



MANUFACTURED BY:



DOĞAL

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SUNSTOP[®]

SUPERIOR SUN PROTECTOR



SunStop prevents solar stress and sun damage on crops



WHY DO WE NEED SUNSTOP?

1-) Fruit burn;



2-) Bud burn;



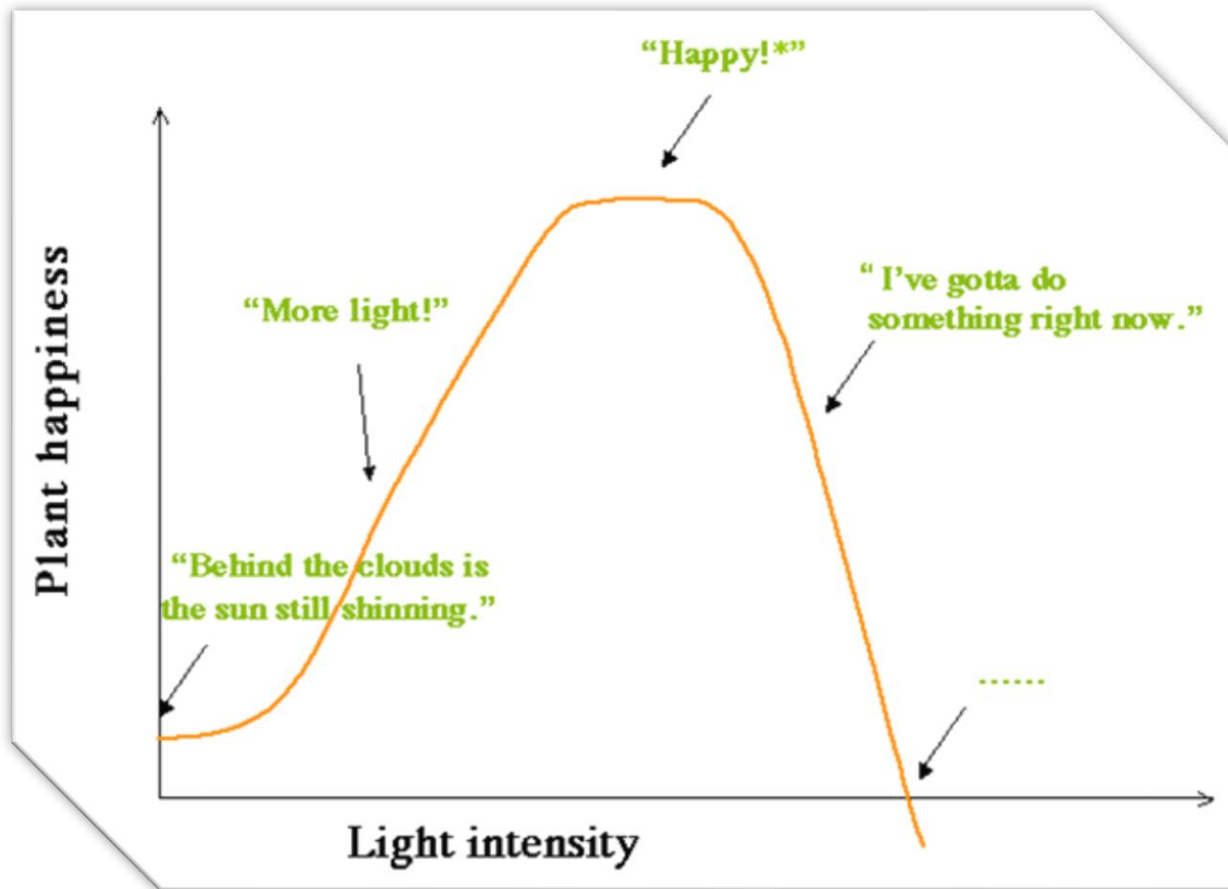
- The fruit of next year depends on fruit buds
Buds are damaged by the sun → next year's yield decrease
- SunStop protects fruit buds, when applied on the same tree 2-3 consequent years, the yield will increase.

3-)

Solar Stress;

Heat Stress

High Light Damage



Heat Stress

- Optimum production depends on plant temperature
 - Varies by crop; approximately 36 °C photosynthesis slows or stops
 - Pepper is more susceptible to high temperatures
- SunStop decreases heat stress around 3-6 °C and prevents photosynthesis to stop,
 - More yield → Bigger fruit

 In extreme temperatures leaf stomata close, leaf and flowers drop,

Leaf drop

Many plants, from trees to annual flowers, will drop a significant number of leaves when they are heat stressed. Sometimes leaf drop occurs as a response to drought, or as a response to intense heat when the plant can't uptake the existing water fast enough to support the entire canopy.

Flower

Some plants may stop flowering in hot weather. Tomatoes and peppers fall into this category. They may simply drop their flowers without developing fruit, or possibly not flower at all until temperatures cool.

Blossom End Rot

Tomatoes, peppers, squash and cucumbers may exhibit black spots on their bottoms in hot weather

Pepper plant with
no flowers or fruit.



Pepper plant with previous leaf drop.
As the temps cool down, the plant is
recovering with new leaf growth.

Black End Rot



High Light Damage

Leaf chlorosis in winter occurs mostly on sunny side of trees

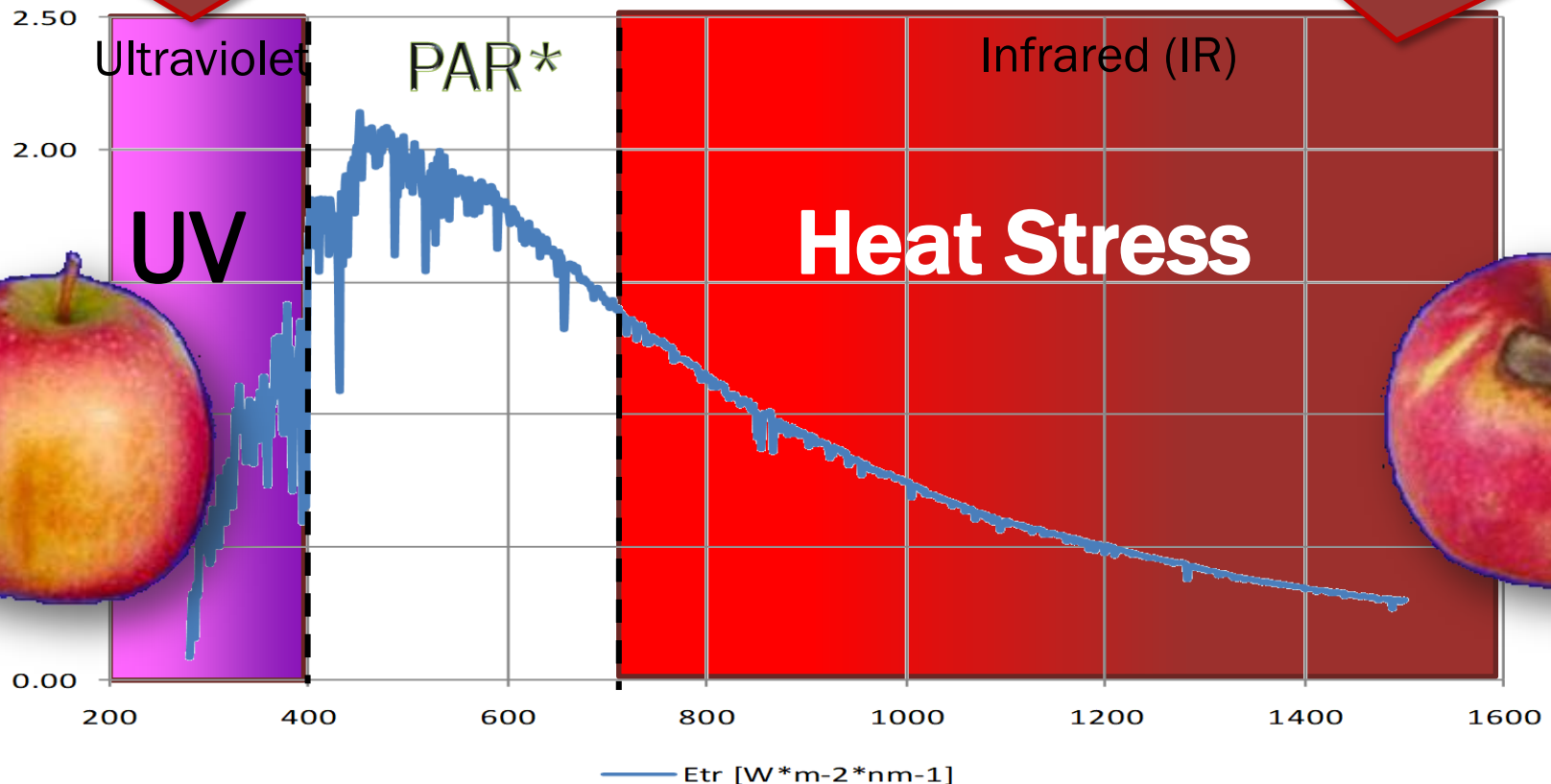


What causes Solar Stress?

Harmful Radiation

External Damage
(cell damage, discoloring)

Internal Damage
(dehydration, reduction in quality)



* Photosynthetically Active Radiation = 400 – 700 nm

Air Pollution Damage

Photochemical smog;

- results from the interaction of pollutants in the presence of SUNLIGHT (UV light)
- Creates a variety of toxic and reactive compounds

« Most farmers focus on addressing challenges of pests and diseases and agronomic practices yet a major challenge could be the effect of air pollution. »



Partially shaded bean leaf

« Crops can be injured when exposed to high concentrations of various air pollutants. Injury ranges from visible markings on crop leaves, to reduced growth and yield, to premature death. In case of animals, it may lead to infection as a result of eating polluted feed and water. »

« Prof Shem Wandiga, from University of Nairobi, while explaining the dangers to agriculture from air pollution pointed out that **photo chemical smog** (a chemical reaction of sunlight, nitrogen oxide and volatile organic compounds in the atmosphere) **increases with the amount of sunshine**. In the end, it is dangerous to plants, animal and human beings. »

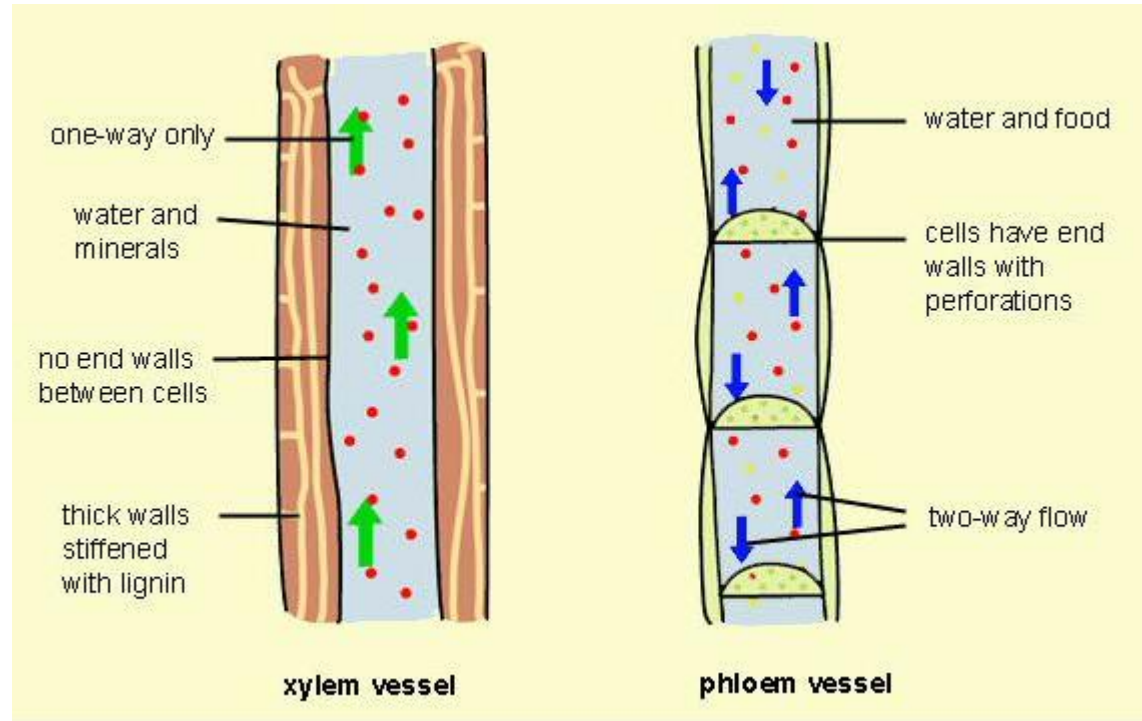
This was during the India-Africa Dialogue on Air Quality, held in Nairobi, Kenya, organised by Media for Environment, Science, Health and Agriculture (Mesha).

Quotation:

<http://www.monitor.co.ug/Magazines/Farming/How-air-pollution-affects-agriculture/689860-2656434-133lf48z/index.html>

4) Water Usage;

Plants under solar stress use water to cool down instead of transportation of nutrients to the new growth

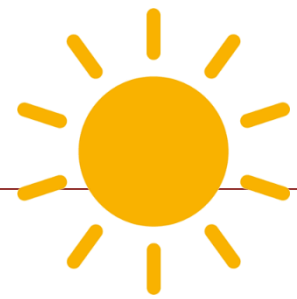


Xylem transports water and soluble mineral nutrients from roots to various parts of the plant. It is responsible for replacing water lost through transpiration and [photosynthesis](#).

Phloem translocates sugars made by photosynthetic areas of plants to storage organs like roots, tubers or bulbs.



Comes in 8 Lt buckets

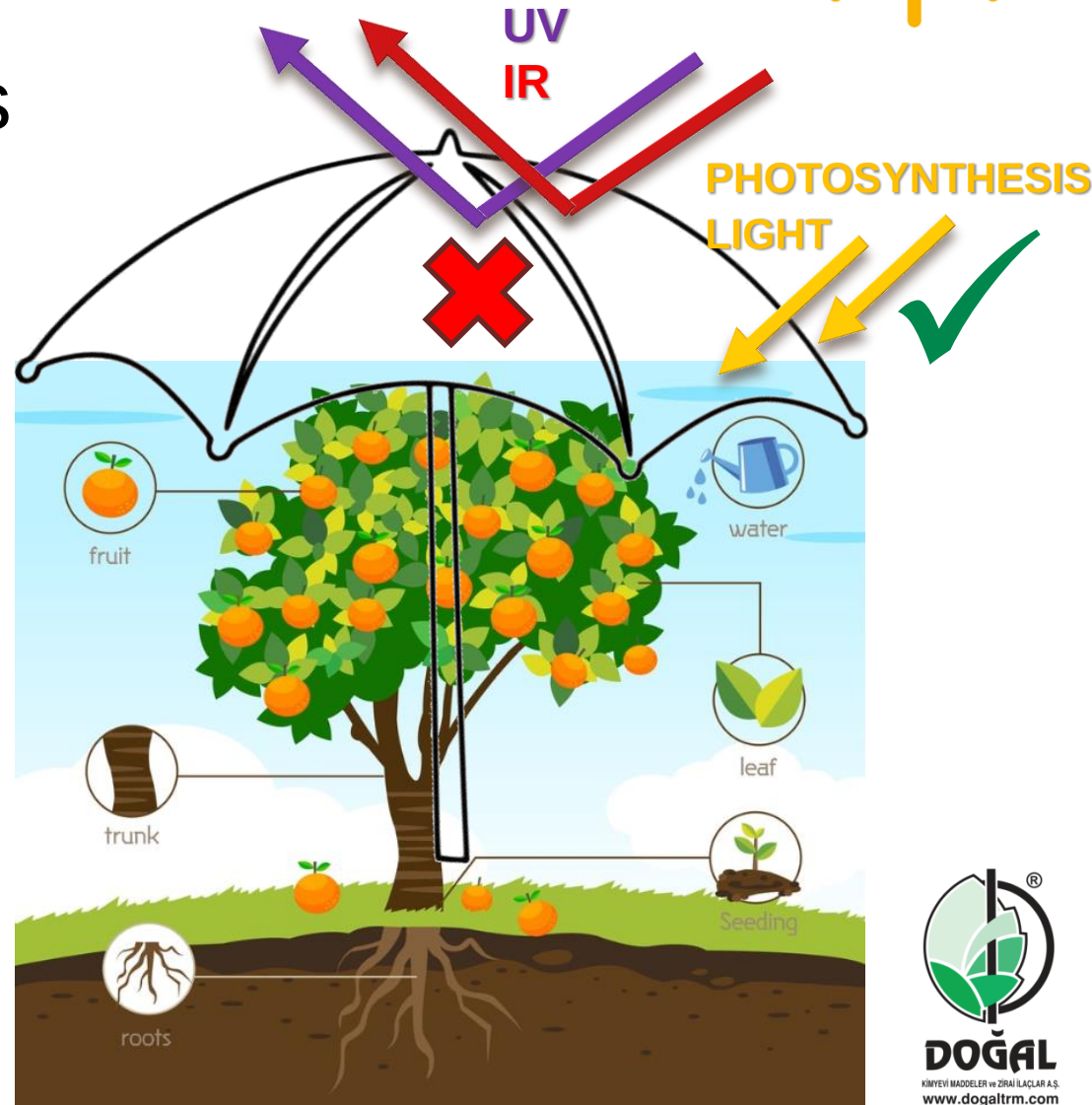


How SunStop works

Reflects harmful sunrays and lets the photosynthesis light in

Decreases the overall plant heat by protecting fruits, buds, leaves, trunk, seedling and roots.

Crops use water more efficiently and need less irrigation.



Summary and Benefits

- ✓ Minimizes sun burn
 - More marketable fruits
 - Prolongs shelf life
- ✓ Decreases crop temperature
 - Prevents heat stress
 - Higher yield & quality
 - Photosynthesis increase
- ✓ Regulates water and nutrient uptake
 - Maintain Normal Transpiration
 - Improved Respiration
 - More tasty and watery fruits



Benefits

- ✓ For all kinds of crops
- ✓ Protects new shoots, and fruit buds of next season
 - Increases next year's yield and quality
- ✓ Suppresses insect populations & fungal diseases



- ✓ Decrease labour cost – no need for sun protection wrapping each fruit

Usage & Application

Dense liquid



Agitate thoroughly



Pre-mix;

- Rate: 1:10
- 1 night before, min 2 hours earlier

→ Complete the necessary amount of water before usage.

Compatibility

- Conduct a jar test for compatibility before mixing with other tank mix ingredients known to be sensitive to high pH,
- preferably use alone

Can be applied with all kinds of orchard sprayers



No damage to sprayer
2 mm nozzle hole is ideal

Homogenous spray cover

After application, there is a thin opaque layer on the leaf surface, which;

- ✓ Reflects harmful light
- ✓ Optimum resistance to rain
- ✓ Allows photosynthetic light





White color disappears
towards the end of season



After harvest remaining spots can be removed by
washing (with pH 5.5 water) or wiping with soft fabric

Preventive Application

- Apply before sun damage-
 - Just after fruit set
- Repeat after 2 - 4 weeks depending on the crop
 - to cover new growth parts of fruits and new shoots



- Homogenous coverage is essential for better results.

How to Apply

Poor Application

Avoid runoff

Do NOT use excessive amounts of water or spray



Product accumulated on the tips of the leaves
- resulting in no coverage

Good Application



Even coverage /
no run off

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Poor Application

Avoid runoff

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Good Application



Even coverage /
no run off

Poor Application

X Too close spraying and big droplets





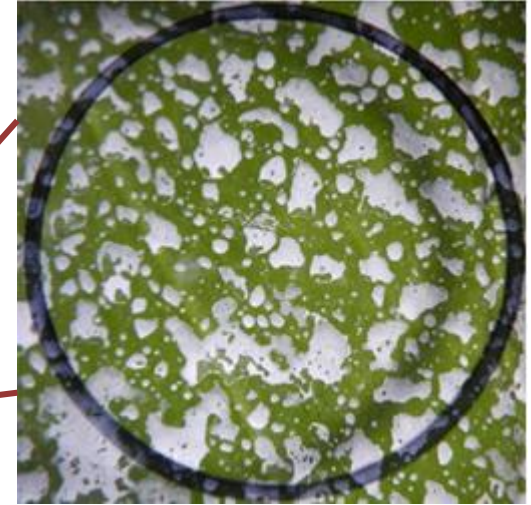
Big droplets do not make a good coverage, they accumulate and run off from the leaf surface.

1
When the sprayer hold too close to the plant, the water amount hitting the leaf-plant area is too much, this is similar to using too much water. The excess of the spray solution runs off as big droplets.





The circle is 1cm²



❖ Apply before sunburn and solar stress symptoms occur on crops,

CROPS including but not limited to	Dosages (L/ha)
Pineapple	10 - 20 L/ha
Coffee, Avocado, Guava, Mango, Papaya, Passion Fruit, Starfruit	10 - 30 L/ha
Citrus, Pome and stone fruits, Pomegranate, Walnuts, Almonds, Hazelnuts, Pistachios, Olives, Figs, Banana, Persimmon, Cherry	20 - 30 L/ha
Tomato, Peppers, Eggplant, Melon, Watermelon, Onion, Garlic, Potato, Cotton	10 – 20 L/ha
Wine Grapes	20 – 25 L/ha

❖ Highest instructed doses should be applied at the first treatments.



Pistachio & Tree Nuts Application



First application:

Begin applications just prior to fruiting bodies reaching 0,5-1.5 cm diameter.

For pistachio; around rice size.

Second application: 10–14 days after the first application.

Subsequent applications: every 2–3 weeks, or as needed.

✿ Make the last application 1 month prior to estimated harvest.



Cherry Application



First application:
should be applied 30 days prior to
expected harvest,

Second application:
should be applied 14 days prior to
harvest.

The tank should be clean in order not to mix SUN STOP with any other products, including adjuvant.



Pineapple & Banana* Application



Applications should be repeated every 4-6 weeks, or as needed.



*Do not make direct application to the bunch.



Tropical Crops Application

Coffee, Avocado, Guava, Mango, Papaya, Passion Fruit, Starfruit



First application should be made 3-10 days before the estimated sun stress period.

- * After heavy rains check plants to determine if reapplication is necessary,
- * Apply every 21–30 days, according to crops' requirements.



Fruiting and Bulb Vegetable Application

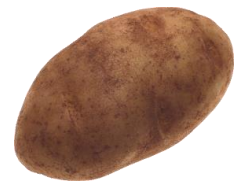
i.e; Peppers, Melon, Watermelon, Tomato, Eggplant, Onion, Garlic, etc



First application:

at or just after full bloom of the whole plant or when the fruits are walnut size, according to the sun intensity.

- * Repeat applications every 2 to 4 weeks or immediately after first harvest,
- * Re-application may be necessary after heavy rain.



Root and Tuber Vegetable Application

i.e; Potato, Ginseng, Carrot, Ginger, Sweet potato, Yam, Turnip, Beet, Radish, etc



First application:

at or just after full bloom of the whole plant or when the fruits are walnut size, according to the sun intensity.

- * Repeat applications every 2 to 4 weeks or immediately after first harvest,
- * Re-application may be necessary after heavy rain.



Row Crops Application

COTTON



First application:

at or just after full bloom of the whole plant

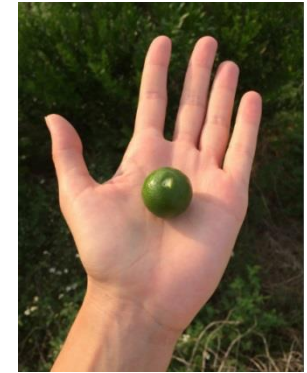
* Cotton: 11 and more blooms / 7.5 meter of row

- * Repeat applications every 2 to 3 weeks or immediately after first harvest,
- * Re-application can be necessary after heavy rain.



Citrus Application

* **1st Spray** of 30 liters / hectare when fruit size is
1 - 2 cm in diameter, apply in 350 – 950 liters of water / ha



* **2nd Spray** – 20 liters in 350-950 liters of water per ha 10-14 days
after 1st spray

* **3rd & 4th Sprays** – 14-21 day intervals as needed to maintain
coverage of the tree and fruit



Grape Application



First application:

After fruit set

(around rice size)

✿ Apply 2 additional times throughout the season, every 14–21 days



Pomegranate & Apple Application



First application:

fruit size 1 - 3 cm

depending on the

variety – before 15th

June

✿ Apply 2–3 additional times throughout the season, every 21–30 days

✿ Make the last application 1 month prior to estimated harvest.



Tomato Application



First application:

At the peak flowering

✿ Apply 2 additional times throughout the season, every 14–21 days



❖ Sucking insect populations

Aphids



Whitefly



Trips



❖ Some fungal diseases

Powdery mildew



Botrytis





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