

Science, Practice and Quality Assured Production of Cider and Perry
Technical Manual Electronic Documents

OVERVIEW: In conjunction with the book, these fully editable Word and Excel **working documents** are designed to assist in **PLANNING, OPERATING** and **MONITORING** a cider and perry production facility. Regularly used by this Author and by other Cidermakers over many years and continually reviewed and updated according to changing circumstances. The purpose of the documents are to:

1. **Be used** to help plan a facility, a new product and a process e.g., a fermentation
2. **Monitor** a process (e.g., fermentation), cost-effectiveness of a product an/or activity (e.g., fruit processing), consumer requirements and feedback (e.g., Hedonic assessment of a product) and to ensure targets and legal requirements are met
3. **Provide exemplars** of written documents of specifications (e.g., apple supply), procedures/work instructions (e.g., packaging), schedules (e.g., tank cleaning) and plans (e.g., HACCP)
4. **Provide training** e.g., how to plan, manage and monitor a fermentation

USAGE: The documents can be used with or without modification. When using spreadsheets, it is **important to note** that most cells left clear and blank require data input, but most of the coloured cells are protected to prevent mistaken changes, particularly as some include complex calculations. There is no password needed to unprotect the cells if changes are required (e.g., in the currency used), but it is advised that they are re-protected after editing.

Document	Type	Worksheets / Pages	Main Features
Group A: Planning			
1. Market Segment Selection	Word	1 Page Document	A simple scoring system used to identify the most attractive market segment(s) - from a number initially identified - to target for product sales
2. Facility Planning	Excel	1. Outline Plan 2. Details of Resource Requirements	Commencing with fruit processing through to final processing and packaging and ancillaries (e.g., laboratory testing), a step-by-step planning spreadsheet to identify and cost resource requirements. An example plan is included. Can also be used for tank scheduling.
3. Resource Requirements: Capacity Calculations	Excel	1. Capacity Calculations 2. Graphical Analysis	Used to model capacity requirements for a whole process involving a number of different stages. An example is provided for a small-scale cider bottling line that includes in-pack pasteurisation. Used to determine that ideal number of bath pasteurisers to maximise production efficiency and staff usage.
4. Cider Cost Analysis	Excel	1. Juice Production 2. Fermentation and Maturation 3. Final Product	Three worksheets (with some interlinkage) that can provide a full cost analysis for each of the three components of cider production, including the final packaged product. Final product margins can also be calculated, based on the retail price and taking account of taxation and retailer margins. An example is provided.
5. Pre-Season Check-List	Word	2 Page Document	A simple pre-season check-list for juice production, fermentation and maturation
6. Fermentation Plan	Word	3 Page Document	A paper-based fermentation plan, which can be used instead of - or in conjunction with - the accompanying spreadsheet system included in document Group D.
7. Production Planning	Word	2 Page Document	Additional proforma docs to be used for setting and checking layout objectives for a new facility and also for use when tendering for equipment and other facilities
Group B: GMP and HACCP			
1 - 6. Development and Operation of a HACCP System	Word	Six Documents: Forms 1 - 6	For Hazard Analysis, identification of CCPs by use of a Decision Tree, specification of CCPs, development of a verification system, Verification check-List and audit, CCP Deviation report.
7. Summary Working Doc	Word	3 Page Document	Summary worksheet for the development of a HACCP and QC Plan
8. Example HACCP Plan	Word	21 Page Document	Example HACCP and HAQP Plan as operated up to 2018 in the Author's production facility
9. GMP Auditing Proforma	Word	10 Page Document	A GMP Audit Proforma as used by this Author to audit cider production enterprises
Group C: Example Procedures, Specifications and Schedules			
1. Fruit Supply Specifications	Word	3 Page Document	Example <i>Fruit Supply Specification</i> as used in this Author's production facility, including requirements for the controlled use of agrochemicals and for the transport of foodstuffs
2. Fruit Processing Procedure	Word	8 Page Document	As an exemplar of a documented procedure (equipment setup, operation and shutdown), it also includes a cross-reference to record keeping requirements and relevant details of health and safety, HACCP and quality control. It also acts a staff-training record.
3. Work Instruction for Tank and Hose Sanitisation	Word	5 Page Document	As an exemplar of a documented work instruction (start-up, operating regime and completion), it also includes a cross-reference to a Sanitisation Schedule , record keeping requirements and relevant details of health and safety. It also acts a staff-training record.
4. Sanitisation Schedule	Excel	1. Working Reference and SOP 2. Chemical Strength Calculations 3. Sanitisation Record	Includes a Standard Operating Procedure (SOP) for all equipment, chemical strength and residue testing methods, working reference document, calculations for making up working strength detergent and disinfectant solutions and a sanitisation record proforma.
5. Fermentation and Maturation Procedure	Word	7 Page Document	An example of a documented procedure for fermentation and maturation. It also includes a cross-reference to record keeping requirements, relevant details of health and safety, HACCP and quality control and acts as a staff-training record.
6. Blending and Packaging Procedure	Word	12 Page Document	A documented procedure for Blending and Packaging (used by this Author for his pilot-scale bottling and kegging unit, including Velcorin dosing). It also includes a cross-reference to record keeping requirements, relevant details of health and safety, HACCP and quality control and acts as a staff-training record.
<i>Continued Overleaf</i>			

Document	Type	Worksheets / Pages	Main Features
Group D: Cider Production Working Records			
1. Fruit Processing	Excel	1. Fruit Supply, Milling and Pressing 2. Data Analysis and Usage	An interlinked Working Record and data analysis spreadsheet including fruit traceability, labour use, additive usage, analytical record (e.g., pH & SG) and cost and KPI analysis
2. Fruit Processing: Manual Record System	Word	2 Page Document	A simple and summary manual record-keeping proforma for use when milling and pressing apples and pears
3. Fermentation Plan and Record Keeping	Excel	1. Fermentation Plan 2. Use of Concentrate 3. Fermentation Record 4. Fermentation Analysis	An interlinked fermentation planning 'tool', record-keeping and data analysis spreadsheet, that includes use of fresh and/or concentrated juice, target-setting, yeast addition, Chaptalisation and nutrient calculations, management time-plan, multi-parameter (e.g., SG, temperature, pH) fermentation tracking, along with graphical displays, production efficiency data and cost analysis. Includes example 'real-life' data
4. Fermentation: Manual Plan and Record System	Word	2 Page Document	A summary manual record-keeping proforma for use to plan for and monitor fermentation. Can be used in conjunction with the above spreadsheet or as a stand-alone system.
5. Post Fermentation Storage Record System	Excel	1. Overview of all Storage tanks 2+. Individual Tank Records	Storage/maturation tank record system. Interlinked summary/overview record sheet plus (on separate worksheets) full details of each vessel used, including product batch code, initial and existing volume of stored cider and analytical parameters e.g., %ABV, SO ₂ , pH etc.
6. Blending, Downstream Processing and Packaging Working Record	Excel	1. Blending Trials & Final Recipe (2 Pages) 2. Final Product Filtration & Preparation 3. Final Processing & Packaging 4. Packaging Checks 5. Nutritional & Taxation Data 6. Filtration, Blending & Packaging Analysis	An interlinked product development, record-keeping and data analysis spreadsheet, that includes: 1.A costed & multi-ingredient trial-blending & recipe creation 'tool' (inc. scale-up data). 2. A multi-step filtration & blend analysis record. 3. A Final Processing record system, including use of cartridge filtration (trap, polish, sterile), filling & capping, pasteurisation and final analysis QC and Product-Release sign-off. 4. Packaging check system for volume/fill quantities. 5. Nutritional data calculations for label declaration and calculations for Excise tax purposes/returns. 6. KPI analysis
7. Blending and Packaging: Manual Record System	Word	2 Page Document	A simple and summary manual record-keeping proforma for use in conjunction with the above spreadsheet to blend, package and in-pack pasteurise a final bottled cider product
Group E: Sensory Analysis			
1 - 4. Consumer (Hedonic) Assessment Questionnaires	Word	4 x Hedonic Assessment Score- Sheets	Hedonic score-sheets for use with consumers: (1) Line-marking Hedonic score-sheet. Paired Preference Test (Forced Choice). (3) Preference Ranking Questionnaire. (4) Multi-attribute Just Right (JAR) Analysis, including the 9-point Hedonic score for the whole product
5. Hedonic Assessment Data Analysis	Excel	Analysis for the 9-Point Hedonic & JAR assessments	As provided, data from 100 score-sheets is analysed (easily extended) to provide the Mean Score and Standard Deviation for the 9-point Hedonic assessment, along with Bar-Chart presentations for up to six product attributes.
6. Preference Ranking Analysis	Excel	Data analysis for Preference Ranking Test	Calculates Rank Sums for up to 7 different samples and includes Basker's Tables for statistical analysis.
7. Cider and Perry Table of Attributes	PDF	5 Page Document	A widely used structured lexicon for Analytical Descriptive Analysis and development of Product Profiles and production of 'Spider-Plots'
8. Organoleptic Profile Form	Word	1 Page Document	Used with above Table of Attributes for Descriptive Analysis and attribute Intensity Scoring
9. Spider Plot	Excel	Production of a Product Spider Plot	Used to produce a product profile Spider Plot diagram resulting from Descriptive sensory analysis