

## In the orchard in May

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*Date:* 25.05.2020 *Issue:* 5/2020



The average monthly temperature in May for most regions of the country ranges between 15 and 18 degrees. Very often in certain years, daytime temperatures reach up to 30 degrees. In May, the amount of precipitation increases. It is short but intense.

In May, fruit trees are in a phenophase of intensive growth.

For **apple** usually 2 sprayings are carried out, which are directed against apple scab, powdery mildew, codling moth, San Jose scale, leaf-mining moths, mites and aphids. For the control of apple scab, one of the following fungicides is used: Delan 700 WDG - 50 g/da, Delan PRO - 250 ml/da, Decibel Max WG - 30 g/da, Dithane DG - 200 g/da, Dithane M45 - 200 g/da, Difcor 250 EC - 15 ml/da, Indar 5 EW – 100 ml/da, Karamat 2.5 EW – 200

ml/da, Quimera WG – 20 g/da, Luna Care WG – 300 g/da, Password 25 WG – 50 g/da, Polyram DF – 0.2%, Sancozeb 80 WP – 200 g/da, Syllit 544 SC – 125 ml/da, Scab 80 WG Capetan – 188 g/da, Score 250 EC – 15 – 20 ml/da, Sugoby WG – 20 g/da, Thiovit Jet 80 WG – 600 g/da, Faban – 120 ml/da, Flint Max 75 WG – 0.02%, Folpan 80 WDG – 0.15%, Fontelis SC – 75 ml/da, Heliosulfur S – 150 – 500 ml/da, Chorus 50 WG – 30 – 50 g/da, Shavit F 72 WDG – 0.2%, Shardif 25 EC – 20 ml/da, DifenzoN 25 EC – 20 ml/da, Dishom 25 EC – 20 ml/da.

*For the control of powdery mildew, one of the following fungicides is used:* Bayfidan 250 EC – 15 ml/da, Bellis – 80 g/da, Kozavet DF – 750 g/da, Quimera WG – 20 g/da, Kumulus DF – 600-900 g/da, Luna Care – 300 g/da, Systhane 20 EW – 28-42 ml/da, Systhane Ecozome EW – 60-185 ml/da, Score 250 EC – 15-20 ml/da, Solfo 80 WG – 750 g/da, Thiovit Jet 80 WG – 600 g/da, Topaz 100 EC – 25-50 ml/da, Topsin M 70 WDG – 0.12%, Flint Max 75 WG – 0.02%, Heliosulfur S – 150-500 ml/da, Shavit F 72 WDG – 0.2%.

For apple cultivars that are sensitive to scab and powdery mildew, it is advisable to use fungicides that are approved for the control of both diseases, such as: Quimera – 20 g/da, Kumulus DF – 600-900 g/da, Luna Care – 300 g/da, Score 250 EC – 15-20 ml/da, Thiovit Jet 80 WG – 600 g/da, Flint Max 75 WG – 0.02%, Heliosulfur S – 150-500 ml/da, Shavit F 72 WDG – 0.2%.

At high temperatures, do not spray with a sulfur-containing fungicide, which may cause scorching in some cultivars.

During this period, green pruning should be carried out to remove shoots infected with powdery mildew.

For the control of codling moth, one of the following insecticides is added to the fungicide solution: Avant 150 EC - 33.3 ml/da, Affirm 095 SC - 300 g/da plus 0.02% Break-Thru adjuvant, Afikar 100 EC - 30 ml/da, Affirm Opti - 200 g/da, Voliam Targo 063 SC - 75 ml/da, Delegate 250 WG - 30 g/da, Decis 100 EC - 7.5-12.5 ml/da, Deka EC/Desha EC/Dena EC/Poleci/Decision - 30 ml/da, Dukat 25 EC – 30 ml/da, Efcymetrin 10 EC/Cyper 10 EC – 30 ml/da, Imidan 50 WG – 150 g/da, Calypso 480 SC – 20-25 ml/da, Coragen 20 SC – 16-30 ml/da, Meteor – 0.06%, Proteus O – TEC – 0.05-0.06%, Reldan 22 DM – 200 ml/da, Reldan 40 EC – 120 ml/da, Sineis 480 SC – 30-43.7 ml/da, Sumi Alpha 5 EC/Sumicidin 5 EC/Oasis 5 EC – 0.02%, Harpoon – 100 ml/da, Cyclone 10 EC – 30 ml/da. Of the listed insecticides, Affirm 095 SC - 300 g/da plus 0.02% Break-Thru adjuvant, Afikar 100 EC - 30 ml/da, Affirm Opti - 200 g/da, Voliam Targo 063 SC - 75 ml/da, Delegate 250 WG - 30 g/da, Dukat 25 EC – 30 ml/da, Efcymetrin 10 EC/Cyper 10 EC – 30 ml/da, Calypso 480 SC – 20-25 ml/da, Coragen 20 SC – 16-30 ml/da, Sineis 480 SC – 30-43.7 ml/da, Sumi Alpha 5 EC/Sumicidin 5 EC/Oasis 5 EC – 0.02%, Cyclone 10 EC – 30 ml/da are also effective against leaf-mining moths.

For the control of codling moth, the bioinsecticides Carpovirusin – 100 ml/da, Madex TOP – 10 ml/da and Madex TWIN – 10 ml/da can also be used; they are applied during mass flight and more precisely before egg hatching.

For the control of San Jose scale, the following insecticides are registered: Brai - 28-50 ml/da, 0.03%, Deka EC/Desha EC/Dena EC/Poleci/Decision – 50-75 ml/da, Dursban 4 EC – 150-187 ml/da, Closer 120 SC – 40 ml/da, Meteor - 90 ml/da, Mulligan – 30-50 ml/da, Proximo – 28 - 70 ml/da, Reldan 22 DM – 200-250 ml/da, Harpoon – 30 ml/da.

In case of occurrence and high population density of European red mite, spray with one of the acaricides: Apache EW – 100 ml/da, Bermectin – 60-96 ml/da, Valmec EC – 60-96 ml/da, Vertimec 018 EC - 100 ml/da, Voliam Targo 063 SC – 75 ml/da, Danitron 5 SC – 100-200 ml/da, Zoom 11 SC – 25-50 ml/da, Laota - 60-96 ml/da, Milbeknock – 25 g/da, Naturalis SC - 100-150 ml/da, Nealta SC – 100 ml/da, Nissorun 10 WP – 75 g/da.

For **pear** during this period, sprayings are directed against scab, leaf spots (white and brown), pear psylla, codling moth, pear fruit moth and oriental fruit moth. For the control of diseases, one of the fungicides listed for the control of apple scab is used. For the control of pear psylla, one of the following insecticides is added to the fungicide solution: Bermectin – 37.5 – 120 ml/da, Vaztak New 100 EC – 20 ml/da, Valmec – 37.5 – 120 ml/da, Deka EC/Desha EC/Dena EC/Poleci/Decision – 75 ml/da, Delegate 250 WG – 30 g/da, Decis 100 EC – 12.25 ml/da, Laota – 37.5-120 ml/da, Meteor – 90 ml/da, Movento 100 SC – 0.12-0.15%, Naturalis -100-200 ml/da, Sineis 480 SC – 30-43.7 ml/da, Sumi Alpha/Sumicidin 5 EC/Oasis 5 EC – 0.03%, Harpoon – 100 ml/da.

To protect pear fruits from worm infestation, one of the insecticides listed for the control of codling moth is used. **Quince** is sprayed against brown rot and fruit moths. For the control of brown rot, the following fungicides are effective: Captan 80 WP – 150-180 g/da, Karamat 2.5 EW – 200 ml/da, Chorus 50 WG – 45-50 g/da, and for the control of fruit moths – one of the insecticides listed for the control of codling moth.

In May, in most fruit-growing regions (under favourable conditions), symptoms of **fire blight** on pome fruit species appear on a mass scale. The disease causes serious damage to pear, quince and apple. To limit it, pruning is carried out to remove infected branches and shoots (cut 30-40 cm below the site of infection), after which the wounds are covered with oil-based paint to which copper-containing preparations are added – Bordeaux Mix 20 WP, Bordeaux mixture, Funguran OH 50 WP, Champion WP/Champ 50 WP/Makk 50 WP. Pruning tools are disinfected after each cut with denatured alcohol or in bleach diluted with water at a ratio of 1:10. In addition to pruning, to protect trees from infection, sprayings are carried out with: Bordeaux mixture – 1%, Funguran OH 50 WP – 0.15%, Champion WP/Champ 50 WP/Makk 50 WP – 0.15%, Kocide 2000 WG – 0.155-0.68 kg/da, Serenade ASO SC – 400-800 ml/da. The growth regulator Regalis Plus can also be used, but

not during the first 3-4 years after establishment of the orchard. Under favourable conditions for disease development – susceptible cultivars, cool and humid weather, as well as the presence of inoculum from the previous year – preventive sprayings are carried out at intervals of 5-7 days.

**Sweet cherry and sour cherry** during this period are sprayed twice against cylindrosporiosis (shot-hole/bacterial leaf spot), brown rot and cherry fruit fly. Effective fungicides against cylindrosporiosis are: Karamat 2.5 EW – 300 ml/da, Signum WG - 30 g/da, Score 250 EC – 30 ml/da, Syllit 40 SC – 150 ml/da, Syllit 544 SC – 125 ml/da, Delan 700 WDG - 0.05% and Flint Max 75 WG - 30 g/da. Of the listed fungicides, Karamat 2.5 EW - 300 ml/da and Signum WG – 65-70 g/da are also effective against brown rot. At the first spraying against cylindrosporiosis, at high population density of defoliating caterpillars, sawflies and snout beetles, Meteor 60-90 ml/da is added to the fungicide solution. Usually, spraying against cherry fruit fly coincides with the second spraying against cylindrosporiosis. For the control of cherry fruit fly, one of the insecticides authorised for use against this pest is added to the fungicide solution: Decis 100 EC – 10-17.5 ml/da, Imidan 50 WG – 150 g/da, Calypso 480 SC – 20 ml/da, Karate Zeon 5 CS – 15 ml/da, Naturalis – 100-200 ml/da.

Only for late-ripening sweet cherry cultivars and very high population density of cherry fruit fly is it necessary to carry out a second spraying against it. This is done 10–14 days after the first one. Young, non-bearing sweet cherry and sour cherry trees are sprayed against aphids. Effective insecticides against them are: Decis 100 EC – 12.25 ml/da, Mospilan 20 SG – 25 g/da, Closer 120 SC – 20 ml/da, Lamadex Extra – 40-60 g/da, Teppeki – 14 g/da.

In the case of frequent showers during the period of fruit ripening and the presence of strong infection pressure from brown rot, it is necessary to carry out one or two sprayings against the pathogen. Effective fungicides are: Indar 5 EW -150 ml/da, Karamat 2.5 EW – 300 ml/da, Luna Experience – 50 ml/da, Password 25 WG – 50 g/da, Signum WG – 30 g/da, Chorus 50 WG – 40-50 g/da.

It is very important to observe the pre-harvest interval at the last spraying against brown rot.

In May, it is also necessary to take measures against fruit cracking in sweet cherry, which is also a reason for attacks by rot pathogens. Data from various countries where cracking is a problem show that spraying with  $\text{CaCl}_2$  reduces the percentage of cracked fruits. Usually, it is recommended to carry out three sprayings with 0.5%  $\text{CaCl}_2$  during the period of fruit ripening.

Foliar fertilizers containing calcium are also recommended – Vuxal Calcium – 500-600 ml/da, applied in 150 l of spray solution. Three to four treatments are carried out, the first one about 8 weeks before harvest. According to

the manufacturer of Vuxal Calcium, this foliar fertilizer is compatible with the pesticides commonly used in sweet cherry.

In a number of European countries and in the USA, spraying against cracking is also carried out with:

**RainGard** - contains fatty acids, plant esters, emulsifiers and water. When sprayed, it forms a film on the fruit skin that acts as a barrier to the penetration of rainwater and thus prevents cracking. Four to five sprayings are recommended, the first being carried out at "straw colouring" or when the fruits turn straw-yellow, and the remaining ones at intervals of 7-10 days. It has been established that this product reduces cracking by 50%;

**SureSeal** - a copolymer of stearic acid, cellulose and calcium, which forms a biofilm on cherry fruits and protects them from cracking. A double spraying is recommended - 4 and 2 weeks before harvest.

For **plum** during this period, sprayings are carried out against shot-hole disease, red leaf spots, rust, brown rot, plum fruit moth and common plum scale. For the control of shot-hole disease, Captan 80 WP – 150-180 g/da and Funguran OH 50 WP – 110-300 g/da are used, and for the control of brown rot one of the fungicides: Difcor 250 EC – 20 ml/da, Indar 5 EW – 150 ml/da, Captan 80 WG - 150-180 g/da, Karamat 2.5 EW – 300 ml/da, Luna Experience – 50 ml/da, Password 25 WG – 50 g/da, Signum WG – 30 g/da, Systhane 20 EW - 12.5 – 30 ml/da, Chorus 50 WG – 0.045%. For the control of rust and red leaf spots on plum, Indar 5 EW – 150 ml/da and Karamat 2.5 EW – 300 ml/da are approved.

Effective insecticides against plum fruit moth are: Delegate 250 WG – 100-120 ml/da, Decis 100 EC -7.5-17.5 ml/da, Coragen 20 SC – 16-30 ml/da. For the control of common plum scale, the following are recommended: Movento 100 SC – 0.075-0.1%, Proximo – 28-70 ml/da,

For **peach** sprayings are directed against powdery mildew, shot-hole disease, brown rot, Anarsia, oriental fruit moth and aphids. For the control of powdery mildew, one of the following fungicides is used: Difcor 250 EC – 20 ml/da, Embrelia – 150 ml/da, Indar 5 EW – 150 ml/da, Karamat 2.5 EW – 300 ml/da, Kozavet DF – 150 g/da, Kumulus DF – 750 g/da, Luna Experience – 50 ml/da, Miclofil – 32-60 ml/da, Password 25 WG – 50 g/da, Ritual – 32-60 ml/da, Sercadis - 15 ml/da, Signum WG – 30 g/da, Systhane 20 EW – 15-36 ml/da, Systhane Ecozome EW – 65-200 ml/da, Score 250 EC – 20-30 ml/da, Solfo 80 WG – 750 g/da, Sulgran - 500 g/da, Sulfur WG – 600 g/da, Thiovit Jet 80 WG – 600 g/da, Topaz 100 EC – 50 ml/da, Flosul SC – 500 ml/da, Fontelis SC – 120 ml/da, Heliosulfur S – 125-500 ml/da, Hercules 125 SC – 15-25 ml/da. Of the listed fungicides, Indar 5 EW – 150 ml/da, Karamat 2.5 EW – 300 ml/da, Luna Experience – 50 ml/da, Password 25 WG – 50 g/da, Signum WG – 45 g/da,

Sythane 20 EW – 15-36 ml/da, Sythane Ecozome EW – 65-200 ml/da, Score 250 EC – 20-30 ml/da, Fontelis SC – 120 ml/da are also effective against brown rot and are used for simultaneous control of both diseases.

For the control of oriental fruit moth and Anarsia, one of the following insecticides is used: Avant 150 EC – 33.3 ml/da, Affirm Opti – 200-225 g/da, Voliam Targo 063 SC – 75 ml/da, Delegate 250 WG – 30 g/da, Imidan 50 WG – 150 g/da, Coragen 20 SC – 16-30 ml/da, Lamadex Extra - 70 g/da, Meteor - 90 ml/da, Sumi Alpha 5 EC - 0.02%.

At high population density of aphids, spray with: Abanto – 60 ml/da, Ascot WG - 40-80 g/da, Deka EC/Desha EC/Dena EC/Poleci/Decision – 30-50 ml/da, Decis 100 EC – 8.75-12.25 ml/da, Estrela WG/Lamsha WG/Adalam WG/Indulam WG – 40-80 g/da, Calypso 480 SC – 20 ml/da, Lamadex Extra - 40-60 g/da, Movento 100 SC – 0.075-0.1%, Mospilan 20 SG – 25 g/da, Natur Breaker – 75 ml/da, Proteus O-TEC - 0.05% - 0.06%, Teppeki – 14 g/da.

**Apricot orchards** are sprayed against brown rot, gnomonia, Anarsia and oriental fruit moth. For the control of brown rot, one of the following fungicides is used: Delan 700 WDG – 0.05%, Difcor 250 EC – 20 ml/da, Embrelia -150 ml/da, Indar 5 EW -150 ml/da, Karamat 2.5 EW – 300 ml/da, Luna Experience – 50 ml/da, Password 25 WG – 50 g/da, Signum WG – 30 g/da, Sythane 20 EW – 12.5-30 ml/da, Chorus 50 WG – 40-50 g/da. Of the listed fungicides, Delan 700 WDG – 0.05%, Karamat 2.5 EW – 300 ml/da and Signum WG – 30 g/da are also effective against gnomonia. For the control of Anarsia and oriental fruit moth, one of the insecticides listed for peach is used.

For **raspberry** sprayings are directed against didymella, anthracnose, cane base dieback (leptosphaeriosis), grey mould, raspberry agrilus, raspberry midge, raspberry gall midge and raspberry beetle. For the control of didymella, anthracnose and cane base dieback (leptosphaeriosis), one of the following fungicides is used: Signum WG -100 g/da or Funguran OH 50 WP – 200-300 g/da. Effective fungicides against grey mould are: Serenade ASO SC – 400-800 ml/da, Signum WG - 150 g/da, Switch 62.5 WG – 100 g/da.

For raspberry agrilus, raspberry midge, raspberry gall midge and raspberry beetle, there is no insecticide included in the list of authorised plant protection products. The insecticides Karate Zeon 5 CS – 0.02%, Vaztak New 100 EC – 0.015% and Decis 2.5 EC – 0.04% are effective against the listed pests. It is recommended that Karate Zeon 5 CS – 0.02% be used at the first spraying and the other two at the second spraying. In case of occurrence of mites, Apollo 50 SC - 30-40 ml/da or NeemAzal T/S at a concentration of 0.3-0.5% is recommended. This bioproduct also affects aphids and leafhoppers. Lamadex Extra – 28-60 g/da is also approved against aphids.

**Strawberry plantations** in May are sprayed against grey mould, powdery mildew, strawberry blossom weevil and strawberry stem weevil. For the control of grey mould, one of the following fungicides is used: Geoxe WG – 50 g/da, Switch 62.5 WG – 100 g/da, Signum WG – 75 g/da, Captan 80 WG - 150 g/da, Prolectus 50 WG – 120 g/da, Luna Sensation – 60-80 ml/da, Serenade ASO SC – 400-800 ml/da, Fontelis SC – 90 ml/da. To protect strawberry from powdery mildew, spray with one of the approved fungicides: Dagonis – 60 ml/da, Zoxis 250 SC – 80-100 ml/da, Kozavet DF – 500 g/da, Kumulus DF – 500 g/da, Norios 250 SC – 80-100 ml/da, Systhane Eozome EW – 55-130 ml/da, Score 250 SC – 50 ml/da, Sulgran – 500 g/da, Sulfur WG – 500 g/da, Topaz 100 EC – 50 ml/da, Flosul – 750 ml/da, Heliosulfur S – 150-600 g/da, Hercules 125 SC – 50 ml/da, Cidely Top - 100 ml/da, Shavit F 72 WDG – 0.2%, Thiovit Jet 80 WG – 500 g/da. Of the listed fungicides, Cidely Top is also effective against white leaf spots and anthracnose.

For the control of weevils, Calypso 480 SC – 25 ml/da is used. This insecticide is also effective against aphids. The insecticides Grial – 50 ml/da, Infis – 50 ml/da, Lamadex Extra – 28-60 g/da, Oikos EC – 100 – 150 ml/da are also approved against these pests.

In case of occurrence of mites, spray with one of the acaricides: Naturalis – 70-100 ml/da, Akramite 480 SC – 20-25 g/da, Apollo 50 SC – 30 - 40 ml/da, Zoom 11 SC – 40-50 ml/da, Milbeknock – 100 – 150 ml/da, Nissorun 10 WP – 50-75 g/da, Thiovit Jet 80 WG 500 g/da.

## Attention!

### For effective plant protection it is necessary:

- sprayings to be carried out according to the warnings of the Regional Food Safety Directorates and the advice of plant protection agronomists;
- to use only pesticides that are authorised for use, and sprayings to be carried out only when pest population density exceeds the established economic threshold levels, which are as follows:

Codling moth – 0.8 – 1% fresh entries;

Oriental fruit moth – 1.5% damaged fruits;

Plum fruit moth – 1 – 1.5% fresh entries;

Anarsia – 3% damaged shoots;

Cherry fruit fly – 10 flies/trap;

Aphids – 10 – 15% infested shoots;

Common plum scale – 5-7 individuals per leaf;

Leaf-mining moths – 1-2 fresh mines per leaf;

Fruit tree mites – 3-4 individuals per leaf;

Pear psylla – 4-6% shoots with colonies;

Strawberry blossom weevil and strawberry stem weevil – 15% infested plants.

**In organic production** the use of synthetic pesticides is not permitted. For the control of fungal diseases, copper-containing and sulfur-containing fungicides are used. For pest control, the following bioinsecticides are approved:

**Carpovirusin** against codling moth and oriental fruit moth,

**Chrysant EC** against peach aphid.

**Madex Twin and Madex Top** against codling moth and oriental fruit moth.

**Naturalis** against whitefly and spider mite on strawberry, cherry fruit fly, common pear psylla, European red mite,

**NeemAzal T/S** against leaf-mining moths on apple.

**Oikos** against aphids, leafhoppers and leaf-mining moths on apple.

**Piretro Natura** against peach aphid.

**Rapax** against oriental fruit moth, Anarsia and leafrollers on pome fruit.

**Sineis** against codling moth, apple blotch leafminer, Anarsia and pear psylla.

Pheromones (attractants) are also approved:

Ginko for codling moth

Isomate OFM TT for oriental fruit moth

Isomate C for codling moth

Isomate CRB for codling moth and leafrollers.

For cherry fruit fly, the visual trap Farkon AM is approved.