PROCESSING TOMATOES IN 2015: TOTAL QUALITY, INNOVATION and SUSTAINABILITY TO COMPETE

Luca Sandei
SSICA – Experimental Station for Food Preserving Industry - Parma ITALY
Head of Tomato Department
Chair of WPTC Commission on International Legislation

Napa Tomato Conference 2015
TOPICS TREATED

- FOREWORD – who we are
- 2015 Italian Processing Tomato numbers
- Italian Organization and Processing Tomato actors (Northern District and Southern District)
- Key trends in R&D (new varieties, technological developments..)
- New ISSUES: Future WPTC members common Projects collaboration (i.e. for legislative and quality standard requirements)
- Conclusions
FOREWORD: SSICA WHO WE ARE

Established in 1922
Operational from 1923
Area of 16,000 m²
Labs and offices: 10,000 m²
Staff: 80 units (Researchers)

EXPERIMENTAL STATION FOR THE FOOD PRESERVING INDUSTRY
Special Agency of the Chamber of Commerce of Parma

SSICA - headquarters
Via Tanaia, 31/a
43121 Parma
tel +39 0521 7951
fax +39 0521 7951
info@ssica.it
www.ssica.it

Parma headquarters

RESEARCH FOR THE FOOD PRESERVING SECTOR: SAFETY, QUALITY, INNOVATION

The Experimental Station for the Food Preserving Industry in Parma (SSICA) aims to promote the scientific, technical and technological progress of the Italian food-preserving industry for the sectors of fruits, vegetables, meat and fish products, through its activities of research, consultancy, training and dissemination of information.
MAIN TASKS

Pre-competitive industrial research and development

Analysis, testing and experimentation of products, processes and new technologies

Consultancy for businesses, public authorities and public institutions

Technical and scientific disclosure and documentation, and promotion of quality

Participation in technical standardisation activities entrusted by national and international bodies
The TOMATO DEPT. is historically ranked strategic for SSICA: the activity aims to develop and to study new processing technologies and new products. The activities cover the entire production chain from field to fork in three main areas: applied research; food safety analysis and controls; improvement of total quality practices (pre-competitive innovation in processes and products).
Italy 2015: 3° world producer about 5,4 million tons (2.7 North + 2.7 South)
In the field of processing tomato in Italy there are over 8000 agricultural enterprises and 150 industries, with about 20,000 employees, with a total turnover of more than 3 Billion Euro/year (3.6 total canning vegetables sector).

Source: Tomato News
Two tomato districts = **TWO DIFFERENT PEDO-CLIMATIC GROWING ZONES**

= TWO DIFFERENT TYPES OF FRESH MATTER CHARACTERISTICS

(ROUND SQUARED TOMATOES IN THE NORTH )

(OBLONGED PEAR SHAPE TOMATOES + CHERRY TOMATOES IN THE SOUTH)

= DIFFERENT PROCESSED PRODUCTS:

(Tomato Purees and Crushed Tom., Diced Tom., T. Paste in the NORTH)

(Whole Peeled Tom., Diced Tom., Cherry Tom., T. Purees and Paste in the SOUTH)
The Two Tomato Districts are made up of members which are equally divided into Agricultural part and Industrial part.

For the agricultural part, participating: O.P. Producer Organisations, Professional Organisations (AOP), Agricultural Cooperatives, etc.

For the industrial part, participating: Private processing industries, Processing Industries and Cooperative institutions that represent the transformation (AIIPA, UPI, CONFCOOPERATIVES) MOREOVER participating several RESEARCH INSTITUTIONS (SSICA, AASTUARD, TADINI, PTP, etc.)
### Processing Tomato Italian Organizations Aggregate Data 2015

<table>
<thead>
<tr>
<th></th>
<th>Final Delivered 2014</th>
<th>Contracted 2015</th>
<th>Final Delivered 2015</th>
<th>% Delivered/Contracted 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southern Basin</td>
<td>2,528,587</td>
<td>2,957,413</td>
<td>2,717,174</td>
<td>91.88%</td>
</tr>
<tr>
<td>di cui ANICAV</td>
<td>2,107,512</td>
<td>2,558,821</td>
<td>2,228,863</td>
<td>87.11%</td>
</tr>
<tr>
<td>Northern Basin</td>
<td>2,385,775</td>
<td>3,011,165</td>
<td>2,676,235</td>
<td>88.88%</td>
</tr>
<tr>
<td>Totale Italia</td>
<td>4,914,362</td>
<td>5,968,578</td>
<td>5,393,409</td>
<td>90.36%</td>
</tr>
</tbody>
</table>

#### Totale Italia

- **Consegno finale 2015**: 90.36%
- **Contratto 2015**: 90.36%

#### BACINO NORD

- **Consegno finale 2015**: 88.88%
- **Contratto 2015**: 90.36%

- **2,676,235 TONS**

#### BACINO CENTRO SUD

- **Consegno al 4 ottobre 2015**: 91.38%
- **Contratto 2015**: 91.38%

- **2,717.174 TONS**
## 2015 NORTHERN ITALY TOTAL DELIVERIES

### DATA 2015 - TOTAL DELIVERY

Reference Period: from 16/07/2015 to 18/10/2015

<table>
<thead>
<tr>
<th></th>
<th>Quantity (total)</th>
<th>Quality (only round squared IPM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NET WEIGHT [t]</td>
<td>WASTE [t]</td>
<td>NET WEIGHT PAYED [t]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CONTRACTED QUANTITY [t]</td>
</tr>
<tr>
<td><strong>2.814.932</strong></td>
<td><strong>133.647</strong></td>
<td><strong>2.681.285</strong></td>
</tr>
<tr>
<td><strong>2.681.285</strong></td>
<td></td>
<td><strong>3.011.165</strong></td>
</tr>
<tr>
<td><strong>3.011.165</strong></td>
<td></td>
<td>89.04%</td>
</tr>
<tr>
<td>% Delivered / contracted</td>
<td>° BRIX</td>
<td>% WASTES</td>
</tr>
<tr>
<td>89.04%</td>
<td>4.96</td>
<td>4.70%</td>
</tr>
<tr>
<td>% PAYMENT INDEX</td>
<td></td>
<td>[94.68]</td>
</tr>
</tbody>
</table>
The percentages between contracted and delivered do not consider contract integrations. [min] and [max] denote the minimum and maximum data recorded by OI for its week.

Data from O.I. Distretto del Pomodoro del Nord Italia
WEEKLY DELIVERY CAMPAIGN 2015

The percentages between contracted and delivered do not consider contract integrations. [min] and [max] denote the minimum and maximum data recorded by OI for its week.
<table>
<thead>
<tr>
<th>ANDAMENTO DEL POMODORO CONSEGNA PER SETTIMANE IN TON</th>
<th>2015</th>
<th>2014</th>
<th>2013</th>
<th>Diff. 2015/2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>settimana 29 (13 - 19 lug)</td>
<td>10.511</td>
<td>8.899</td>
<td>9.698</td>
<td>1.612</td>
</tr>
<tr>
<td>settimana 30 (20 - 26 lug)</td>
<td>71.821</td>
<td>40.237</td>
<td>46.851</td>
<td>31.584</td>
</tr>
<tr>
<td>settimana 31 (27 lug - 2 ago)</td>
<td>221.411</td>
<td>122.257</td>
<td>130.782</td>
<td>99.154</td>
</tr>
<tr>
<td>settimana 32 (3 - 9 ago)</td>
<td>316.139</td>
<td>262.698</td>
<td>232.510</td>
<td>53.441</td>
</tr>
<tr>
<td>settimana 33 (10 - 16 ago)</td>
<td>304.731</td>
<td>303.844</td>
<td>280.620</td>
<td>887</td>
</tr>
<tr>
<td>settimana 34 (17 - 23 ago)</td>
<td>344.245</td>
<td>324.446</td>
<td>276.709</td>
<td>19.799</td>
</tr>
<tr>
<td>settimana 35 (24-30 ago)</td>
<td>291.158</td>
<td>333.762</td>
<td>195.175</td>
<td>- 42.604</td>
</tr>
<tr>
<td>settimana 36 (31 ago - 6 set)</td>
<td>236.099</td>
<td>103.338</td>
<td>222.108</td>
<td>132.761</td>
</tr>
<tr>
<td>settimana 37 (7 - 13 set)</td>
<td>196.319</td>
<td>236.014</td>
<td>175.351</td>
<td>- 39.695</td>
</tr>
<tr>
<td>settimana 38 (14 - 20 set)</td>
<td>123.404</td>
<td>224.176</td>
<td>146.853</td>
<td>- 100.772</td>
</tr>
<tr>
<td>settimana 39 (21 - 27 set)</td>
<td>57.028</td>
<td>111.694</td>
<td>95.027</td>
<td>- 54.666</td>
</tr>
<tr>
<td>settimana 40 (28 set - 4 ott)</td>
<td>46.535</td>
<td>29.795</td>
<td>20.008</td>
<td>16.740</td>
</tr>
<tr>
<td>TOT. da 41 a fine campagna</td>
<td>9.461</td>
<td>6.352</td>
<td>15.320</td>
<td>3.109</td>
</tr>
<tr>
<td><strong>TOTALE</strong></td>
<td><strong>2.228.863</strong></td>
<td><strong>2.107.512</strong></td>
<td><strong>1.847.012</strong></td>
<td><strong>+121.351</strong></td>
</tr>
</tbody>
</table>

**SOUTH ITALY WEEKLY DELIVERIES DATA**
Thanks to the implementation of the EUROPEAN REGOLAMENTS AND ITALIAN rules and voluntary regulations of "Controlled Quality" and "Integrated Production", the TOMATO DISTRICTS Guarantees the highest QUALITY STANDARD AND SUSTAINABILITY of the raw material and a complete traceability "from the field to the table".

From 01/01/2014 it is MANDATORY the «Integrated Pest Management»:
Regulament CE 128 - 21/10/2009 e s.m.i., D.L. 14 agosto 2012 n. 150.
RESEARCH AND DEVELOPMENT PROJECTS THEORY

**TOMATO total quality FACILITATORS**

- **Product Concept**
  - New ingredients
    - Biotecnology
    - Natural additives and preservers
    - Nanotechnology
  - Vitality
    - Organic
    - Dietetic
    - Ready to eat
  - Supports
    - Networking instruments
    - Knowledge management
    - Bioinformatics
  - Valorization WASTES/Byproducts
    - UHPP
    - RF
    - Ohmic treatment
    - Supercritical fluids
    - Membrane treatm.

- **New processes**
  - Mild technologies
    - Scheduling delivery
    - Quality Sensors
    - Not Destroy Quality analyses
    - Remote Maintenance
  - Process Controls
    - New Packaging
      - Smart Packaging
      - RFId
      - Smart Labels
  - Process
HEALTHY AGING Lifespan has been increasing …

84 years old Woman active and in good health state

Her mother Died at 65

Her Granmother Died at 45

aging: business opportunities
Social and Demographics Changes and new consumption trends
Total Sustainability and Nutritional Antioxidants in Eldery People

What about?
Development of FUNCTIONAL FOODS and INGREDIENTS ...from FOOD
... What are willing to pay more European consumers?

- Food convenience
- Healthy food
  - Functional
  - Nutraceutical
  - Organic

CONSUMERS WILLINGNESS
Development and application of new process technologies (mild technologies);

Study and analytical quantitative characterization of bioactive molecules "naturally present in tomatoes by industry" (Licopene, polyphenols, Vitamins, amino acids);

Study of quality and origin markers (tomato Protection Made in Italy).

Study of new varieties and introduction of specific mild technologies for high quality tomato products

Study and development of biocompatible technologies for complete recovery and valorisation of by-products of industrial processes (extraction of Bioactive Natural Compounds)
KEY TREND: **Total Sustainability**

**ORGANIC FARMING and ORGANIC PROCESSING TOMATOES:**
Study of two different systems of cultivation, an integrated system (IPM) and an organic system (Organic Pest Management) to verify whether and which destinations the fresh tomato for processing showed the eligibility requirements for industrial quality standards.

KEY TREND: **re-use of by-products**

Recycling by-products interest the environmental viewpoint (reduction of amount of wastes) and for health benefits derived from their bio-active native compounds.

These bio-products may be used:

• **For extraction of bioactive compounds** (Lycopene, Phenols, UMAMI Aminoacids, etc.) for **NUTRACEUTICAL PRODUCTS**

• **For innovative Functional Products** (i.e. Passata Funzionale)
(Consumers are increasingly looking for food, beverages and dietary supplements that address their particular health concerns, such as improving digestion or reducing sugar intake or implement ).
SYNERGIC EFFECT OF BIOACTIVE TOMATO MOLECULES

BYPRODUCTS ANTIOXIDANTS (mg/kg s.s.)

- Polifenoli
- Vitamina C
- Licopene

Skin eliminator
Refiner (peels and seeds)
KEY TREND: re-use of **by-products**

These bio-products may be used: **For the development and use of bio-based thermosetting lacquer from renewable resources in the rigid packaging sector**. The said lacquer will originate from processing by-products in the tomato industry, offering alternative strategies for waste utilisation, in accordance with Directive 2008/98/EC. BIOCOPAC will contribute to **maintain the competitiveness of the metal packaging sector**:

[www.biocopac.eu](http://www.biocopac.eu)
KEY TREND: **New Varieties studies**

New varieties studies for specific uses and specific areas of cultivation

The projects aims to:

obtain innovative hi-quality tomato-based products (*tomato puree – whole peeled and diced tomatoes*)

preserving the distinctiveness of hi-value Italian fresh tomato matters with another added value coming from the specific quality features (i.e. flavour and taste molecules) measured in new selected fresh matters (new cultivars)

These cultivars are **specifically studied** for the two definite areas of cultivation (North and South Italy ) with specific pedo-climatic conditions and needs.
**INTERNATIONAL COLLABORATIONS**

New ISSUES: Future WPTC common Project collaborations for legislative and quality standard requirements

Necessity of standardize quality parameters measured in processed products for clear and correct world market exchanges:

- Same method of analysis for NTSS (°Brix) in Hot Break concentrated samples.
- Color Evaluation and Grading Tables (use of same equipment and same scales)
- Standardization of Natural carotenoids evaluation (Lycopene and other).
- Agro-chemicals measurement and international limits standardization.
- Measure of xenobiotics residuals and evaluation of not allowed ingredients.
- New Quality markers molecules...
- Legislative CODEX STDs homogenization (i.e. Additives List and other)
CONCLUSIONS

• Economy and Financial Crises push consumers towards more conscious spending.
• Processing tomato industries usually harvest, picked and process best quality processing tomato, in an integrated “from farm to fork” concept, counting on all the food chain players in distinguished and rigorously controlled protocols.

• Investments in R&D, innovation and pre-competitive studies will be essentials to innovate processed tomato products and to guarantee strategic new “tailored made products” rich in “tasty and healthy” nutrients for the customers of our modern society.
THANKS for your kind attention.

luca.sandeil@ssica.it

Enjoy Italian Style
Enjoy Italian Fashion

...But ...above all ...

Enjoy MEDITERRANEAN DIET
eating a lot of “extra quality” processed tomatoes products ...
...Good for your Senses and Good for your Health ...

Napa (CA) Tomato Conference 2015