Science, Practice and Quality Assured Production of Cider and Perry

This **Technical Manual** offers the knowledge and information gained by the Author over more than 35 years of working in the Cider Industry as an award-winning producer of cider and perry, trainer and consultant. The main purpose of this book is to provide instruction and guidance, with references for further study. This book is also designed to act as the main text for advanced training programmes, such as those operated by the *Cider & Perry Academy* (CPAC) and *Cider Institute of North America* (CINA). It is not intended that this book is read from cover to cover, but used as a reference and training manual as required. It is organised into three parts, each referenced to encourage further study. Content includes the following:

Part 1: Founding Principles and General Operations

- **The Raw Materials**: Apples and pears – Different types and their structure and composition
- **Quality Assurance** including HACCP
- **Microbiology of Cider Production**: Yeasts and bacteria. Potential hazards and sensory faults. Microbial control including the use of SO_2 and other preservatives
- **Planning for Production**: Planning and equipping a facility. Hygienic design. Environmental considerations. Health and safety
- **Cider Production as a Business**: The importance of marketing, legal requirements and costs
- **General Operations and Processes**: Sanitisation. Liquid handling, including use of pumps, hoses and pipework
- **Production Monitoring**: Chemical, microbiological and sensory analysis. Planning for analysis and the reliability of results

Part 2: The Science and Practice of Cider and Perry Production

- **Juice Production:** Selection of fruit and harvesting. Juice extraction and use of enzymes. Use of juice concentrate. Juice quality and its specifications. Maceration and Keeving
- **Fermentation – The 'Heart' of Cider Making**: Yeast selection, handling and nutrition. Fermentation biochemistry. Use of vessels and ancillary equipment. Temperature and oxygen control. General management. Monitoring and trouble-shooting. Racking
- **Maturation of Cider and Perry**: Its benefits and its management. Malo-lactic fermentation
- **Sensory Attributes of Cider and Perry**: Main groups of sensory-active compounds and their production and sensory impact. The effect of production practices on flavour

Part 3: Preparing Cider and Perry for the Marketplace

- **New Product Development**: Overview of the NPD process and its application in cider making. Hedonic sensory analysis
- **Initial Downstream Processing**: Blending and product specifications. Fining and filtration. Carbonation
- **Final Processing and Product stabilisation**: Cartridge filtration. Sterile filtration. Pasteurisation. Use of preservatives
- **Packaging:** Filling technology. Types of packaging, including bottles, cans and kegs. In-pack quality issues
- **Alternatives:** In-bottle fermentation and conditioning. Ice and 'Low/No' cider

The Author

Drawing from practical experience over many years, Peter is a highly qualified and internationally recognised authority in cider and perry production. He is a professional trainer and presenter, acts as an advisor to clients across the world, is an international competition judge and an author. In 2015, he received the prestigious *American Cider Association* (ACA) award for ***Significant Contributions to the Cider Industry***.

Peter runs his own specialist training and consultancy business - *Mitchell F&D Limited*, which includes the highly regarded ***Cider & Perry Academy***. From the mid 1990's up to September 2018, Peter ran his own demonstration commercial production companies. As well as incorporating analytical laboratories, the facilities were operated as a model of best practice and were also used as 'incubator units' to assist clients with business and product development work. After the production facility was sold in 2018, Peter re-invested in a state-of-the-art laboratory and pilot production facility to focus on research work in cider production.

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