



03007 Révový mošt; zkrvstiteľné cukry v kg/ht: 15° C.



## Methods for identification of must pH and titratable acid concentrations

- Evaluation of acids means evaluation of total acidity / titratable acidity
- Titratable acids are identified by a process of neutralization using sodium hydroxide
- Titratable acids include all types of acids (inorganic - phosphoric acid, as well as organic)
- pH ranges throughout the aging from 2.80-3.50



High pH has negative impact on grape and wine quality

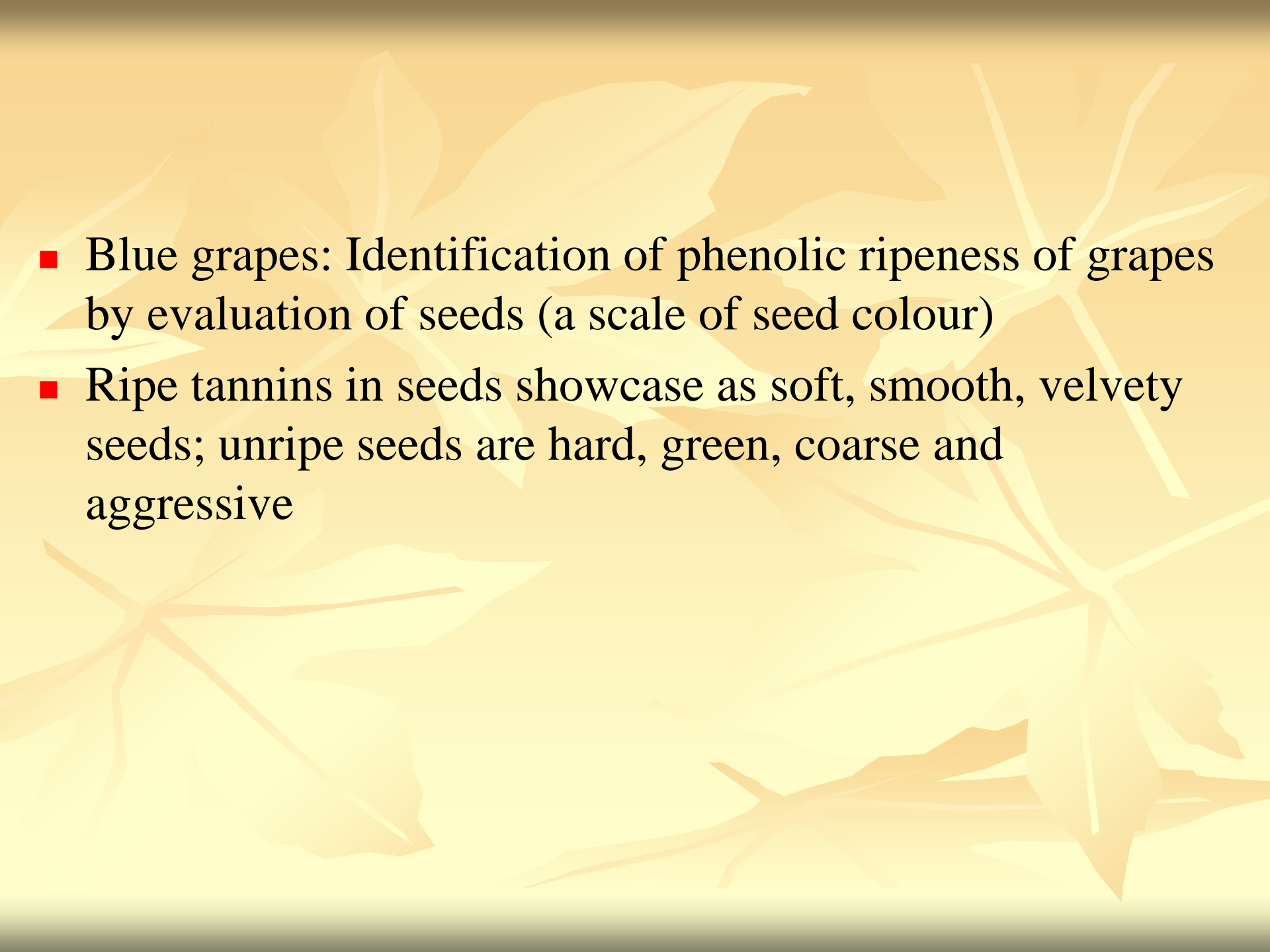
- Musts are more likely to oxidize
- pH higher than 3.5 results in a flat, “tired” wine and loss of its freshness
- Wines are often contaminated with microbes
- Low colour stability in red wines, insolubility of tannins
- High pH decreases efficiency of bentonite in elimination of heat-labile protein
- High pH requires more sulphur dioxide

## Evaluation of aromas and phenological ripeness

- Evaluation of sensory ripeness of grapes helps determine optimum harvest date

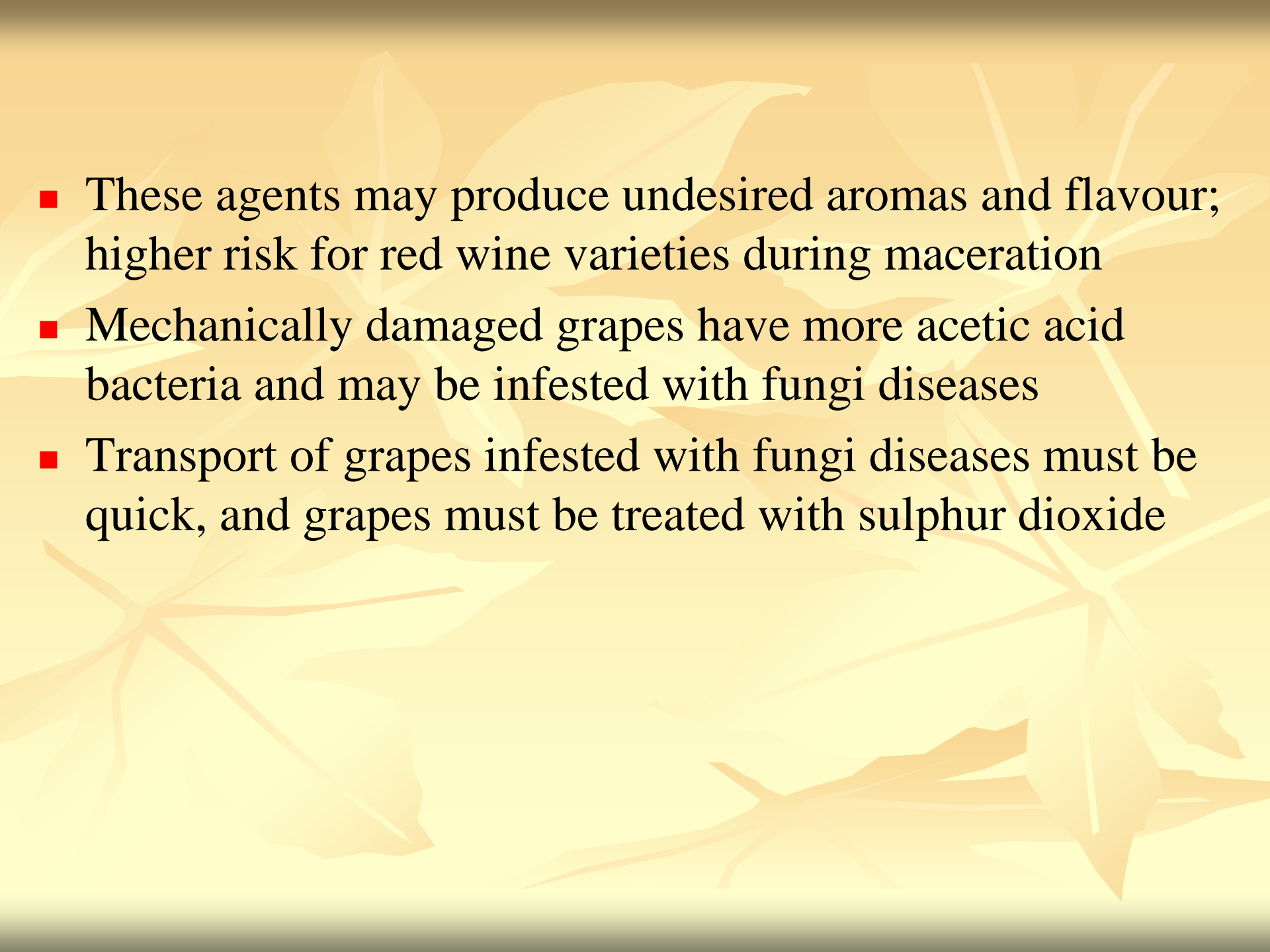
### Skin colour:

- Green skin shows unripe aromatic ripeness of berries; grass tones prevail
- Brownish, sun-burnt skin (Welschriesling) contains high amount of volatile phenols and their precursors which showcase burnt, plastic and stale taste

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- Blue grapes: Identification of phenolic ripeness of grapes by evaluation of seeds (a scale of seed colour)
  - Ripe tannins in seeds showcase as soft, smooth, velvety seeds; unripe seeds are hard, green, coarse and aggressive

## Harvest and health condition of grapes

- Efficient and fast harvest is a prerequisite for good wine production
- Following aspects may have negative impact on grapes during their harvest and transport to processing facilities:
  - Fungi diseases, powdery mildew, grey mould
  - Wild yeasts (not *saccharomyces*)
  - Acetic acid and lactic acid bacteria

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- These agents may produce undesired aromas and flavour; higher risk for red wine varieties during maceration
  - Mechanically damaged grapes have more acetic acid bacteria and may be infested with fungi diseases
  - Transport of grapes infested with fungi diseases must be quick, and grapes must be treated with sulphur dioxide

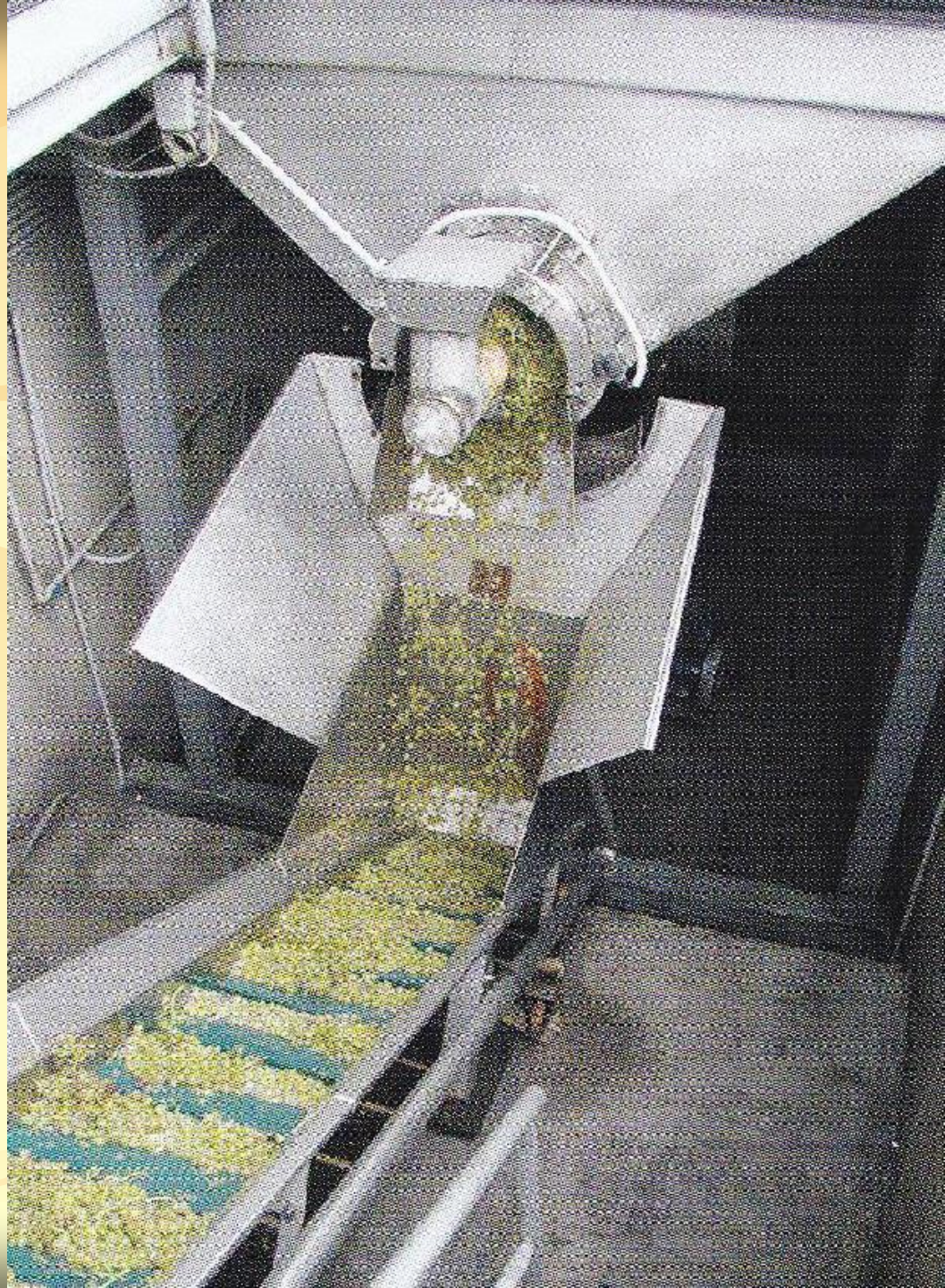


- Sugar is a good substrate for lactic acid bacteria, risks include:
  - Prolonged transport of grapes from vineyard into the cellar
  - Musts which do not ferment for a while
  - High residual sugar concentrations, irregularities in a fermentation process
  - Wines with high residual sugar content
- Manual picking of grapes is the most common and most used harvesting method
- Commercial producers - mechanized grape picking

Some of the principles for proper grape picking

- Ideal container volume: 10-15 L, grapes do not get damaged
- Larger containers (30 kg) – grapes must be treated before the harvest (most often with dry ice); damaged grapes – mild sulphuring
- Quick transport of grapes to processing facilities is important
- White grape varieties are harvested during cold day time; red grape varieties are harvested during warm day time





## Grape picking

- One-off grape picking (days without rain)
- Grapes infested with mold are picked first (release of phenols)
- Low wine quality
- Manual picking (special scissors, plastic containers, transport boxes)
- 1 ha of vineyard = 250 hours; decrease in temperatures, dry ice
- Clusters infested with *Aspergillus*, *Penicillium expansum* (ochratoxin) and acetic acid bacteria are removed

## Gradual grape picking

- Picking is repeated several times per the harvest season
- Individual cluster or berries are picked

## Mechanized grape picking

- Harvesting machinery
- Healthy berries are separated from the grape stalk, and fall into the harvesting containers; 3-4 ha per day
- Good for red wine varieties (high phenol concentrations)
- Transport containers have perforated bottoms (outlet for must)

## Schéma výroby bílého vína



## Schéma výroby červeného vína

