Standardization of Sea Buckthorn

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You are not traveling to see situations but to get into them.

Content

- SBT and SBT trade worldwide
- Variability of composition
- Standardization
- interests – customer vs. industry ?
- Areas of standardization
- Standardization vs. legislation
- summary

SBT and it's position in the world

Different species, sub-species and varieties
Different fields of interest

- *SBT as an ecological source*
  - stabilisation of sands in high mountains and at shoreline
- *SBT for production of valuable products:*
  - fruits
  - juice
  - oil
  - feed
  - wood
  - drugs and pharmaceutical raw materials
- *Use as ornamental plant and in gardening*
- *.....*

Chemical composition of SBT

Composition [mg/100 g]	Seabuckthorn minimum	Seabuckthorn maximum
Carotene	1	18,7
Ascorbis acid	50	450
Tocopheroles	3	18
Phyllochinone	0,8	2,8
Vitamin B	0,05	0,15
Niacin	50	250
Organic acids	1200	4000
Pulp oil [%]	1,2	3,5

Chemical composition of SBT pulp oil

Parameter		Min	Max	Mittel	RSD
density 20 °C	g/cm³	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%

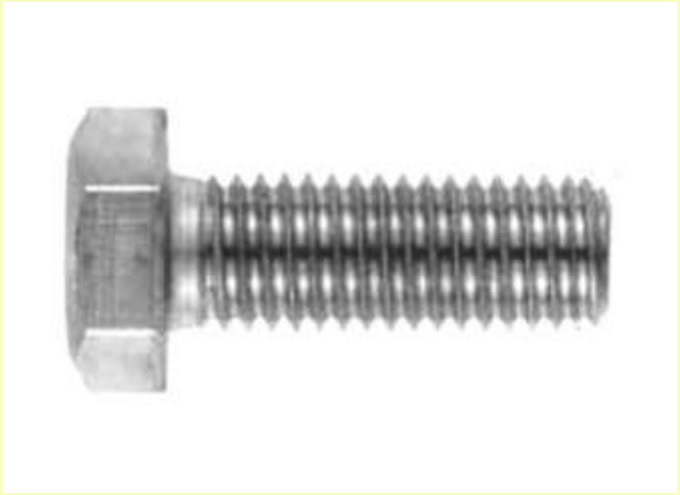
Parameter		Min	Max	Mittel	RSD
moisture	%	0,02	2,3	0,49	113,4%
ffa	mg KOH/g	0,5	24,6	8,8	76,9%
POZ	meq/kg	0	7	1,4	148,5%
Ranzimat 110°C, 20 l/h	h	0	65	27,5	65,7%

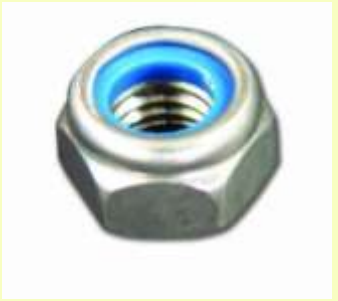
Standardization

Standardization

- Based on common knowledge and state of the art
- Shall be accepted widely
- Shall unify products, processes, properties
  - To make them better suitable for products, processes or services
  - To ease exchange of goods and services
  - To support co-operation

W H Y ?





Standardization – it is because …

Standardization

- De-jure-Standards
  - Based on a unified process – DIN ISO EN
- De-facto-Standards
  - Based on common accepted agreements – industry standards (e.g. IFS, BRC)
- ISO process structure
  - Also standardized

Standardization

- ISO process structure
  - 00 Preliminary Work Item PWI
  - 10 New Proposal (for a work item) NP
  - 20 Working Draft WD
  - 30 Committee Draft CD
  - 40 Draft International Standard DIS
  - 50 Final Draft International Standard FDIS
  - 60 International Standard IS
  - 90 Review
  - 95 Withdrawal

Status of standards

- Have no legal status and power
- Are more recommendations
- Can be come compulsory by:
  - Legal acts (e.g. cGMP for cosmetics)
  - International agreements (e.g. – country codes)

Status of standards

Regional aspects

European Community
- CEN –
- Most norms do not have legal power
- Borders between state and NGO's

Russian Federation
- GOST
- Many norms have legal power
- Federal agency for technical regulation and metrology is organ of Russian administration

PR China
- Standardization Law PRC
- classified into
  - National
  - Industrial
  - Provincial
  - Company

Standards
- Are mean of legislation

Customer vs. Industry ?

Customer vs. industry ?

- Standards define level of confidence
- Customer decide about needs
- Trading companies and producer have to fulfil them
- Standards are “the glue” of the chain
- Standardization often divide products in quality levels - grading

Customer vs. industry ?

- Industries view
  - Defined links in supply chain
  - Make goods reproducible and substitutable
  - Ensure necessary quality
- Customers view
  - Make product safe
  - Ensure quality
  - Make supplier “trustable”

Areas of standardization

SBT in agricultural output

- Sort depending parameters
  - Valuable constituents (vitamins, acids, sugar …)
  - Size, shape, physical properties
  - Amount of seeds
  - Mech. stability of flesh and husk
  - humidity

SBT in agricultural output

- Sort depending parameters
- parameters depending on agro technology
  - Number of damaged fruits
  - Amount of other plant parts
  - Amount of wood
  - Stability and storability
  - Microbiological status
  - Pesticide-, insecticide residues

SBT in agricultural output

- Sort depending parameters
- parameters depending on agro technology
- Parameters depending on pre-processing
  - Number of damaged fruits
  - Manageability
  - Stability and storability
  - Microbiological status

SBT in processing to semi-products

- Relation yield and lost
- Specific ingredients based parameters (sugar, acid, oil etc.)
- Manageability
- Processing properties
- degradation, deterioration, decomposition
- Microbiological deterioration
- Toxination

SBT in manufacturing final products

- Nutritional properties (vitamins, fat, sugars)
- Texture components (pectins)
- Colour
- Odour
- Taste
- Mouthfeeling

SBT in manufacturing final products

- Contaminants
  - Heavy metals
  - Mycotoxines
  - Pesticides, insecticides, agrochemicals
  - Environmental pollutants
- Microbiological status
- Off flavour, off taste,

SBT in manufacturing final products

	legale rules	Normative rules	grading rules
degradation, deterioration, decomposition		x	x
Amount of other plant parts		x	x
Amount of seeds		x	
Amount of wood		x	x
Colour		(x)	(x)
Environmental pollutants	x		
Heavy metals	x		
humidity		x	x
Manageability		x	
Mech. stability of flesh and husk		x	x
Microbiological status		x	(x)
Mouthfeeling		(x)	(x)
Mycotoxines	x		
Number of damaged fruits		x	
Nutritional properties (vitamins, fat, sugars)		x	
Odour		(x)	(x)
Pesticides, insecticides, agrochemicals	x		
Processing properties		x	
Relation yield and lost		x	
Size, shape, physical properties		x	
Specific ingredients based parameters (sugar, acid, oil etc.)			x
Stability and storability		(x)	(x)
Taste		(x)	(x)
Texture components (pectins)		x	x
Toxination	x		
Valuable constituents (vitamins, acids, sugar …)		x	x

Standardization vs. legislation

Status of standards - Regional aspects

Consequences for trade

- If standards have legal power
  - Imports have to comply
  - Customs may reject if documents are not accepted
  - Additional costs may arise from certification
- If not
  - Market divides – as supplier and buyer agree
  - More flexibility
  - More concurrency by low level products
  - Higher risk of scandals
- If standards exist
  - Will depend on acceptance
  - Mya be better

Status of standards - Regional aspects

Actual situation:

European Community

- Doesn’t accept in general non EC certificates
- Does not require standard compliance
- Russian, Chinese and other countries certificates not generally accepted

Russian Federation

- Tax union since 2013
- Product certifi-cation required
- Doesn’t accept EC certificates
- Require domestic certificates

PR China

- Doesn’t accept EC certificates
- Domestic certification of imported products compulsory

application in border regions

Conclusions

- SBT is a plant with a great scientifiv and economic potential
- eastern and western view on health clash in this field
- variety of products will grow quickly
- market of SBT products will become international, not only for raw material
- Standards can make market
  - more reliable
  - More transparent
  - Products better

Questions

- eastern and western view on health clash in this field
- Will standards influence international trade
- How will it influence access to market
- May it become a market barrier
- Who will control standard developments
- Will suppliers in different countries be treated differently

Conclusions / Questions

Georg Christoph Lichtenberg
1742 – 1799
German physicist, philosopher

Ich weiß nicht, ob es besser wird, wenn es anders wird. Aber es muss anders werden, wenn es besser werden soll.

I do not know if it will be better if it is changed. But it needs to be changed to become better.

Thanks for your kind attention