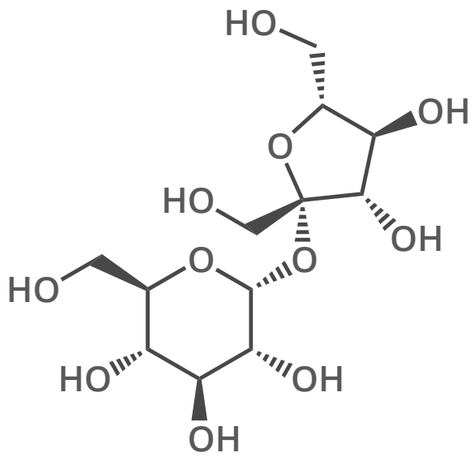
THE CHEMISTRY OF JAM-MAKING

SUGAR

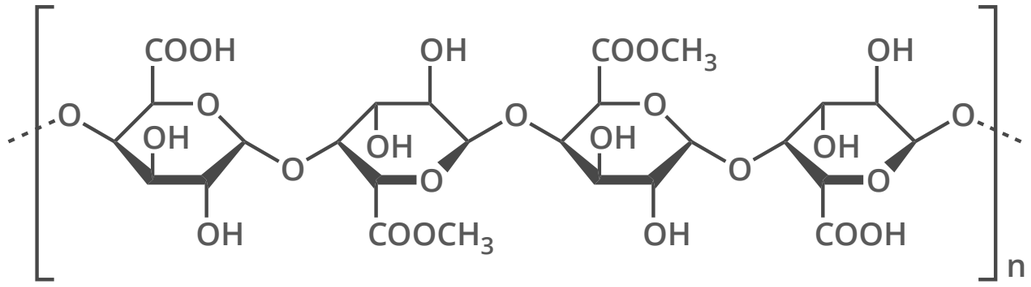


SUCROSE
(table sugar)

The majority of jam-making recipes call for an equal weight of fruit and sugar. Sugar boosts the gel-forming capability of the jam by drawing water away from pectins. It binds the water, meaning that with high levels of sugar, there is no longer enough water available in the jam to support microbial growth, therefore imparting a natural preservative effect.

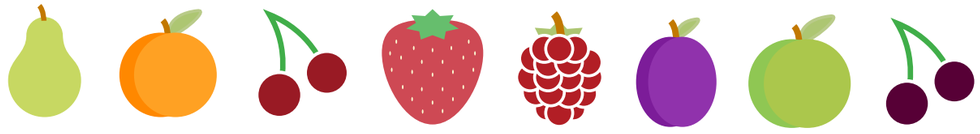
65-69%
REQUIRED FINAL SUGAR CONTENT OF JAM

SETTING & PECTINS



PECTIN
(typical chemical structure)

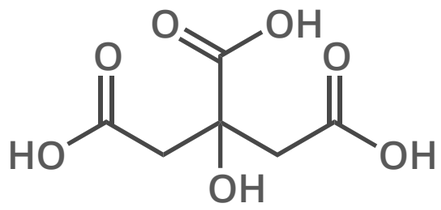
Pectin is made up of a large number of sugar molecules bonded together in a long chain. The pectin content varies from fruit to fruit; fruits lower in pectin require more pectin to be added, either in the form of commercial pectin or by addition of fruit whose pectin content is higher. The 'setting point' when boiling jam is ~104˚C; the pectin chain binds to itself, forming a gel network that traps liquid as the jam cools and helps it set.



LOW IN PECTIN
Pears, peaches, cherries, strawberries, raspberries, blackberries, sweet plums, blueberries, elderberries.

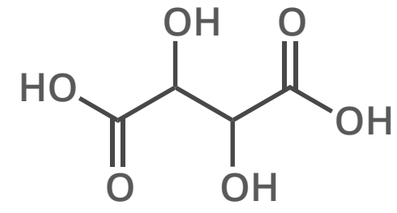
HIGH IN PECTIN
Apples, gooseberries, blackcurrants, sour plums, grapes, citrus rind.

FRUIT ACIDS



CITRIC ACID
(occurs naturally in citrus fruits)

A frequent cause of jam not setting is a lack of acidity. Fruits themselves provide some acids naturally, but often extra acid will need to be added - this is commonly in the form of citric acid, but tartaric acid can also be used. A pH of between 2.8-3.3 is needed to help the pectin form a gel and allow the jam to set properly.



TARTARIC ACID
(found in grapes)

2.8-3.3
OPTIMAL pH FOR SETTING