

# Development in SBT processing a must for international trade and consumers safety



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„Sustainable Fruit Growing:  
From Plant to Product”

[www.ubf-research.com/presentations](http://www.ubf-research.com/presentations)

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- SBT's position in the world
- SBT as raw material - standards and needs
- Fruit properties of SBT
- Chemical properties of SBT
- Technologies for harvesting SBT
- processing technologies
- the 'quality flow' from tree to counter
- summary

# SBT's position in the world

## From nature different - the SBT plant

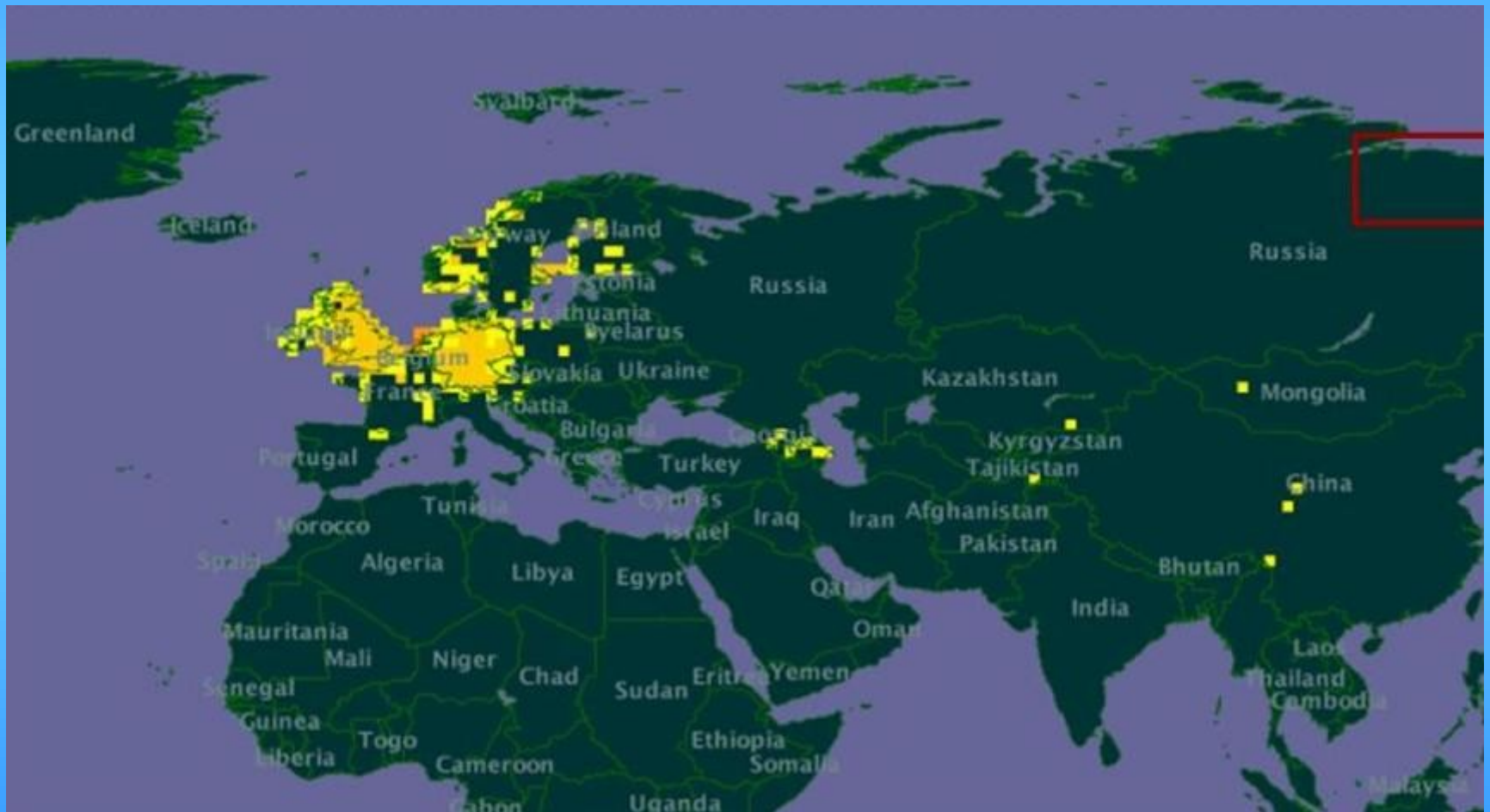
- different species, sub-species and varieties
- different areas of cultivation
- different technologies of
  - harvesting
  - after harvest treatment
  - processing

## From nature different - the customer

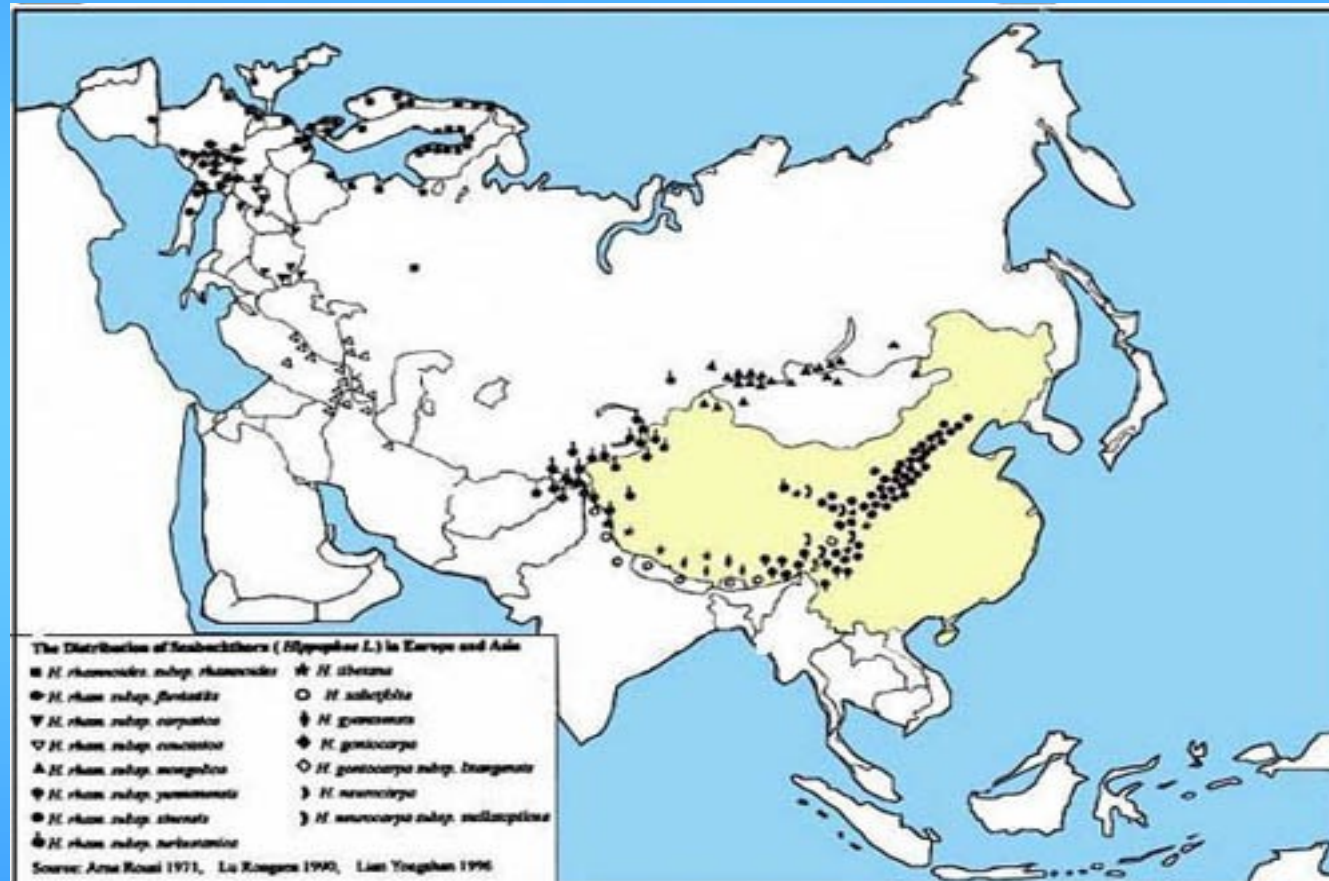
- different expectations on product
- different products
- manifold applications



# SBT in the world - view from databases in Europe



# SBT in the world - view from ICRTS China



# SBT's position in the world

International trade is growing

- upcoming production in Asia
  - China
  - India
  - Mongolia
  - .....
- rising demand in Europe
  - EU countries
  - new EU members
- developing market in (N) America
  - Canada
  - USA

see data at: [www.eanseabuck.com](http://www.eanseabuck.com)

# SBT as raw material - standards and needs

## Demand is still rising

- German market - estimated only 50% of raw material supplied from inland
- Expected raw materials from Baltic and southeast european states growing

## Raw material specification incompatible





# Fruit properties of SBT

## agro-technical properties

- optimum adaptation to climate
- high yield
- resistance against diseases

## harvesting properties

- differing regionally
- depending on labour costs

## processing properties

# Chemical composition of SBT

Composition [mg/100 g]	Seabuckthorn
Carotene	1,0 – 18,7
Ascorbis acid	260
Tocopheroles	3,0 – 18,0
Phyllochinone	0,8 – 1,28
Vitamin B	0,05 – 0,1
Niacin	50 - 250
Organic acids Tartaric acid	3000 – 4000
Pulp oil [%]	1,2 – 3,5

table from 2005 meeting  
Steen, Heilscher, Moersel

# Chemical properties of SBT

## Differences resulting of production area

- clear division between oil qualities (pulp oil, seed oil, trestler oil)
- sensory of products (e.g. juices)
- content of nutrients, especially vitamins
- residual problems (today one major problem !)
- certification and specification of products

# Chemical composition of SBT

Parameter		Min	Max	Mittel	RSD
density 20 °C	g/cm <sup>3</sup>	0,85	0,94	0,8968	2,6%
Refraction index		1,464	1,472	1,4670	0,1%
unsaponifiable matter	%	1,6	3,7	2,2052	30,1%
Carotenoides	mg/100g	18,72	166,5	83,317	57,1%
β-Carotene	mg/100g	17,5	191	53,346	76,4%
Tocopheroles	mg/100g	15,7	983	150,3	158,2%
Steroles	%	0,1	0,9	0,39	49,6%

table from 2005 meeting  
Steen, Heilscher, Moersel

# Technologies for harvesting SBT

Only a question of labour costs?





# After Harvesting Techniques

## Reduction of chemical changes

- biochemical degradation
- oxidation
- hydrolysis

## Reduction of microbiological changes

- fermentation
- contamination by micro-organisms
- toxin formation

## Prevention of chemical contamination

- PAH's, PCB's,
- pesticides
- radioisotopes





# Processing Technologies

Depending on required product properties

- reduced damage of ingredients and nutrients
- high yield on target compounds or constituents
- economy of processing
- waste minimisation
- use of by-products

Depending on social situation

- organic farming (EU 2092/91, 834/2007 + 889/2008)
- social accountability SA8000

# the ‘quality flow’ from tree to counter

- Quality is a complex interaction of many parameters
- Quality is depending on regional and international factors
- It’s a result of the production process
- arising from consumers demands and needs
- resulting from responsible handling and processing of
  - seeds and seedlings
  - plants
  - berries - fruits
  - semi-finished products
  - final products
- a challenge to producer each day

# the 'quality flow' from tree to counter

## The dilemma of standardisation and legislation



### 'Western' system

- many legal regulations
- standards have no legal power
- many product details regulated by contracts

### 'Eastern' system

- only basic legal regulations
- standards have legal power
- product details mostly not regulated by contracts

the 'quality flow' from tree to counter

The dilemma of standardisation and legislation





# Quality and productivity



# summary

- Quality management is a necessary mean in international trade
- It's the ticket to world market
- economical and social systems widely differs
- supplier have to look for the market, the customer and their demands
- we need standards for international trade

# summary

- standards for international trade should include:
  - raw material properties
  - semi-finished products
  - final goods
  - documentation and legislation
- standards shouldn't be based on lowest level requirements (fulfilment of legal musts)
- standards shouldn't be at the highest stage (fulfilment of customers demands)



Thanks for your  
kind attention

