



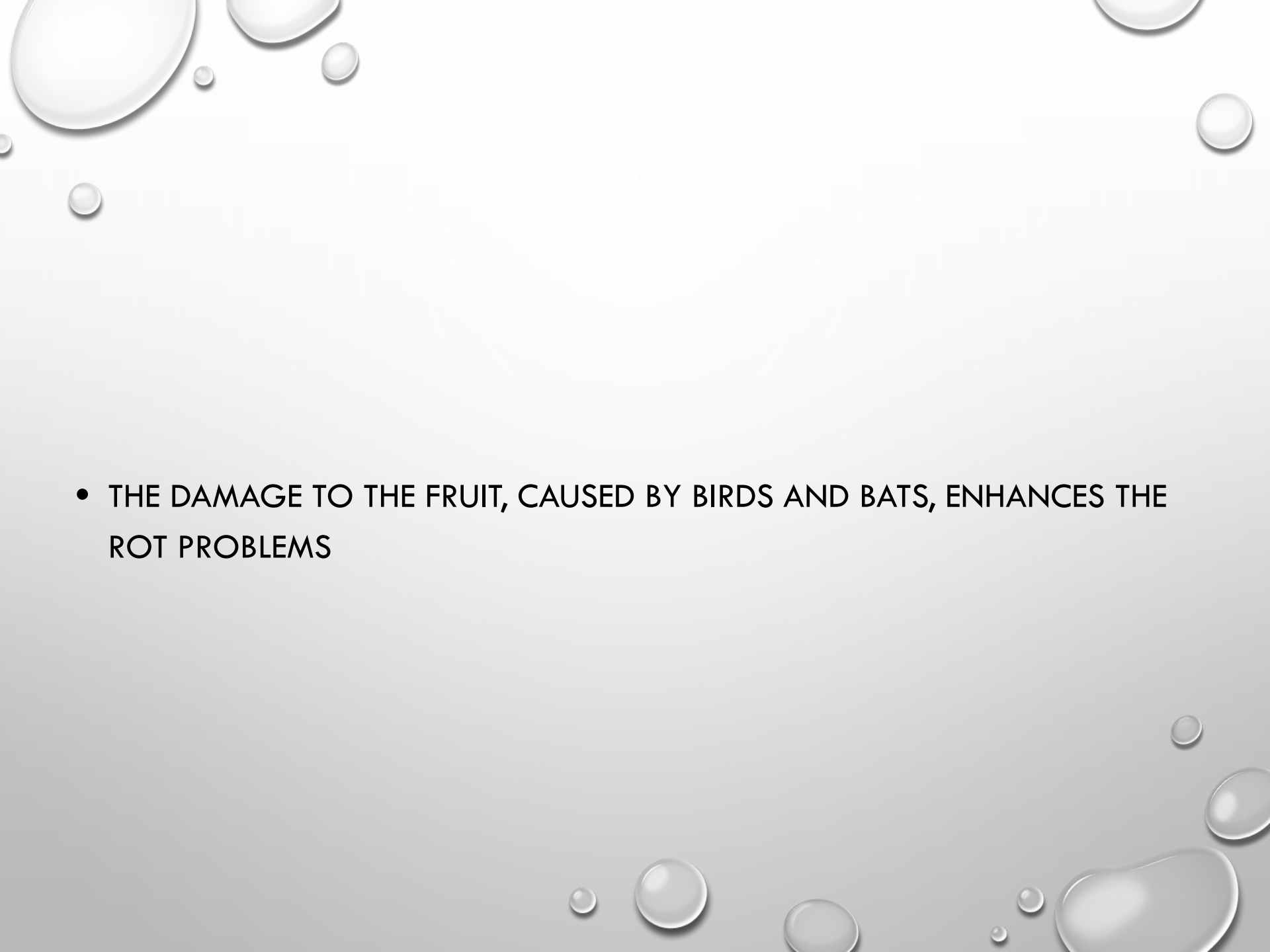
STORAGE ROTS IN PEARS


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- THE DAMAGE TO THE FRUIT, CAUSED BY BIRDS AND BATS, ENHANCES THE ROT PROBLEMS



FUNGAL ROTS ARE RESPONSIBLE FOR SIGNIFICANT LOSSES IN STORED PEARS IN MOST SEASONS. THEY CAN BE DIVIDED INTO TWO BROAD GROUPS:

- THOSE CAUSING ROTS PRIMARILY AFTER HARVEST (STORE DISEASES)
 - THOSE THAT ALSO CAUSE ROTS IN THE ORCHARD (ORCHARD DISEASES).
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Brown rot (*Monilinia fructigena*)

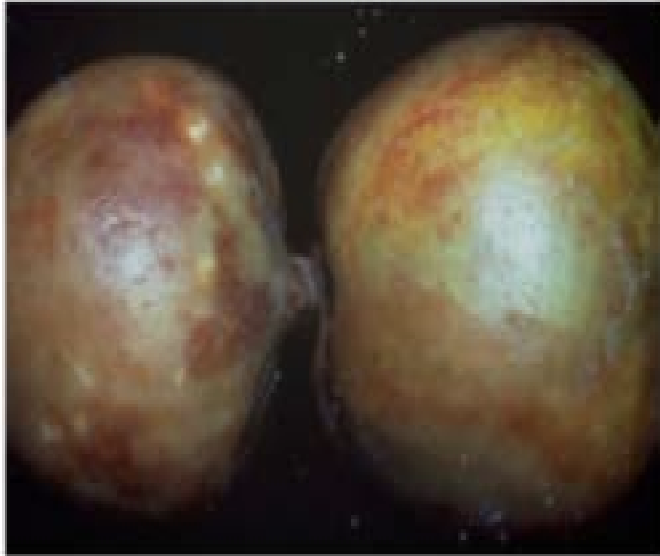


Brown rot is an important disease of apple fruits causing significant losses in store and in the orchard. All varieties are susceptible.

ALTERNARIA ROT--*ALTERNARIA ALTERNATA*.

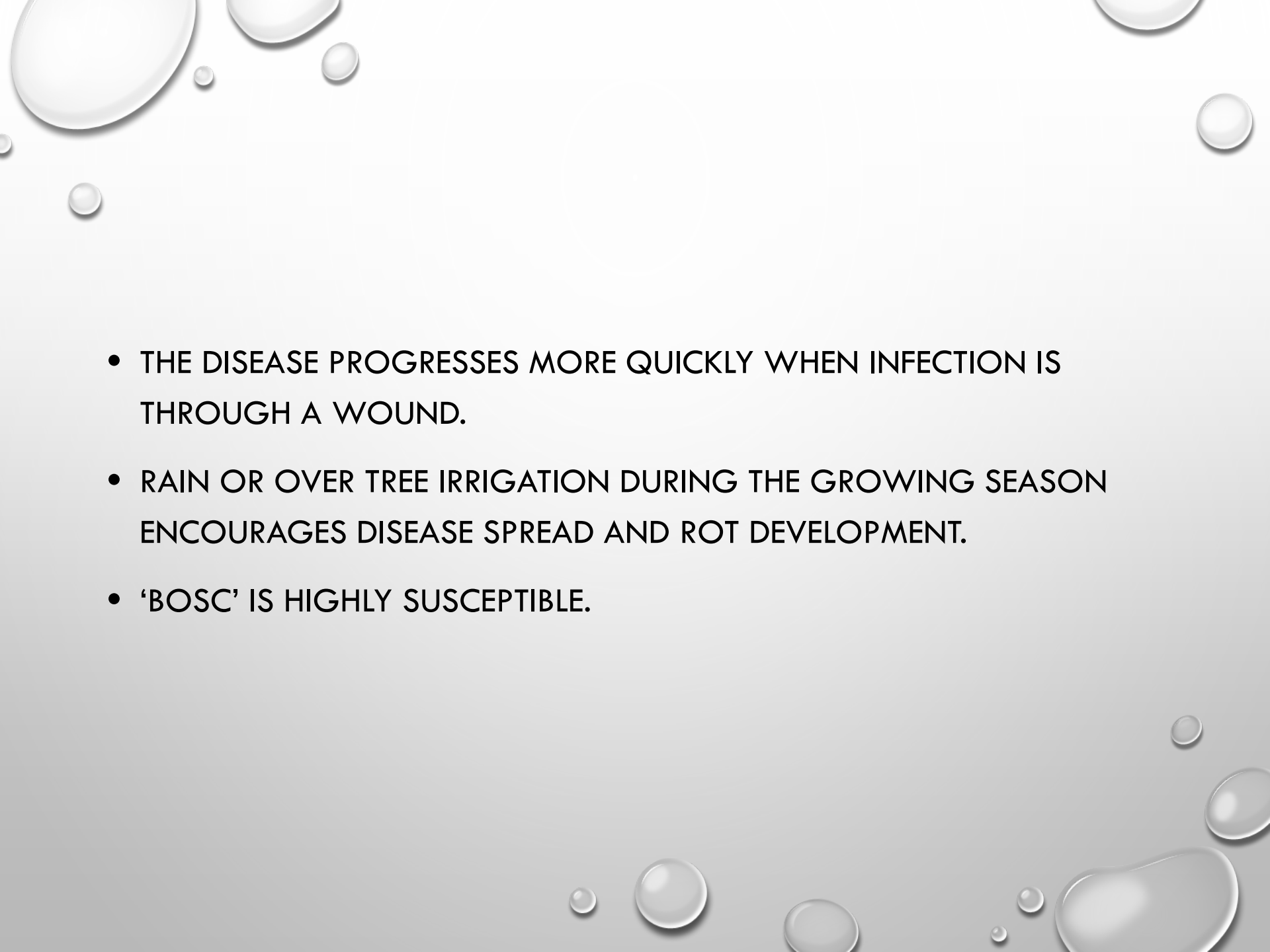
- INFECTION IS THROUGH SKIN BREAKS OR AREAS WEAKENED BY SUNBURN, BRUISING, SENESCENCE OR SCALD.

Phytophthora Fruit Rot (*Phytophthora syringae*)



- PHYTOPHTHORA FRUIT ROT ONLY BECAME COMMON IN PEARS WHEN THE USE OF HERBICIDE STRIPS UNDER TREES WAS INTRODUCED IN THE 1970S.
- LOW-HANGING FRUIT BECOME INFECTED BY THE PATHOGEN BEING SPLASHED ONTO FRUIT FROM THE SOIL DURING HEAVY RAIN. PHYTOPHTHORA FRUIT ROT CAN ALSO OCCUR ON PEARS.

- BULL'S-EYE ROT - *NEOFABRAEA PERENNANS* AND *N. ALBA* (FORMERLY *PEZICULA MALICORTICI*).
- INFECTION IS IN THE FIELD FROM APPLE TREE CANKERS OR PEAR BARK. FRUIT CAN BECOME INFECTED ANY TIME BETWEEN BLOOM AND HARVEST, BUT SUSCEPTIBILITY INCREASES AS THE GROWING SEASON PROGRESSES.

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- THE DISEASE PROGRESSES MORE QUICKLY WHEN INFECTION IS THROUGH A WOUND.
 - RAIN OR OVER TREE IRRIGATION DURING THE GROWING SEASON ENCOURAGES DISEASE SPREAD AND ROT DEVELOPMENT.
 - 'BOSC' IS HIGHLY SUSCEPTIBLE.



- BLUE MOLD--*PENICILLIUM EXPANSUM*.
- DELAYS IN COOLING FRUIT AFTER HARVEST CAN INCREASE RISK OF THIS ROT.
- THE FUNGUS CAN INFECT THROUGH WOUNDS, LENTICELS, AND BRUISES LATE IN STORAGE. HIGH NITROGEN LEVELS AND TREE VIGOR ALSO CONTRIBUTE TO DISEASE DEVELOPMENT.

- PRE-HARVEST FUNGICIDE TREATMENT IS GENERALLY INEFFECTIVE AGAINST PENICILLIUM AS ROT INCIDENCE IS RELATED TO FRUIT DAMAGE.
- CONTROL OR PREVENTION OF PENICILLIUM ROT IS MAINLY DEPENDENT ON GOOD HYGIENE, PARTICULARLY OF BINS, AND OF GOOD SUPERVISION AT HARVEST TO MINIMISE DAMAGE TO FRUIT AND TO ENSURE ONLY SOUND FRUIT IS PICKED FOR STORAGE.

- CORRECT NUTRITION OF FRUIT, ESPECIALLY CALCIUM, TO ENSURE PEARS ARE SUITABLE FOR LONG-TERM STORAGE IS ALSO IMPORTANT.

- MUCOR ROT--*MUCOR PIRIFORMIS*

SPORES COME FROM SOIL OR FALLEN FRUIT ON THE ORCHARD FLOOR.

STORAGE SCAB--*VENTURIA PIRINA*.

- CAN DEVELOP AS A POST-HAVEST DISEASE IF LATE SEASON INFECTIONS ARE NOT CONTROLLED IN THE ORCHARD.

GREY MOLD--*BOTRYTIS CINEREA*.

- SPORES FROM THE ORCHARD INFECT THROUGH WOUNDS.

- ROTTING IN STORE IS MAINLY A RESULT FROM FRUIT INFECTION THAT OCCURRED BEFORE HARVEST BUT REMAINED SYMPTOMLESS AND SUBSEQUENTLY DEVELOPED IN STORE.
- THE STORE DISEASES ARE USUALLY WOUND ROTS WHICH GAIN ENTRY TO DAMAGED FRUIT AT HARVEST.

FUSARIUM ROT

- SEVERAL FUSARIUM SPECIES

- ***MINERAL COMPOSITION:***

FRUIT LOW IN CALCIUM AND HIGH IN POTASSIUM AND NITROGEN ARE MORE PRONE TO ROTS.

- THEREFORE, CORRECT MINERAL COMPOSITION IS IMPORTANT

FACTORS AFFECTING FRUIT SUSCEPTIBILITY TO ROTTING


FRUIT MATURITY:

- CORRECT HARVEST DATE IS IMPORTANT AS OVERMATURE FRUIT ARE MORE PRONE TO DAMAGE AND ROTTING.



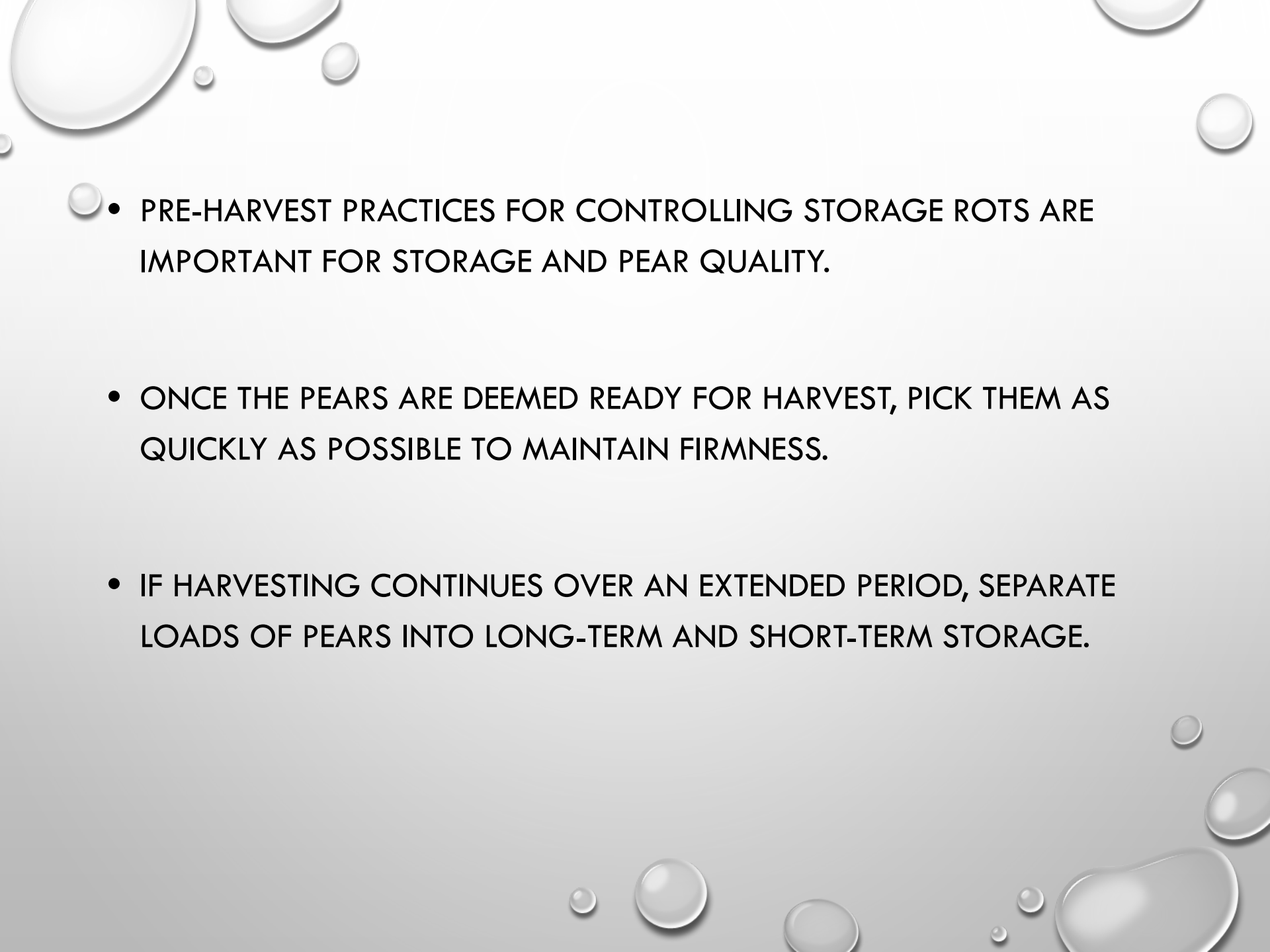
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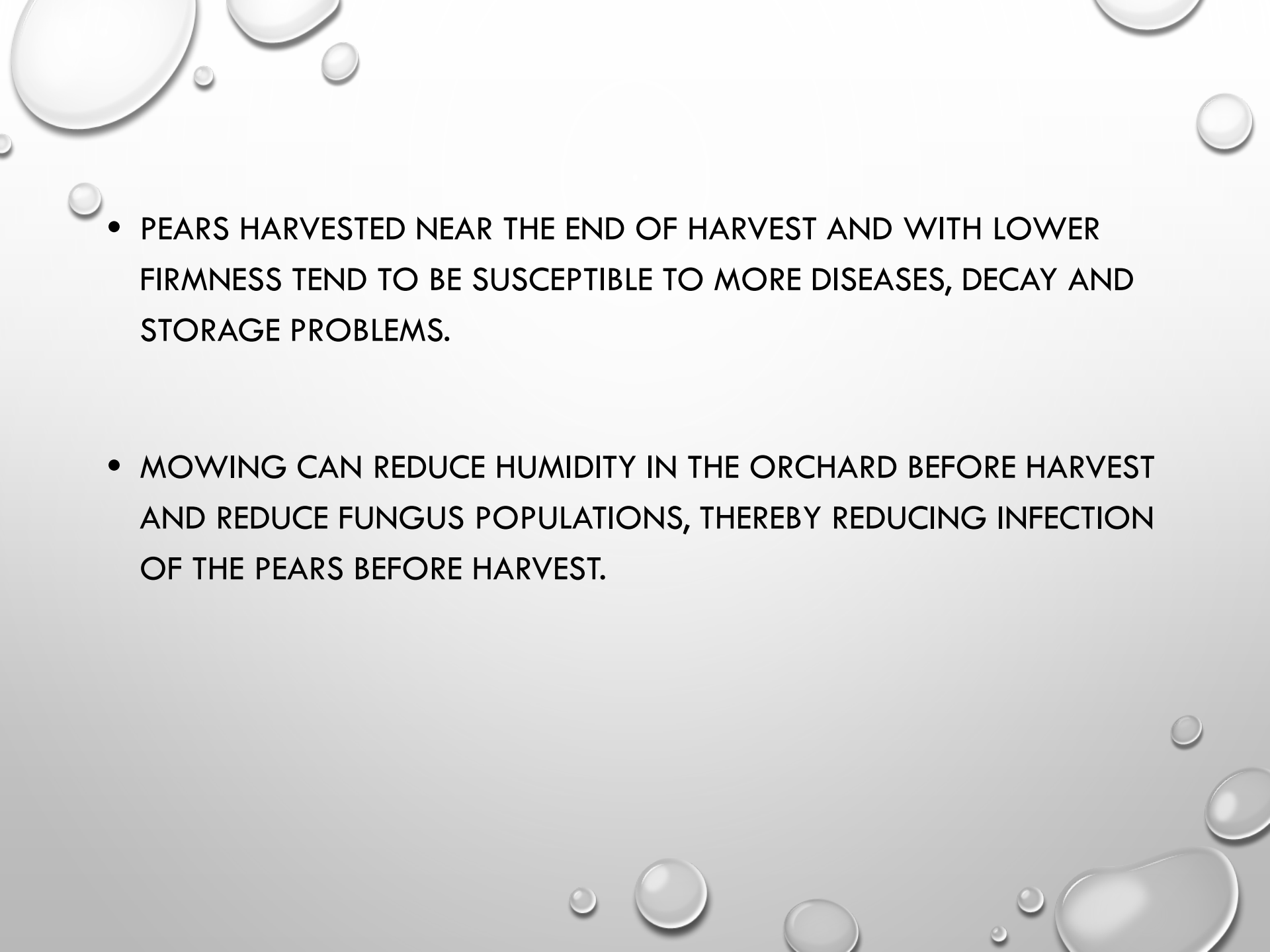
POOR HANDLING OF FRUIT AT HARVEST INCREASES THE RISK OF WOUND FUNGI SUCH AS *BOTRYTIS*, *PENICILLIUM* AND *MUCOR*.



- THE MOST COMMON BINS USED FOR HARVEST HAVE BEEN WOOD, AND THE USE OF PLASTIC LINERS HAS HELPED REDUCE SKIN DAMAGE AND SCUFFING.
- CHANGING TO PLASTIC BINS WILL REDUCE DAMAGE TO PEARS.

- ENSURE BINS ARE CLEAN, DRY AND FREE OF DIRT AND GRAVEL THAT COULD CUT OR PUNCTURE PEARS. IT IS ALSO IMPORTANT THAT DRIVERS KEEP SOIL AND GRAVEL OUT OF BINS AND OFF BIN RAILS.
- THIS DEBRIS CAN CUT PEAR SKIN AND ALSO END UP IN THE PACKING HOUSE.

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- PRE-HARVEST PRACTICES FOR CONTROLLING STORAGE ROTS ARE IMPORTANT FOR STORAGE AND PEAR QUALITY.
 - ONCE THE PEARS ARE DEEMED READY FOR HARVEST, PICK THEM AS QUICKLY AS POSSIBLE TO MAINTAIN FIRMNESS.
 - IF HARVESTING CONTINUES OVER AN EXTENDED PERIOD, SEPARATE LOADS OF PEARS INTO LONG-TERM AND SHORT-TERM STORAGE.

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- PEARS HARVESTED NEAR THE END OF HARVEST AND WITH LOWER FIRMNESS TEND TO BE SUSCEPTIBLE TO MORE DISEASES, DECAY AND STORAGE PROBLEMS.
 - MOWING CAN REDUCE HUMIDITY IN THE ORCHARD BEFORE HARVEST AND REDUCE FUNGUS POPULATIONS, THEREBY REDUCING INFECTION OF THE PEARS BEFORE HARVEST.

- AVOID HARVESTING DURING RAIN OR EARLY MORNING DEWS, SO THAT PEARS ARE DRY WHEN PLACED IN THE BIN, TO HELP REDUCE THE POSSIBILITY OF INFECTION AND DISEASE DEVELOPMENT.
- DURING HARVEST, HAVE PICKERS WEAR GLOVES OR CUT SHARP FINGERNAILS, WHICH CAN LEAD TO CREATING PUNCTURES AND OTHER ENTRY POINTS FOR DECAY FUNGI.




De plukhandschoen voorkomt dat nagels de peer beschadigen.
Foto: Marijke van Ossenbruggen, NFO

- STEM PUNCTURES ARE VERY COMMON DURING HARVEST, SO HAVE PICKERS PLACE PEARS INTO THE PICKING BASKET OR BAG CAREFULLY.
- MOST DECAY ENTERS PEARS THROUGH PUNCTURES OR SMALL CUTS. ANYTHING YOU CAN DO TO REDUCE SKIN BREAKS IN PEARS WILL REDUCE STORAGE ROTS. ENSURE PICKING BAGS OR BASKETS ARE FREE OF ANY EDGES THAT CAN CUT PEAR SKIN.
- THE LATER THE PEAR IS HARVESTED, THE SOFTER IT IS AND THE MORE PRONE TO PUNCTURES AND CUTS.

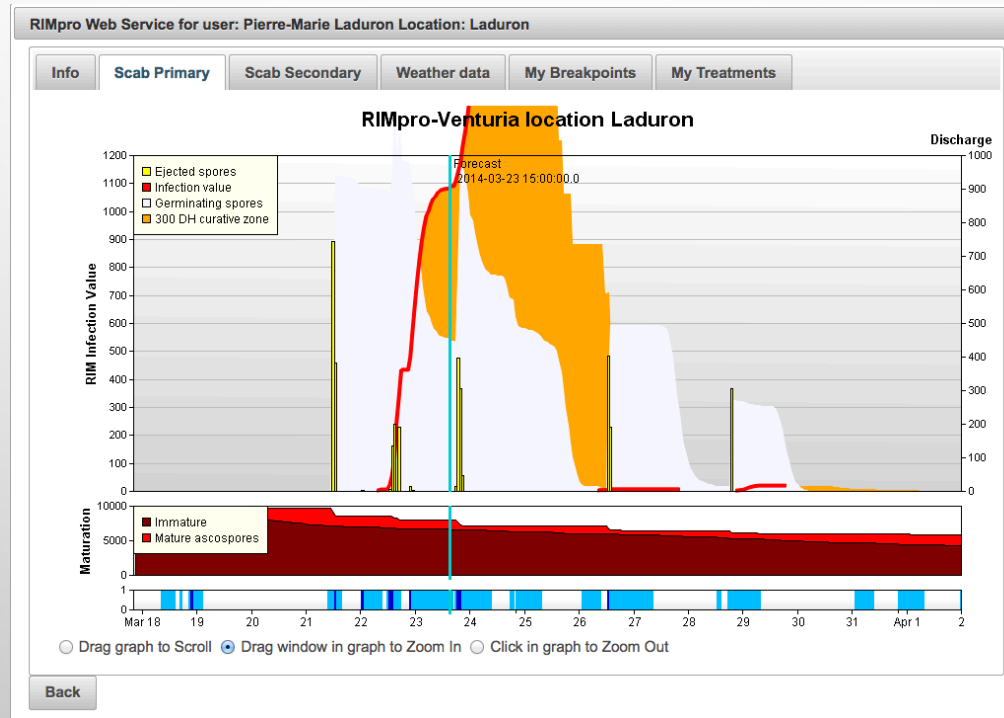




WEATHER:

- RAINFALL IS THE MOST CRITICAL FACTOR IN DETERMINING INFECTION OF PEARS BY FUNGI.
 - WET SUMMERS AND RAIN DURING HARVEST USUALLY RESULT IN HIGH ROT INCIDENCE IN STORE.
 - BUT ALSO HEAVY DEW CAN CAUSE ROTS
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MAKE EFFECTIVE DECISIONS IN YOUR CROP PROTECTION





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DIPPING PEARS WITH FUNGICIDES AFTER PICKING

- POSTHARVEST ROTS – APPLES, PEARS
- THIABENDAZOLE (1)
- FLUDIOXONIL (1 2)
- IPRODIONE (2)
- IMAZALIL (3)

- HARVEST ALL PEARS DESTINED TO BE STORED FOR ANY DURATION AT THE PROPER MATURITY AND HANDLE THEM WITH CARE DURING HARVEST.
- COOL PEARS AS QUICKLY AS POSSIBLE AND STORE THEM AT THE PROPER TEMPERATURE (-1°C TO 0°C) WITH HIGH HUMIDITY (90%-95%).
- WITH SMART FRESH, MOST PEAR CULTIVARS WILL REMAIN FIRMER DURING STORAGE AND FOR LONGER PERIODS OF TIME AFTER BEING REMOVED FROM STORAGE.
- IN ADDITION, SMART FRESH SUBSTANTIALLY REDUCES STORAGE DISORDERS.
- HARVEST PEARS WHEN FIRMNESS REACHES AROUND 7 KG PRESSURE.

OZON

- OZONE KILLS AIRBORNE AND SURFACE MICRO-ORGANISMS, SHUTS DOWN THE SPORULATION PROCESS AND CONSUMES ETHYLENE PRODUCED BY RIPENING.
- REDUCING ETHYLENE SLOWS RIPENING WHICH EXTENDS SHELF LIFE.

- OZONE CAN BE USED ALONE OR TO COMPLEMENT FUNGICIDES AND THE NATURAL MOLECULE, 1-MCP (SMARTFRESH), USED TO SLOW RIPENING OF PEARS IN STORAGE.
- IT CAN CONTROL ROTS BUT ONLY COMBATS SURFACE DECAY OF FRUIT, NOT INTERNAL.

AFTER HARVEST

- SPRAY UREA
- SWEEP ORCHARD AND MULCH THE LEAVES

