106-E, Kamla Nagar, New Delhi-110007, India.
Tel: 91-11-23843955, 23845654, 23845886, +918800733955
Mobile: +91-9811043595

Email: npcs.ei@gmail.com, info@entrepreneurindia.co
Website: www.entrepreneurIndia.co

The Complete Book on Wine Production

| Code: NI244 | Format: paperback |
|--|---------------------|
| Indian Price: ₹2275 | US Price: \$200 |
| Pages: 752 | ISBN: 9789381039021 |
| Publisher: NIIR PROJECT CONSULTANCY SERVICES | |

Description

Wine is the most loved beverage across the world and a popular accompaniment with food. The popularity of wine in India has started growing rapidly. Wine is the fermented product of the grape. Because crushed grapes contain all that is needed to create wine, ancient wine producers simply allowed nature to take its course. As time went on, people realized that by intervening at certain times, they could make a wine with more predictable characteristics. Grape cultivation is one of the most remunerative farming enterprises in India. Grapes can be eaten raw or they can be used for making wine, jam, juice, jelly, vinegar. Delicate wine grapes are generally produced in frost free and moderate temperature environments. Thousands of grape varieties are grown all over the world; the wine grape varieties represent only a fraction of them. The colour, size, phenolic distribution and acidity of grapes give each wine its own characteristic. Wine quality is affected by the factors such as soil, climate, viticulture and wine making techniques. Wine quality is dictated mainly by the grapevines, not by the winemaker. Wine must be slightly aged to be drinkable. Grape production, linked with wine processing has provided the much-needed impetus for the growth of the wine industry. Indian government plays a crucial role in the current phase of Indian wine industry, supporting the current momentum amongst others through financial assistance and market protection. Gradual reduction of import duty levels will no doubt lead to increasing competition through imports, but will on the longer term result in a competitive industry that is able to export its top quality products to overseas markets.

Some of the fundamentals of the book are wine quality, mold and mold complexes associated with grapes, grape aroma components, soluble solids in winemaking, the molds and yeasts of grapes and wine molds, yeasts of grapes and wine, by-products of fermentation, chemistry of fermentation and composition of wines, outline of red wine

making, stuck wines, white table wine, sparkling wine, vermouth and flavoured wines, cider and apple wine, plum wines in Europe, berry wines in pacific coast states, cherry and plum wines in pacific coast states, pomegranate wine from concord grapes, pineapple wine, pear wine, wine from oranges, grapefruit wine, wine from dried fruits, Swiss research on fruit juice fermentation honey wine (mead), etc.

This book provides a complete detail on all aspects of Wine production like describe the varieties of wine available, its manufacturing process, bottling and storage of wine, quality control in wine making and many more. It is hoped that this book will be very resourceful to all its readers, students, scientists, technocrats, existing industries, new entrepreneurs and all those who are related to wine making.

Content

1. THE COMPOSITION OF GRAPES

How Grapes Ripen

Physical Changes

Chemical Changes

Measurement of Maturity

Importance

How to Sample

Preparation of Sample

Methods of Measurement

Interpretation of Results

Harvesting and Transportation

Composition of Musts

Water

Sugars and Related Compounds

Acids

pH and Buffer Coefficient

Nitrogenous Components

Pigments

Tannin

Vitamins

Enzymes

Odorous Constituents

Metals

Environmental Factors

Temperature

Soil

Rainfall Other Factors Variety White Table Wines **Red Table Wines** Pink or Rosé Wines **Dessert Wines** 2. GRAPE MATURITY AND QUALITY Wine Quality Clones Climate Terroir Vineyard Yield **Maturity Sampling Maturity Gauges** Sugar per Berry Sample Processing Fruit Quality Evaluation Mold and Mold Complexes Associated with Grapes Factors Influencing Botrytis Growth Sensory Considerations Quantification of Botrytis Processing Considerations for Botrytis **Pesticides** Sensory Considerations as an Indicator of Grape Maturity and Quality **Grape Aroma Components** Soluble Solids in Winemaking Conversion of Sugar-to-Alcohol Amelioration and Chaptalization Monitoring Fermentation Laboratory Measurements of Soluble Solids **Densimetric Procedures Analysis** 3. FRUIT QUALITY AND SOLUBLE SOLIDS **Maturity Sampling** Contribution of Juice Aroma Color and Phenols

Grower Input

Sugar per Berry
Sample Processing

| Fruit Evaluation |
|--|
| Application of Soluble Solids Data in Winemaking |
| Laboratory Measurements of Soluble Solids |
| Densimetric Procedures |
| 4. THE MOLDS AND YEASTS OF GRAPES AND WINE |
| Molds |
| General Classification of Microorganisms |
| Molds |
| Penicilum |
| Aspergillus |
| Yeasts |
| Botanical Classification of Yeasts |
| Isolation and Purification of Yeasts |
| Spore Formation |
| Identification of Yeast Cultures |
| Yeasts of Grapes and Wine |
| 5. ALCOHOLOMETRY |
| Yeast Metabolism |
| Fermentation |
| By-products of Fermentation |
| Ethanol Production |
| Determination of Alcohol Content |
| Physical Methods |
| Chemical Methods for Alcohol Determination |
| 6. CHEMISTRY OF FERMENTATION AND |
| COMPOSITION OF WINES |
| Fermentation |
| History |
| Chemistry |
| Yield |
| Factors Influencing Fermentation |
| Carbon Sources |
| Alcohol |
| Carbon Dioxide |
| Acids |
| Nitrogen |
| Minerals |
| Antiseptics |
| Substitutes for Sulfur Dioxide |
| Antibiotics |

Growth Factors Tannins Temperature Pressure Oxygen Surface Effect Fermentation Rate Ethyl Alcohol Methyl Alcohol **Higher Alcohols** Glycerol 2,3-Butylene Glycol, Acetoin, and Diacetyl Acetaldehyde Acetal Hydroxymethylfurfural **Esters** Volatile Acidity **Fixed Acids** Sugar **Pentoses Pectins** Nitrogen **Tannins** Color Oxygen Minerals **Anions** 7. RED TABLE WINE Outline of Red Wine Making Varieties **Testing The Grapes Picking** Transportation Crushing **Must Treatment Amelioration** Addition of Sulfur Dioxide Warming Addition of Starter Fermentation

Balling and Temperature Records

Punching and Pumping Over

Stuck Wines

Drawing Off

Pressing

The After-Fermentation

First Racking, Filling up, etc.

Other Methods of Red Wine Fermentation

Care of Wine

Laboratory Examination

Fining and Racking

Aging

Other Cellar Operations

Blending

Rosé

Balance of Products

8. WHITE TABLE WINE

Process

Varieties

Picking and Transporting

Processing

Crushing

Juice Separation

Settling

Amelioration

Addition of Starter

Fermentation

Aging and Finishing

Sweet Table Wines

Stabilization

9. SHERRY

California Sherry

Grapes

Picking and Delivery

Crushing

Fermentation

Settling and Racking Before Fortification

Fortification

Settling

Treatment Before Baking

Baking

Cooling and Stabilization

Clarification

Aging

Colour Removal

Blending

Addition of Sulfur Dioxide or Tannin

Excess Metals

Unbaked Sherry

Finishing

Bottling

Australia and South Africa

Spanish Sherry

Harvesting

Crushing

Plastering

Draining and Pressing

Addition of Sulfur Dioxide

Fermentation

The Solera System

The Flor Film

Blending and Finishing

Stabilizing

Spoilage

Classes of Spanish Sherries

The Yeasts

Sulfur Dioxide Tolerance

Effect of Film on Acids

Effect of Sugars and Yeast Nutrients

Effect of Yeast Lees on Flavor

Winery Experiments

Submerged Flor Process

Australia and Canada

In California

Flor Sherry Process in Australia

Grapes and Yeasts

Methods of Production

Fornachon's Investigations

Flor Sherry Process in South Africa

Flor Process in France and Russia

Composition of Commercial Sherries 10. PORT AND OTHER DESSERT WINES

Port

Normal Vinification of Port

Fermenting Dry Before Fortification

Extraction of Color by Heat

Balancing the Port Cellar

Use of Concentrate

Clarification

Stabilization

Aging

Finishing

Red Muscatel

White Port

Angelica

Muscatel

Varieties

Fermentation

Fortification

Finishing

Spoilage During Fermentation

Proper Aging

California Tokay

California Malaga, Madeira, and Marsala

11. SPARKLING WINE

Definition

Type I Sparkling Wines

Type II Sparkling Wines

Type III Sparkling Wines

Champagne

Other Regions

California

Type IV Sparkling Wines

Production of the Cuvée

Varieties

Processing

Blending

Sugaring

Yeasting

Bottling

The Second Fermentation Finishing Carbonation 12. VERMOUTH AND FLAVOURED WINES Origin Herbs and Spices Methods of Flavoring Base Wine Italian-Type (Sweet) Vermouth Italian Methods Aging and Finishing California Methods French-Type (Dry) Vermouth European Methods California Methods Composition of Vermouth Non-vermouth Types **Special Natural Wines** 13. FRUIT WINES Cider and Apple Wine **Statistics** Apples for Cider in Europe Composition of Cider Apples French Methods Swiss Methods German Methods **English Methods** Californian Methods Oregon and Washington Methods Sparkling Apple Wine The Freezing Method Other Fruit Wines Berry Wines in Europe Cherry Wines in Europe Plum Wines in Europe Berry Wines in Pacific Coast States Cherry and Plum Wines in Pacific Coast States Pomegranate Wine From Concord Grapes Pineapple Wine

Pear Wine

Wine from Oranges

Grapefruit Wine

Wine from Dried Fruits

Swiss Research on Fruit Juice Fermentation

Honey Wine (Mead)

14. THE BOTTLING AND STORAGE OF WINES

Preparation for Bottling

Final Filtration

Membrane Filtration of Wines

Preparations for Membrane Filtration

Charge-Modified Filter Media

Dissolved Gases in Wines

Acidity Effects of Dissolved CO2

Chemical Additives

Bottling Operations

Quality Control

The Bottling Room

Dedusting and Rinsing of Bottles

Filling Machines

Corks and Cork-insertion Machines

Labeling Machines

Capsulators and Foiling Machines

Gas Exchange During Bottling Operations

Pressure in Filled Bottles

Other Operations

Transport and Storage Considerations

Storage Temperature and Temperature Variations

The Cooling and Warming of Bottled Wine

15. MICROBIOLOGICAL SPOILAGE OF WINE AND

ITS CONTROL

Definitions of Microbiological Spoilage

Origins of Wine Spoilage Microorganisms

Diagnosis of Spoilage as Microbiological

Kinds of Microbiological Spoilages of Wine

Identification of Wine Spoilage Microorganisms

Importance of Identification

Cultivation, Isolation, and Purification of Wine Microbes

Spoilage by Molds and Yeasts

Spoilage by Molds

Corkiness

Spoilage by Wild Yeasts

Spoilage by Wine Yeasts

Spoilage by Zygosaccharomyces Yeast

Spoilage by Brettanomyces Yeast

Spoilage by Lactic Acid Bacteria

Misplaced Malolactic Fermentations

Malolactic Fermentation by Undesirable Bacteria

Ropy Wines

Ferocious Lactobacillus Fermentations

Spoilage of Fortified Wines by Lactobacillus

Mousey Wines

Other Spoilages by Lactic Acid Bacteria

Spoilage by Acetic Acid Bacteria

Kinds of Wine-Related Acetic Acid Bacteria

Prevention and Control of Acetic Acid Bacterial Spoilage

Taxonomy of the Wine-Acetic Acid Bacteria

Spoilage by Other Aerobic Bacteria

Spoilage by Bacillus

Spoilage by Zymomonas

16. CARBOHYDRATES: REDUCING SUGARS

Reducing Sugars (Hexoses)

Sucrose

Pentoses

Polysaccharides

Analysis of Reducing Sugars

Rapid Determination of Reducing Sugars

Brix Vs. Reducing Sugar Values

17. YEAST AND BIOCHEMISTRY OF ETHANOL

FERMENTATION

Definition, Origins, and Identification of Wine-Related Yeasts

Definition of Wine-Related Yeasts

Origins of Wine-Related Yeast

Identification of Wine-Related Yeasts

Natural Grape and Winery Flora

Fermentation Inoculation Practices

Starter Cultures

Natural Fermentations

Dominance by Saccharomyces

Yeast Morphology and Cellular Organization

Yeast Nutrition and Growth Characteristics

Carbon Metabolism

Noncarbon Nutrition

Fermentation Biochemistry

Glycolysis

Fermentation Kinetics

The Rate of Cell Growth

Cell Growth and Substrate Preference

Sugar Consumption by Cell Maintenance

Rate of Sugar Consumption

Rates of Cell Death

Rate of Formation of Ethanol

Rate of Change in Density

Temperature Effects

Rates of Heat Release

End Products of Yeast Metabolism

Glycerol, Volatile, and Nonvolatile Organic Acids

Higher (Fusel) Alcohols

Nitrogen Metabolism during Fermentation

Uptake and Transport

Utilization Preferences

Intracellular Pools

Utilization Pathways

Important End Products of Nitrogen Metabolism

Nitrogen Metabolism and Effect on Glycolytic Flux

Sulfur Metabolism during Fermentation

Problem Fermentations

Stuck or Sluggish Fermentations

Production of Off-Characters

Ethanol Tolerance

Fermentation Bouquet and Other Volatile Esters

18. PHENOLIC COMPOUNDS AND WINE COLOR

Representative Grape and Wine Phenols

Nonflavonoid Phenols

Flavonoid Phenols

Complex Phenols (Tannins)

Sensory Considerations

Anthocyanins/Anthocyanidins

Grape Growing and Processing Considerations

Grape Phenols

Grape Maturity and Wine Phenols

White Wine Processing Considerations

Red Wine Processing Considerations

Factors Contributing to Wine Color and Color Stability

Alternative Techniques for Color Extraction

Oxidation

Enzymatic Oxidation of Musts

Oxidation of Wines

Secondary Browning Reactions

Phenol Instability

Oak Barrel Components

Processing Considerations

Evaluation of Color by Spectrophotometry

Tristimulus Color

Spectral Estimations of Red Juice and Wine Phenols

Spectral Estimation of White Juice and Wine Phenols

Analysis

19. OXYGEN, CARBON DIOXIDE AND ASCORBIC ACID

Oxygen

Importance of Oxygen in Yeast Metabolism

Redox Potentials of Wine Systems

Acetaldehyde

Carbon Dioxide

Ascorbic Acid

Modes of Action of Ascorbic Acid

20. EVALUATION OF WINES AND BRANDIES

Sensory Examination

Tasting Glasses

Appearance

Odor

Taste

Flavor

Difference Tasting

Scoring Wines Numerically

Hedonic and Flavor Profile

Frequency of Tasting

Microscopical Examination

Musts

Examination of Yeast Starters

Wines

Chemical Analysis of Wines

Hydrometers

Acidity

Volatile Acidity

Fixed Acidity and pH

Alcohol

Extract of Dealcoholized Sample

Reducing Sugars

Balling-Alcohol-Extract Chart

Determination of Sulfur Dioxide

Tannin and Coloring Matter

Color

Aldehydes

Iron Determination

Copper Determination

Ester Determination

Hydroxymethylfurfural

Carbon Dioxide

Modified Hubach Test

Other Determinations

Brandy

Apparent Proof

True Proof

Extract

Acidity

Fusel Oil

Aldehydes

Furfural

About NIIR Project Consultancy Services (NPCS)

NIIR Project Consultancy Services (NPCS) is a reliable name in the industrial world for offering integrated technical consultancy services. Its various services are: Prefeasibility study, New Project Identification, Project Feasibility and Market Study, Identification of Profitable Industrial Project Opportunities, Preparation of Project Profiles and Pre-Investment and Pre-Feasibility Studies, Market Surveys and Studies, Preparation of Techno-Economic Feasibility Reports, Identification and Selection of Plant and Machinery, Manufacturing Process and/or Equipment required, General Guidance, Technical and Commercial Counseling for setting up new industrial projects and industry. NPCS also publishes various technology books, directories, databases, detailed project reports, market survey reports on various industries and profit making

business. Besides being used by manufacturers, industrialists, and entrepreneurs, our publications are also used by Indian and overseas professionals including project engineers, information services bureaus, consultants and consultancy firms as one of the inputs in their research.

NIIR PROJECT CONSULTANCY SERVICES 106-E, Kamla Nagar, New Delhi-110007, India. Tel: 91-11-23843955, 23845654, 23845886, +918800733955 Mobile: +91-9811043595

Email: npcs.ei@gmail.com, info@entrepreneurindia.co Website: www.entrepreneurIndia.co