



Overview

of

THE NEW CIDER MAKER'S HANDBOOK

CLAUDE JOLICOEUR

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Introduction

PART I *The Basics of Cider Making*

PART II *Growing Apples for Cider*

PART III *Juice extraction*

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PART V *Fermentation and Beyond*

Appendices: Units and measures

Companion Materials

INTRODUCTION

- Why write a book?
- The Cider Maker's Mantras

The Cider Maker's Mantras

- *Seek Quality Cider.*
- *Good Cider Needs Great Apples.*
- *The Cider Makes Itself.*
- *Good Cider Needs Time; Cider Makers Need Patience.*
- *The KISS Principle.*
- *Clean Before Storing; Sanitize Before Using.*
- *Plan Ahead and Remember what you did.*

PART I

The Basics of Cider Making

The first part is written for the novice cider maker. It presents basic cider making practices which are important to master before starting to do new or more complex things.

CHAPTERS:

1. Material and Supplies
2. The Raw Material: Apple Juice
3. Cider Preparation

PART II

Growing Apples for Cider

Part II is on obtaining the best possible apples for preparing the cider through adequate cultural practices and varietal selection. As you will see, I believe the quality of the apples to be a most important factor in obtaining a superior cider.

CHAPTERS:

4. The Cider Orchard

5. The Varietal Selection

Growing Apples for Cider

Whoever thinks that “any apple is good enough for cider” had better not engage in the business. He probably would not know a good article of cider if by any accident he should ever taste one. This book is designed to guide those who intend and desire to make the best, and are to be satisfied with nothing less.

J.M. Trowbridge

The Cider Maker’s Handbook, 1917

Cortland apples - commercially and home grown



Extensive orchard: old standard trees



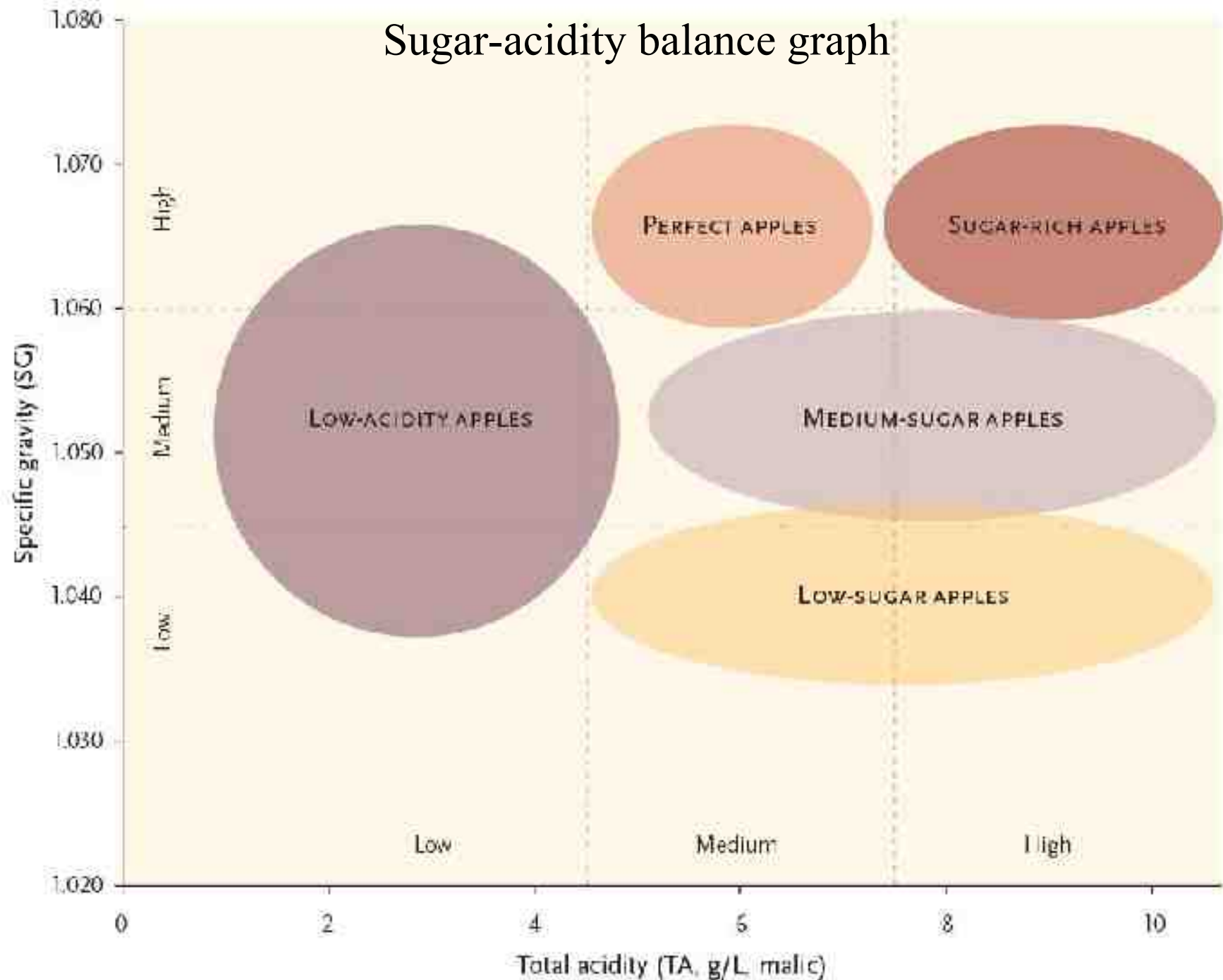
Cider-bush orchard: Steve Wood's Poverty Lane



Chapter 5 VARIETAL SELECTION

- Cider-apple classification.
 - England / France / Spain / N. America
- Recommended varieties by region (N. America)
 - Quebec / New England / Rocky Mountains /
Maritimes / PNW / Mid-Atlantic / Great Lakes
- Directory of apple varieties for North America.
 - Over 60 varieties of cider-appropriate apples and pears described.

Sugar-acidity balance graph



PART III

Juice Extraction

Part III covers the extraction of the juice from the apples. It includes guiding for a cider maker who wishes to buy the required equipment, as well as for the one who wishes to build his own mill and press.

CHAPTERS:

6. Apple Mills

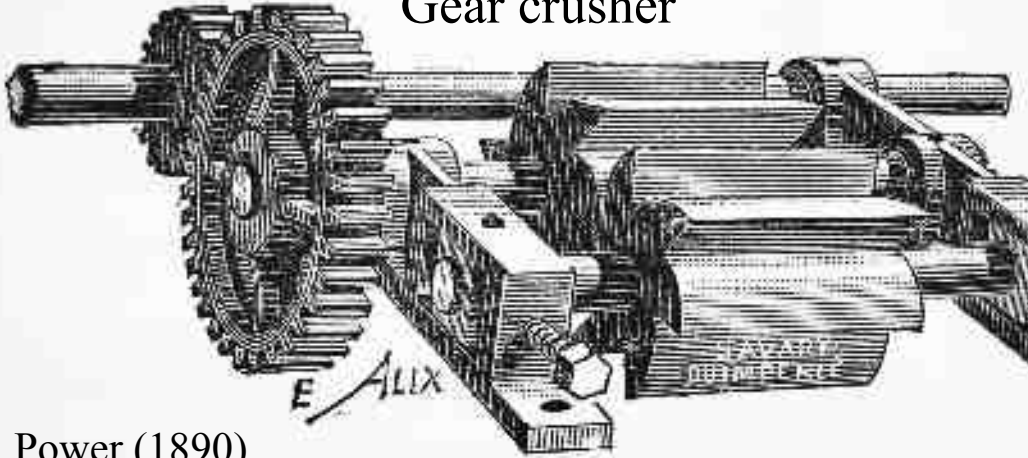
7. Apple Presses

Traditional
American
double-tub
apple press



Mill design

Gear crusher



Power (1890)



Grinder

Photo from the Internet



Wheel crusher



Centrifugal

Modern mills





Home
built
mill

Press design

Jacquemin & Alliot, 1902



Steel frame,
rack & cloth,
hydraulic jack

Wood frame,
basket, screw

Central screw,
rack & cloth



Central
screw,
basket



Special presses



Twin screw press,
Jersey Island

Water press

Photos from the Internet



Demo press



Demo tri-screw press



PART IV

The Apple Juice or Must

Part IV is on the apple juice and how its properties may be influential in the cider that will be obtained from it.

CHAPTERS:

8. The Sugars
9. The Acids
10. The Tannins or Phenolic Substances
11. The Nitrogenous Substances
12. The Pectic Substances

Chapter 8 THE SUGARS

- Measurement and evaluation.
 - g/L, SG, Brix, potential alcohol, volumic mass
- Hydrometer - accuracy and calibration
- Relation between SG and true sugar content.

TABLE 8.1:

Classification of apples according to their richness in sugar

SUGAR CONTENT	SPECIFIC GRAVITY	REMARKS
Low	1.045 and less	Summer apples and cooking apples; not recommended for cider unless they have other desirable qualities
Medium	1.045–1.060	Good
High	1.060–1.070	Ideal for cider
Very high	over 1.070	Exceptional; crabapples sometimes have such high sugar content



SG measurement: 1.017

The original Dujardin-Salleron sugar table (early 1900's)

Densités à 15° Poids en grammes d'un litre de moût.	Grammes de sucre par litre de moût	Degré alcoolique probable du cidre fait litres d'alcool par hectolitre	Densités à 15° Poids en grammes d'un litre de moût	Grammes de sucre par litre de moût	Degré alcoolique probable du cidre fait litres d'alcool par hectolitre	Densités à 15° Poids en grammes d'un litre de moût	Grammes de sucre par litre de moût	Degré alcoolique probable du cidre fait litres d'alcool par hectolitre
1001	0.25	0.01	1035	72.	4.33	1068	147.5	8.94
1002	2.	0.12	1036	74.	4.44	1069	149.5	9.05
1003	4.	0.24	1037	76.	4.60	1070	151.5	9.16
1004	7.	0.40	1038	78.	4.71	1071	153.5	9.27
1005	10.	0.60	1039	80.	4.82	1072	155.5	9.38
1006	12.	0.73	1040	82.	4.94	1073	157.5	9.54
1007	14.5	0.87	1041	84.	5.10	1074	159.5	9.66
1008	16.	0.97	1042	86.5	5.24	1075	161.5	9.77
1009	18.	1.09	1043	89.5	5.43	1076	164.	9.93
1010	20.5	1.26	1044	92.	5.57	1077	166.	10.04
1011	22.	1.34	1045	94.5	5.71	1078	168.	10.15
1012	24.	1.46	1046	97.5	5.84	1079	170.	10.26
1013	26.	1.58	1047	100.	6.05	1080	172.	10.42
1014	28.5	1.70	1048	102.	6.16	1081	174.	10.53
1015	30.5	1.86	1049	104.5	6.30	1082	176.	10.64
1016	32.	1.95	1050	107.	6.49	1083	178.5	10.80
1017	34.	2.07	1051	109.5	6.60	1084	180.5	10.92
1018	36.	2.19	1052	113.	6.79	1085	182.5	11.03
1019	38.	2.34	1053	115.	6.83	1086	184.5	11.14
1020	41.	2.47	1054	117.5	7.09	1087	186.5	11.30
1021	43.5	2.63	1055	119.5	7.24	1088	188.5	11.41
1022	44.	2.68	1056	121.5	7.35	1089	191.	11.57
1023	46.	2.80	1057	124.	7.51	1090	193.	11.68
1024	48.	2.92	1058	126.	7.62	1091	195.	11.79
1025	51.5	3.12	1059	128.5	7.76	1092	196.	11.87
1026	53.5	3.23	1060	131.	7.91	1093	198.	11.98
1027	55.5	3.34	1061	133.	8.06	1094	199.5	12.05
1028	57.5	3.45	1062	135.5	8.17	1095	201.5	12.21
1029	59.5	3.61	1063	137.5	8.33	1096	202.5	12.24
1030	61.5	3.73	1064	139.5	8.45	1097	204.5	12.35
1031	64.	3.89	1065	141.5	8.56	1098	206.	12.46
1032	66.	4.	1066	143.5	8.67	1099	207.5	12.57
1033	68.	4.11	1067	145.5	8.78	1100	208.5	12.60
1034	70.	4.22						

(1) D'après originales publiées par LECHEMINE pour la Belgique et TARDIEU pour la Normandie.

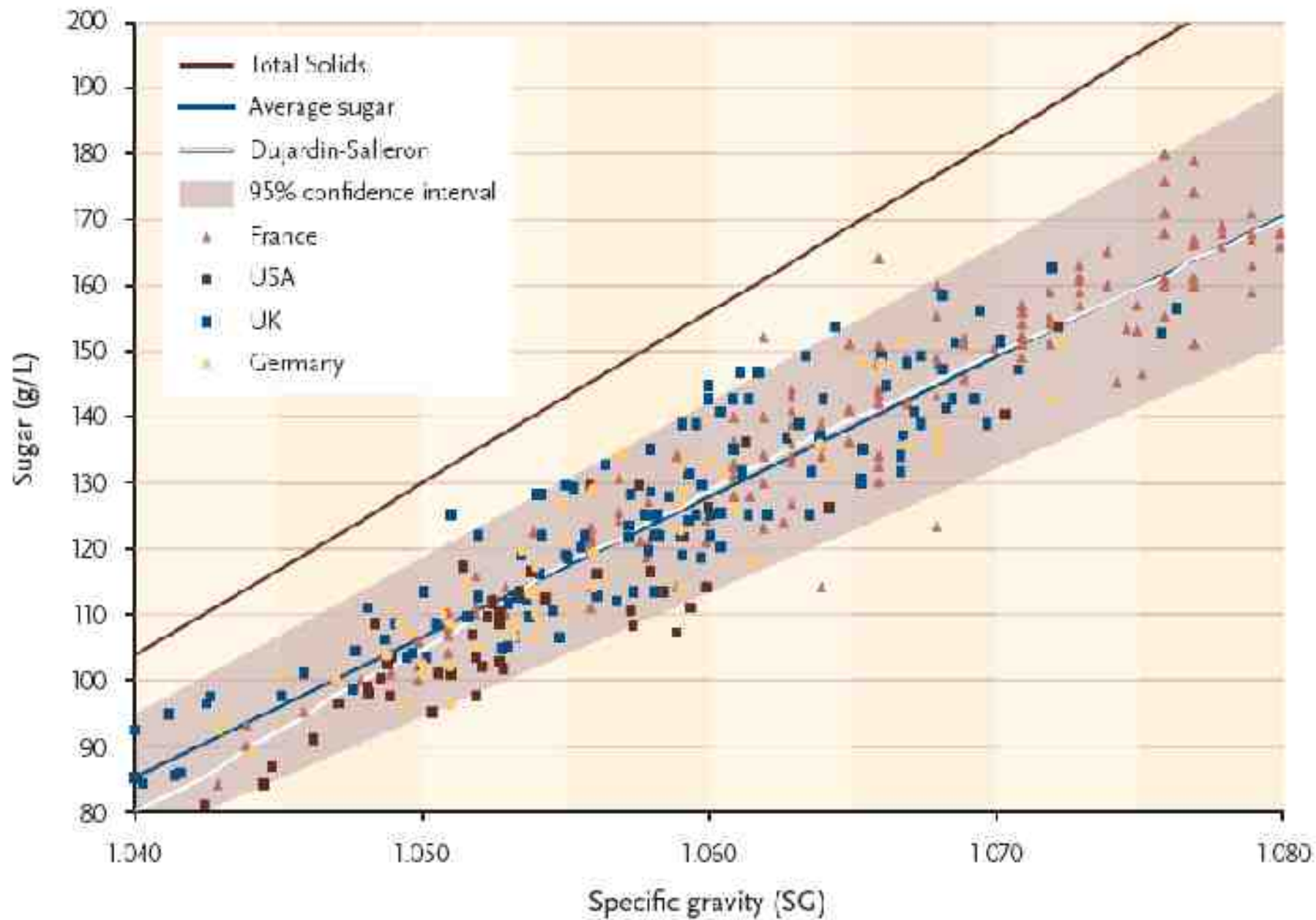


Figure 8.5. Graph of the sugar concentration as a function of the density for apple juice.

Chapter 9 THE ACIDS

- Measurement and evaluation
 - TA: Titratable or Total acidity - taste, freshness.
 - pH: Potential hydrogen - biochemistry.
- Relation between TA and pH.

TABLE 9.1:

Apple classification according to their acidity

ACIDITY	TA (g/L as malic acid)	TYPE
Low	less than 4.5	Sweet apples
Medium	4.5 to 7.5	Balanced: ideal for cider
High	7.5 to 11	Many table apples
Very high	more than 11	Cooking apples, crabs

Acidity testing kit (TA)



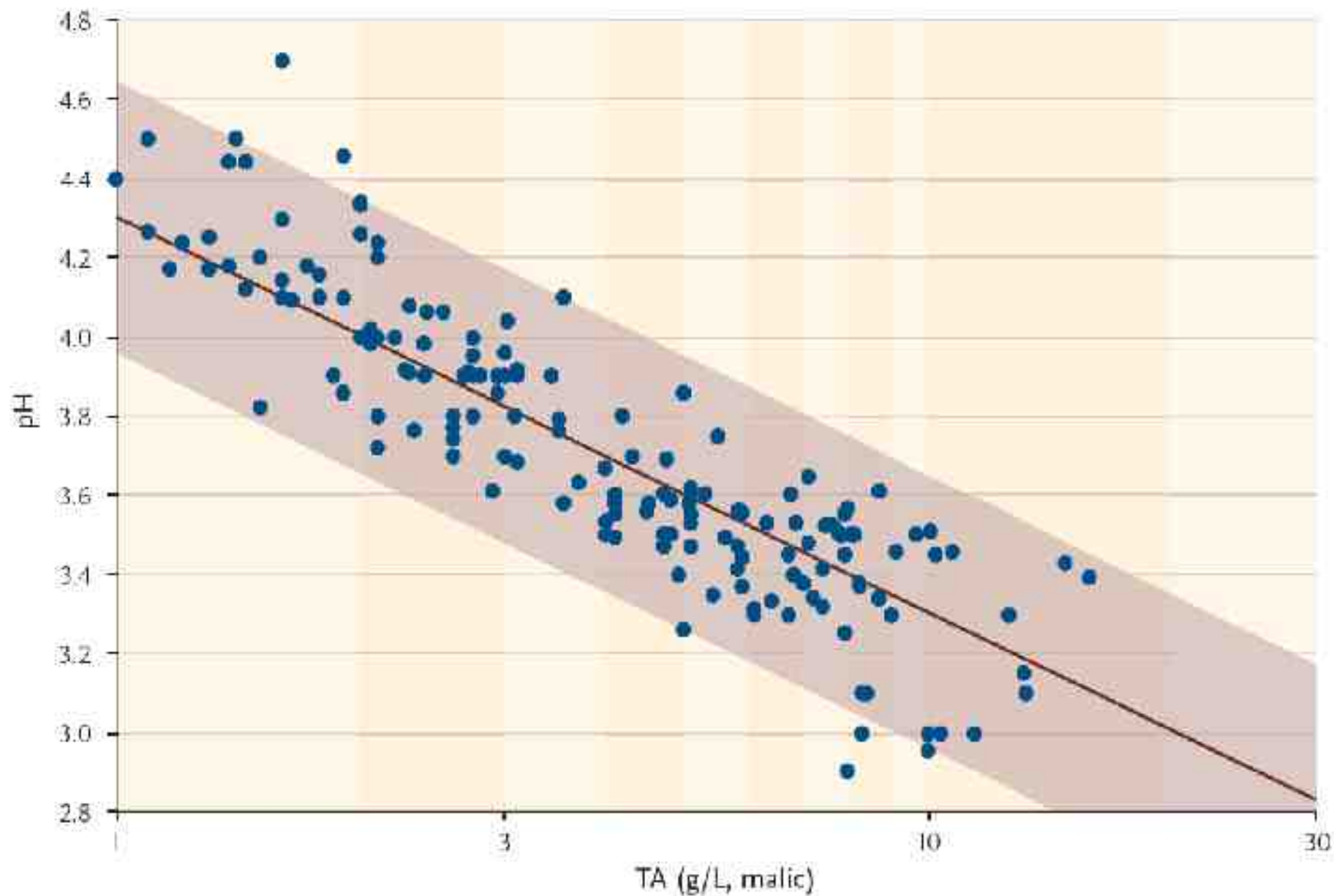


Figure 9.2. Graph of pH as a function of titratable acidity for 187 data points.

Chapter 10 THE TANNINS

- Phenolic substances:
 - Astringency: sensation of dryness in the mouth.
 - Bitterness: like what hops do to beer...
- Evaluated by our taste buds...
 - low: less than 1.5 g/L tannic acid
 - medium: 1.5 to 2.5 g/L
 - high: over 2.5 g/L
- Important for the **style** of cider.
 - Most North American apples and ciders are low in tannins.

Chapter 11 **NITROGEN**

- Natural yeast nutrient.
- Concentration depends on variety and cultural practices.

Chapter 12 **PECTIN**

- May cause hazes in cider.
- Pectic enzyme treatments.

PART V

Fermentation and Beyond

Part V is on cider making itself, the process of fermentation and transformation of the juice into cider.

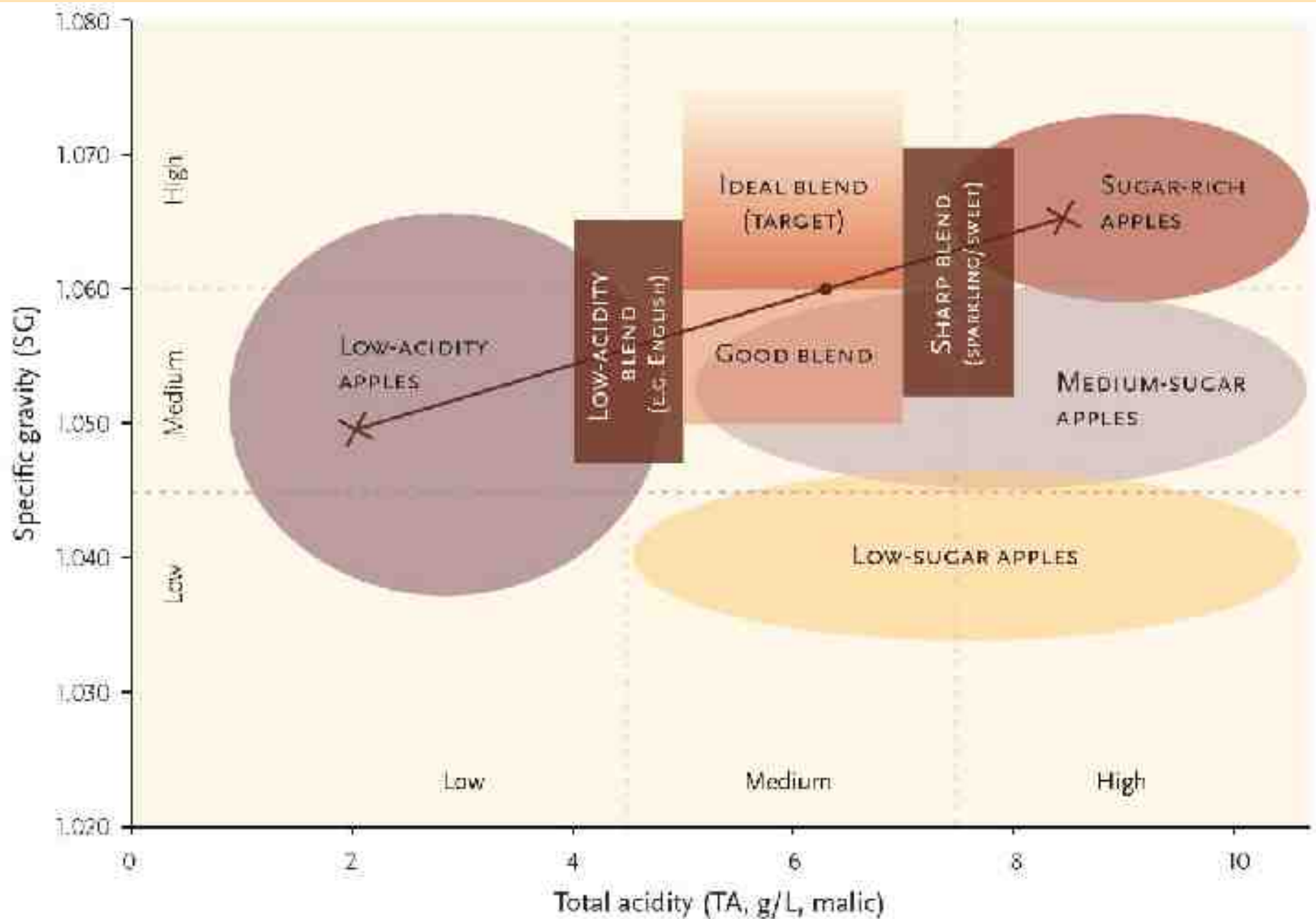
CHAPTERS:

13. Blending
14. The Fermentation Process
15. Cider Diversity
16. Cider Troubles and how to Avoid Them

Chapter 13 BLENDING

- **Sugar** - as high as possible.
Min SG 1.045 (11 Brix).
May be as high as SG 1.065 (16 Brix).
- **Acidity** - normal range of TA
between 4.5 and 7.5 g/L as malic acid.
- **Tannins** - according to your personal taste
and style of cider.

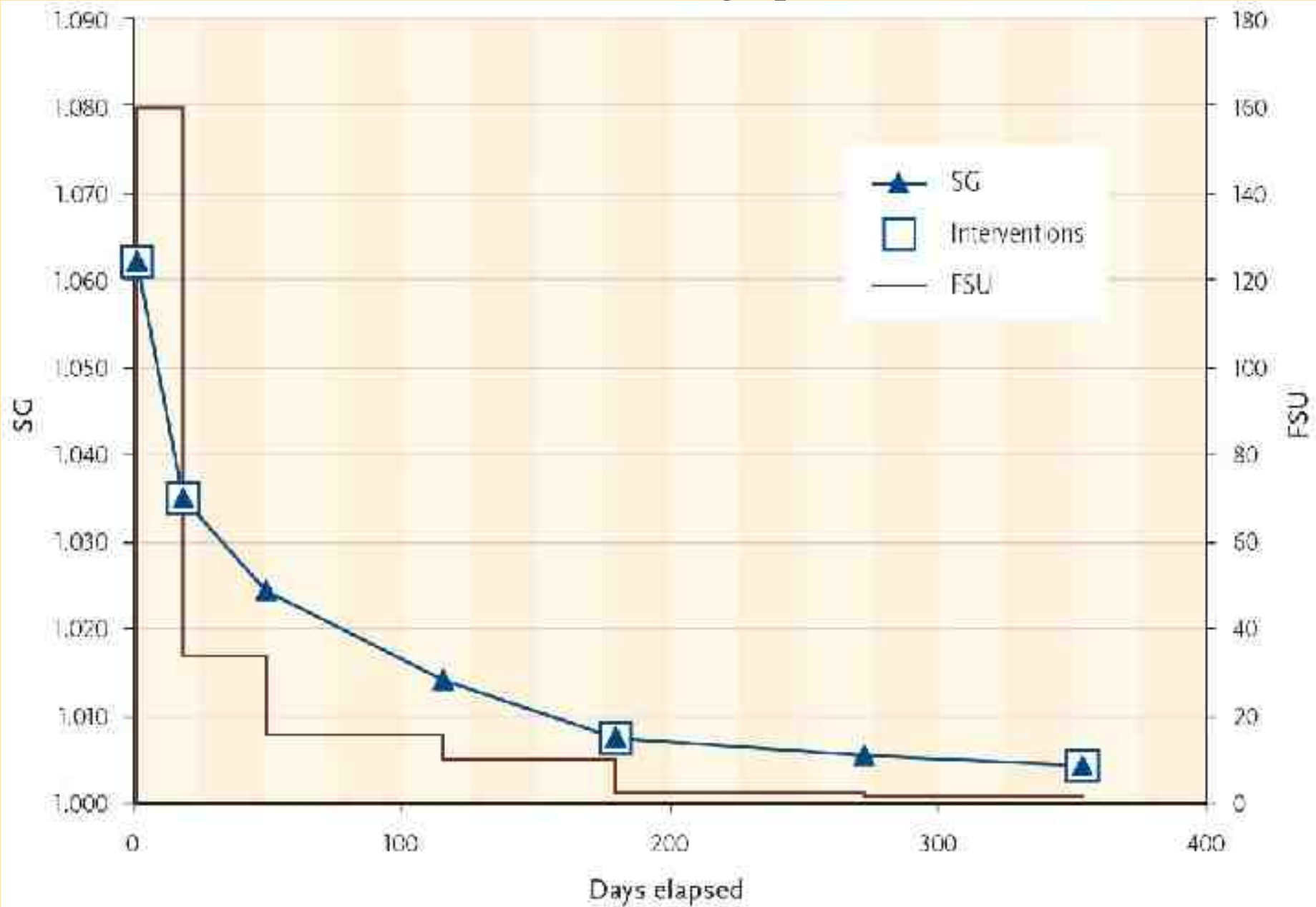
Blending for sugar and acidity



Chapter 14 FERMENTATION PROCESS

- Sulfite (SO_2).
 - How it works / dosage / usefulness
- Yeast and yeast nutrients.
 - Yeast strategies / wild vs cultured / nutrients
- Monitoring and control of the fermentation.
 - FSU / racking / plots
- Malolactic fermentation.
- The alcohol.
 - How much is produced / measurement

Fermentation graph



Chapter 15 CIDER DIVERSITY

- Sweetness: dry / medium / sweet.
 - Keiving and other methods to retain residual sweetness.
- Bubbles: still / perlant / petillant / sparkling.
 - Prise de mousse / bottle conditioning / sugar dosage / CO₂ tank and forced carbonation.
 - Bottling procedures.
- Ice cider.
 - Methods for obtaining the concentrated juice.
 - Fermentation and stabilization.

Keeping for a naturally sweet cider



Sparkling!



Cider Days in
Massachusetts:
www.ciderdays.org
See you there
next weekend!

Ice cider - partially thawed apples, ready to press



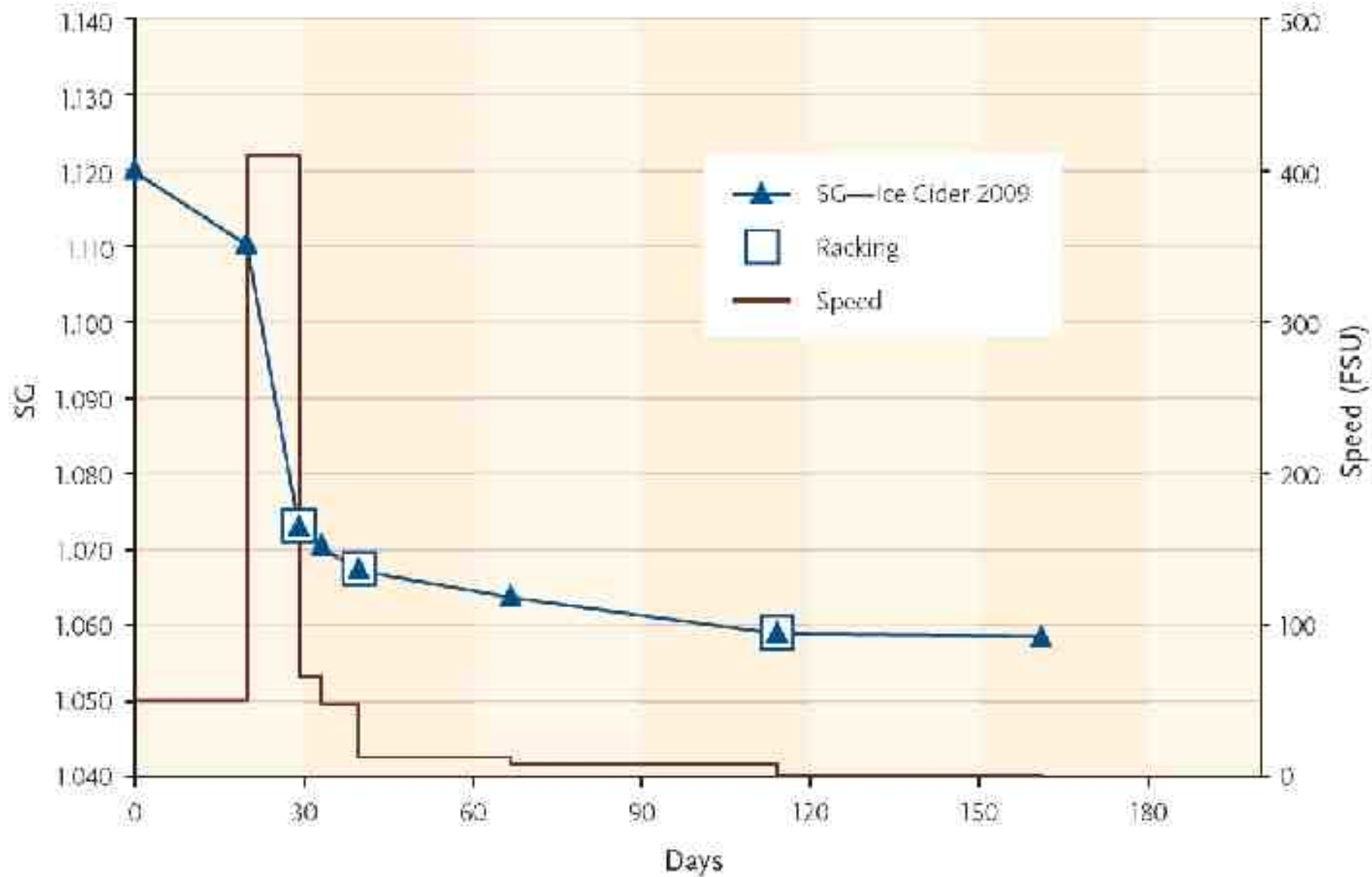


Figure 15.16. Fermentation graph of 2009 ice cider.

Chapter 16 CIDER TROUBLES (AND HOW TO AVOID THEM...)

- Film yeast or Flower sickness.
- Acetification - volatile acidity.
- Microbiological faults.
- Hazes, clearing problems.
 - Thining / filtering / patience...
- Sulfur and rotten-egg taints.

Fining test for a hazy perry





Cleared
cider

Actively
fermenting
cider

APPENDICES

Appendix 1 Units and Measures

*Liters, Gallons, Kg, lb., spoons, cups,
concentrations in g/L and ppm, bushels, bins,
tons...*

Appendix 2 Companion Materials

*Excel spreadsheets for hydrometer, blending,
monitoring or modeling a fermentation...*



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||| *A Comprehensive Guide for Craft Producers* |||



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