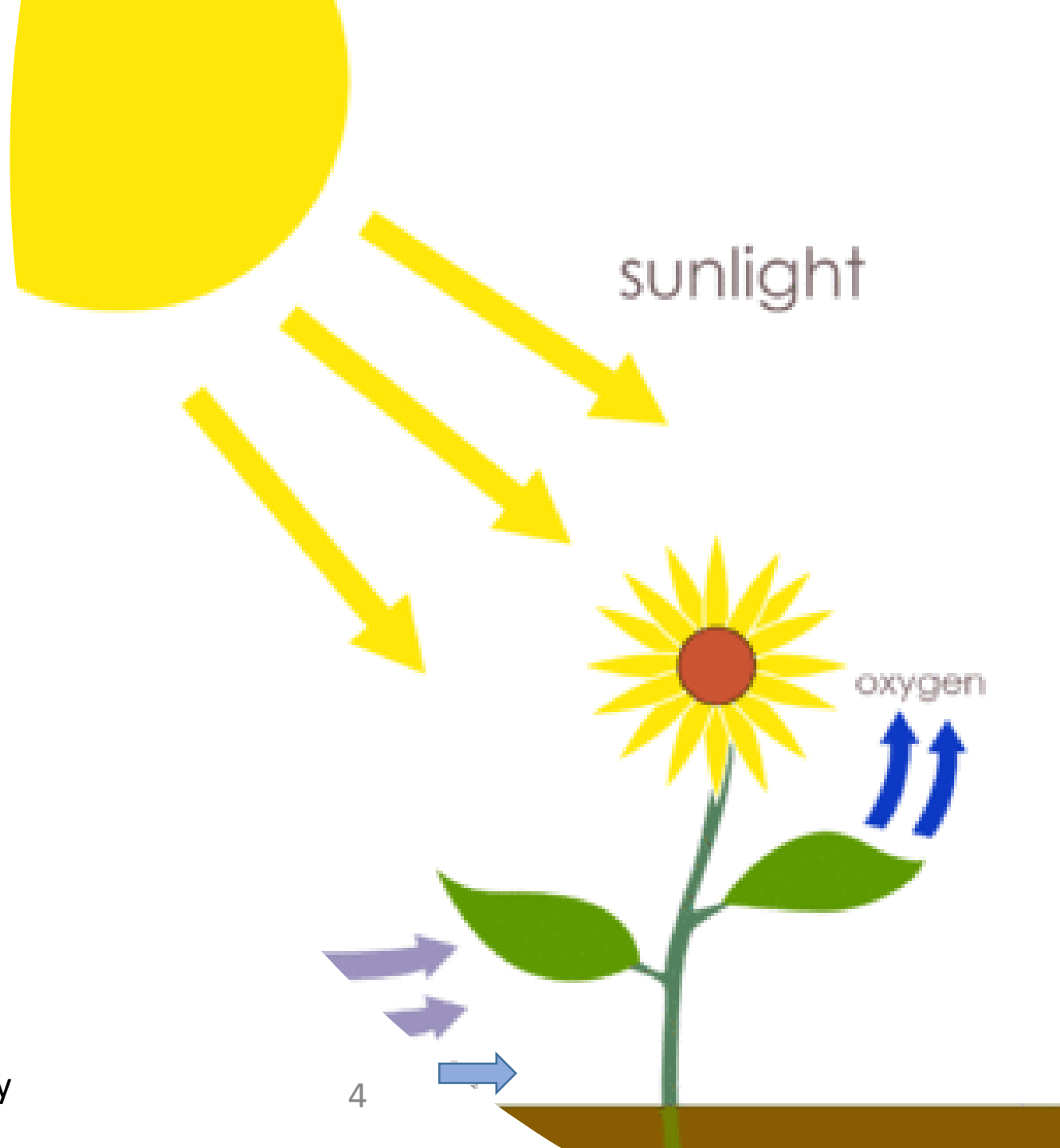
UCCE Master Gardener Program

What do Plants Need to Grow?



What Plants Need to Grow

-  Sun or light
-  Air (Oxygen)
-  Nutrients
-  Water
-  Soil



Plants Can Help Each Other Grow

How you think plants can help each other grow? do



How Do Plants Help Other Plants?

Shade

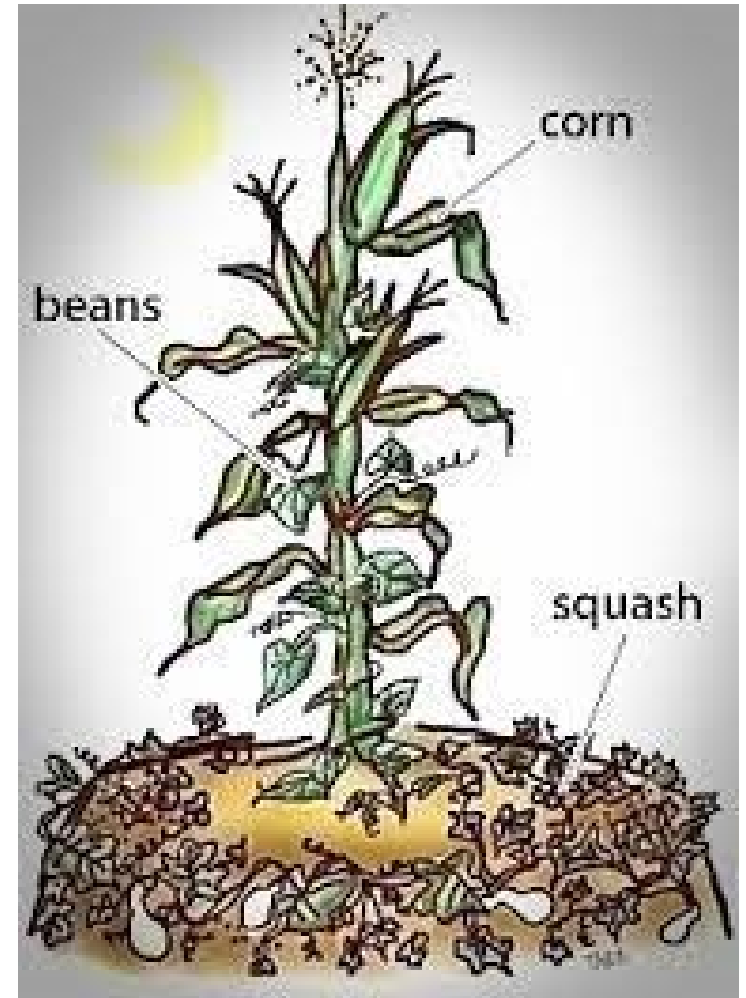
- Some plants provide shade for plants that do not grow well in full sun.
- The shade helps keep needed water in the soil for plants to share.
- These squash leaves cast a shadow on the soil.



How Do Plants Help Other Plants?

Support

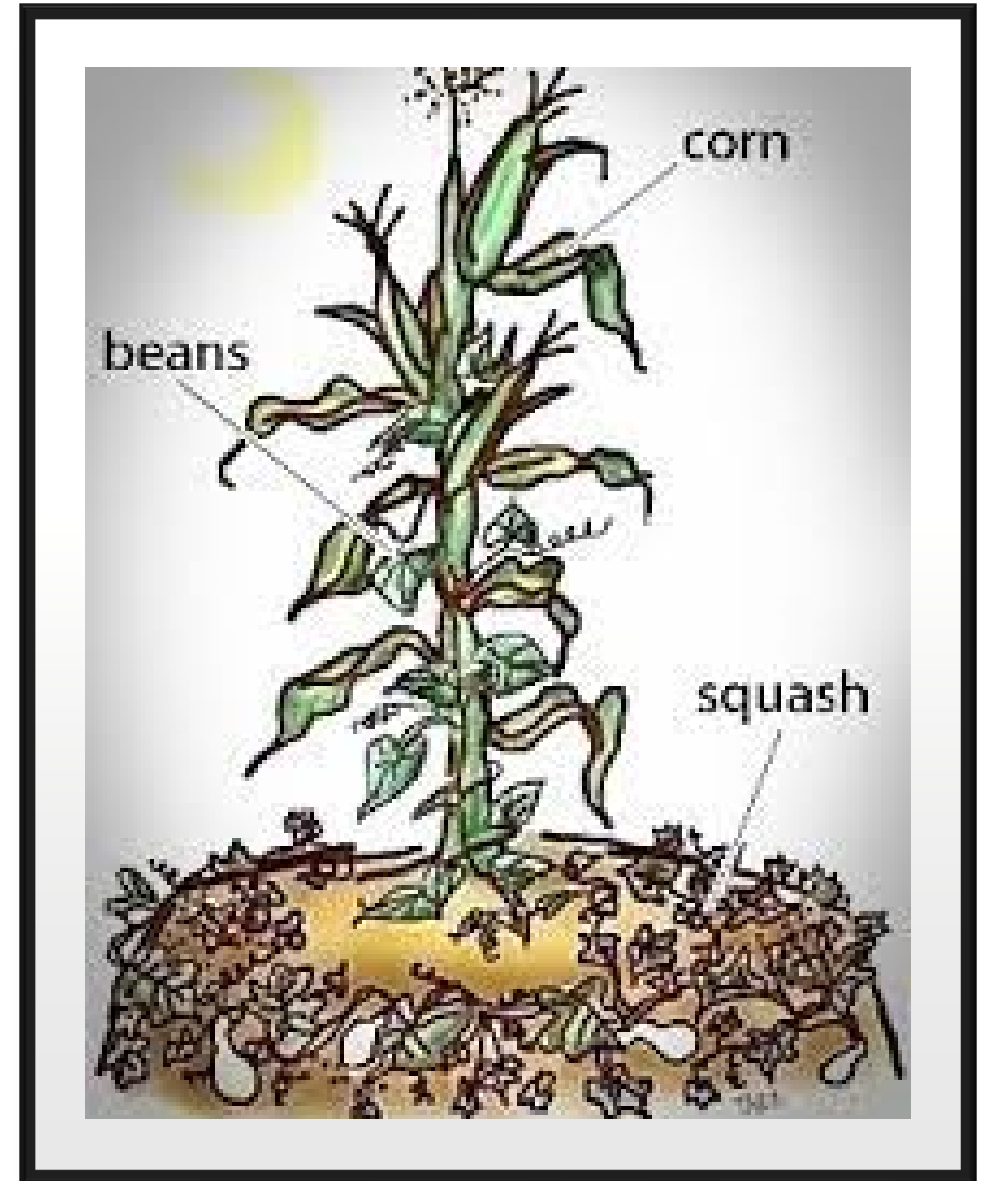
- Some plants allow vegetables on a vine, such as beans and peas, to grow up a plant stock.
- Corn plants can support bean and pea vines.
- In this picture, beans are growing up the corn stock. Squash is shading the soil. This planting is called Three Sisters.



Three Sisters

Video: Three Sisters Planting

[Three Sisters Planting](#)



How Do Plants Help Other Plants?

Nutrients



- Some plants share nutrients that another plant needs, such as nitrogen.
- Bean plants add nitrogen to the soil which helps corn and other plants grow.

How Do Plants Help Other Plants?

Reduce Weeds

- Planting vegetables and flowers close together in a garden provides shade, so the weeds have less sun to help them grow.
 - There is also less space in the soil for weeds to grow.



How Do Plants Help Other Plants?

Attract pollinators

- Attract insects and birds that share pollen needed for other plants to make seeds and fruits.
- The picture shows a honeybee carrying pollen (yellow).



Mixing Plants Together

- Farmers often plant large fields of the same crop, such as corn or lettuce.
- A gardener may be able to plant more plants in a mixed garden.
 - This pictures shows carrots and onions growing together.
- The plants can be planted close together.



Planting Families Together

Tomato Family

- Vegetables from the same scientific family have similar needs, for sun, water and nutrients, so they can be planted together.
- One example is the tomato family:
 - Tomatoes & tomatillos
 - Peppers
 - Eggplant
 - Potatoes



Planting Neighborhoods

- Each plant family can be a neighborhood in your garden.
- Other plant families are:
 - Onions
 - Cabbage
 - Carrots
 - Legumes (Beans and Peas)
 - Spinach
 - Squash



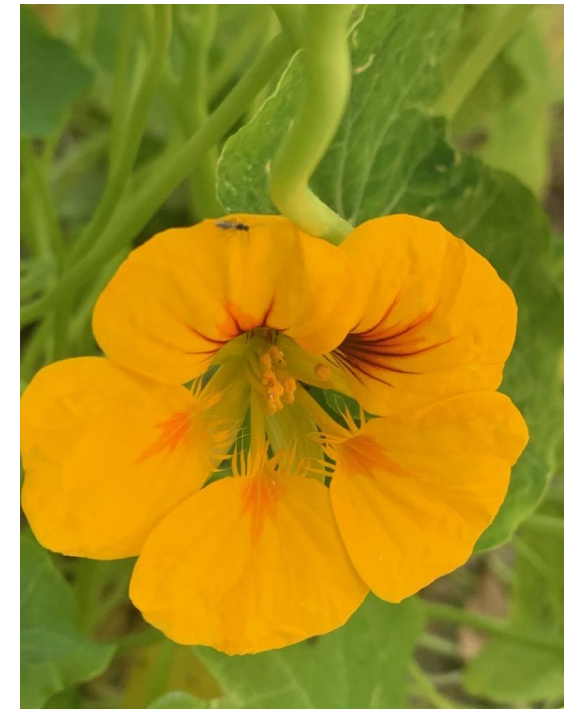
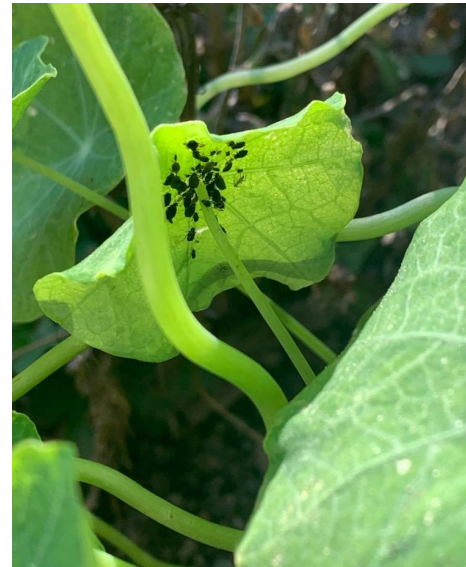
Adding Helpful Friends

- Some flowers may attract insects that eat vegetable plants.
- Some flowers, like marigolds, keep some root eating pests from entering the garden bed and eating vegetable roots.
- Some flowers attract pollinators that are needed to spread pollen.



Friendly Plants that Attract Unwanted Insects

- Some plants attract insects that can damage plants.
- Flowers, like the nasturtiums, are often used to attract aphids, a small insect that eats plant leaves.
- The theory is that the insect will be less likely to eat a vegetable plant if the flower is present.
- **This possible benefit is under study by scientists, but not proven.**



Review

- Some flowers attract birds and insects that share pollen with other plants. Why is pollen helpful to plants?
- Beans and other plants put nitrogen in the soil. How does nitrogen help plants?
- What are the three plants in the Three Sisters planting? What does the corn provide for the bean vines?
- What are ways that planting vegetables and flowers close together can help plants grow?

Application

- How many different plants can you identify in this picture?
- How can the flowers help the other plants?
- Why is it good to plant the vegetables and flowers so close together?



Extension

- If you are in a garden with vegetables and flowers planted together, like nasturtiums and cabbage or other vegetables in the cabbage family, you can observe the insect activity on the flowers and vegetables. The nasturtiums attract aphids, a small insect that eats leaves of some vegetables. (see picture on slide 16).
- Keep a log of the insect activity you see over a two-week period.



Vocabulary



Nutrient



Organism



Oxygen



Pollen



Soil



Theory

Nutrient

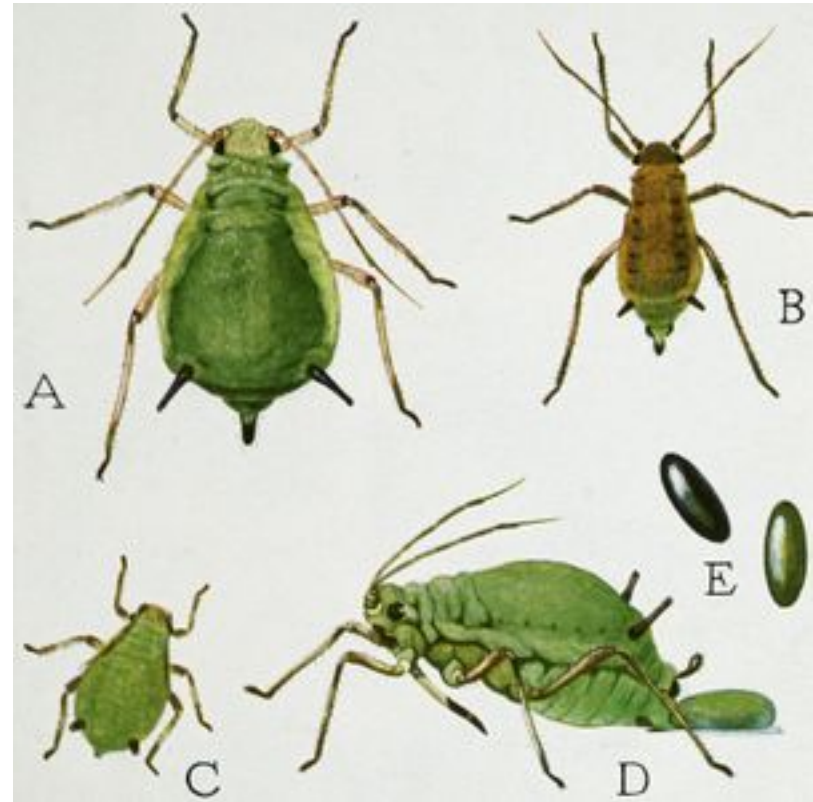
A **nutrient** is something used by an organism to grow and survive.



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Organism

Organism is a living thing, including insects like aphids.



Oxygen

Oxygen is a substance in the air that supports life.



Pollen

Pollen is a powdery grainy substance that helps plants make seeds and fruit.



Soil

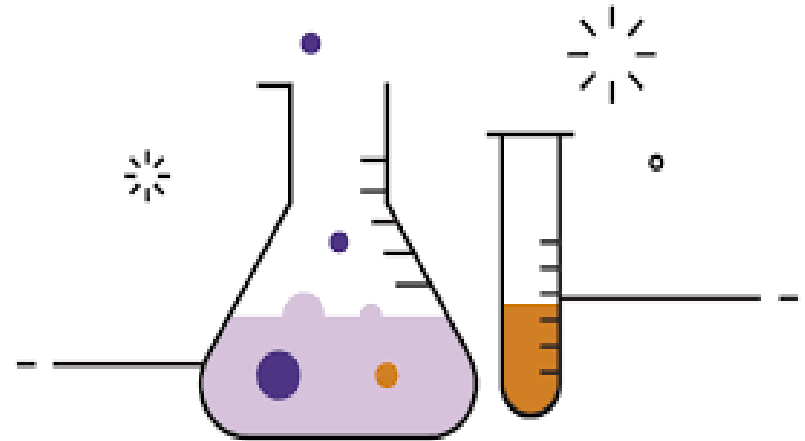
Soil is the loose upper layer of the Earth's surface where plants grow.



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Theory

A scientific theory is **an explanation for why things work or how things happen**. Scientists develop theories based on their observations of the world around them. Theories are based on ideas that can be tested.



Next Generation Science Standards

3rd Grade

LS4.C: Adaptation

For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. (3-LS4-3)

LS4.D: Biodiversity and Humans

Populations live in a variety of habitats, and change in those habitats affects the organisms living there. (3-LS4-4)

4th Grade

LS1.A: Structure and Function

Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction. (4-LS1-1)

Next Generation Science Standards Continued

5th Grade

LS1.C: Organization for Matter and Energy Flow in Organisms

Plants acquire their material for growth chiefly from air and water. (5-LS1-1)

LS2.A: Interdependent Relationships in Ecosystems

A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life.

LS2.B: Cycles of Matter and Energy Transfer in Ecosystems

Matter cycles between the air and soil and among plants, animals, and microbes as these organisms live and die.

Resources

- California Master Gardener Handbook, Edited by Dennis Pittenger. 2015
- Images: www.kids.kiddle.co, UCANR, bbc.co.uk, Kay Force
- Video: Wisconsin Department of Public Instruction, <https://www.youtube.com/watch?v=FwaNH6khB0k>
- Companion Planting in Your Vegetable Garden, Lucy Heyming, Riverside County Master Gardener
- Companion Planting, Butte County Master Gardeners, <https://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=17642>

Resources (Continued)

- Planting the Three Sisters, San Diego County Master Gardeners, <https://www.mastergardenersd.org/wp-content/uploads/2019/03/The-Three-Sisters.pdf>
- Farmer's Almanac, <https://www.farmersalmanac.com/companion-planting-guide>
- Piedmont Master Gardeners, <https://piedmontmastergardeners.org/article/magical-repelling-powers-of-marigolds-myth-or-fact/>
- Washington State University Master Gardeners, <https://s3.wp.wsu.edu/uploads/sites/2073/2020/07/Trap-Cropping.pdf>
- Kids.Britannica.com

Gardening Questions?

- Email or Call the UCCE Master Gardeners of Riverside County
- Email Helpline
 - anrmgriverside@ucanr.edu
- [Riverside Master Gardeners Website](#)
- E-mail: mgschoolgardens@gmail.com



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