VCR: THE ORIGINS

- 1863 – In the department of Gard in France the presence of Phylloxera was discovered
- 1879 – Between Como and Milan, the presence of the aphid was noticed
- 1891 – The Royal School of Agriculture in Pozzuolo del Friuli preventively creates a nursery for the production of American vines
- 1901 – Phylloxera is identified in Friuli in a vineyard of Billia Brothers in Castions di Strada
- 1905 – Beginning of the production of grafted vines in Friuli and Trentino
- 1911 – Italian viticulture is affected from Phylloxera
- 1920 – In Rauscedo the table grafting technique is being improved
- 1933 – Foundation of Vivai Cooperativi Rauscedo
1920 - TABLE GRAFTING IN RAUSCEDO

THE GRAFTINGS ARE BEING PLANTED IN THE NURSERY
1930 - VCR FIRST HEADQUARTERS

1933: THE FIRST VCR CATALOGUE

E. Sartori - VCR: AN 80-YEARS LASTING LEGEND
CATALOGUE DATED 1952

UDINE

6 milioni di viti innestate nella primavera 1952.

I più forti produttori di viti innestate in Europa

1959 - NEW MACHINE FOR TABLE GRAFTING (CELERINA)

E. Sartori - VCR: AN 80-YEARS LASTING LEGEND
In 1965, VCR decided to create an Experimental Centre where, with the passing of time, considerable human and financial resources were invested in research activities in the field of vine-growing nursery, in vine cloning, in the oenological characterization of clones through the evaluation of fine parameters and in taking part to research programs for the creation of disease-resistant cultivars.
VCR GRAFTED VINES BELONGING TO BASE, CERTIFIED AND STANDARD CATEGORY

24 MARCH 1972 – THE FIRST 51 «RAUSCEDO» SERIES CLONES ARE APPROVED

<table>
<thead>
<tr>
<th>Clone</th>
<th>Category</th>
<th>Approved Series</th>
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<tbody>
<tr>
<td>ALBANA</td>
<td>R4</td>
<td>R3, R12, R18</td>
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<td>R4</td>
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<td>R5</td>
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<td>PINOT NERO R4</td>
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<td>SCHAIA GROSSA R2, R5</td>
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<td>TRAMINER AROMATICO R1</td>
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<td>VERDIZZU FRIULANO R5</td>
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TOTAL 51 CLONES
Haifa seminar: "From a Grafted Vine to a Glass of Wine" - September 2013

**THE FIRST 51 “RAUSCERDO” CLONES**

- ALBANA R4
- ANCELLOTTA R2
- BARBERA R4
- CAB. SAUV. R5
- CANAILO R6
- CARMENERE R9
- CHARDONNAY R8
- GARGANEGA R4
- MALV. CHIANTI R2
- MERLOT R3
- PINOT GRIGIO R6
- PINOT NERO R4
- SANGIOVESE R24
- SAUVIGNON R3
- TOCAI FRIULANO R5
- TRAMINER R1
- TREBB. TOSC. R4
- VERDICCHIO R2

**1975 – THE NEW VCR HEADQUARTERS**

E. Sartori - VCR: AN 80-YEARS LASTING LEGEND
THE CLONE SELECTION PROCESS

Observation of the biotypes

Picking up material from the more interesting biotypes

Serological diagnosis Elisa/P.C.R.

Healthy stocks

Infected stocks

HOMOLOGATION AND COMPARISON FIELDS

HOMOLOGATED CLONES

GERMPLASM COLLECTION FIELDS

MAINTENANCE OF THE BIOTYPES (IN THE SCREENHOUSE)

Wine making and must analysis

Sensory analysis

BASE MATERIAL

INITIAL MATERIAL

CERTIFIED MATERIAL

SANITARY SELECTION

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<tr>
<th>Virus</th>
<th>ELISA test</th>
<th>PCR</th>
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<th>&quot;Arboreous Indexing&quot; in the field</th>
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<td>Baco 22A + Cab. Franc</td>
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* New compulsory Sanitary Protocol
* Optional controls
** Compulsory controls (quarantine diseases)
1987 – RENOVATION OF VCR EXPERIMENTAL CENTRE

MICRO PROPAGATION

E. Sartori - VCR: AN 80-YEARS LASTING LEGEND
Haifa seminar: "From a Grafted Vine to a Glass of Wine" - September 2013

ELISA TEST
ARBOREOUS INDEXING
INDEXING IN THE SCREENHOUSE

VCR EXPERIMENTAL CENTRE: WINERY FOR MICRO-WINEMAKING

E. Sartori - VCR: AN 80-YEARS LASTING LEGEND
Experimental micro-vinifications of clones of Italian and foreign cultivars and of new varieties: from 25 in 1972 to 410 in 2013
PINOT NOIR

2002 -
CERTIFICATION
UNI EN ISO 9001

E. Sartori - VCR: AN 80-YEARS LASTING LEGEND
Up to now, **346** VCR clones of Italian, Greek, Spanish and Czech varieties have been homologated. In the next future new selections coming from Serbia, Georgia, Montenegro, Macedonia, Crimea, Portugal and Russia will be available for wine-growers from all over the world!

![VCR clones](image)

### «RAUSCEDO» SERIES AND “VCR” SERIES CLONES

<table>
<thead>
<tr>
<th>VARIETY</th>
<th>CLONES</th>
<th>TOT. CLONES</th>
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<tbody>
<tr>
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**VARIETY** | **CLONES** | **TOT. CLONES**
--- | --- | ---
**LAMBRUSCO GRAPPADELLA** | R1, VCR 402 | 2 CLONES
**LAMBRUSCO DI SOBRA (R1)** | VCR 20 | 2 CLONES
**LAMBRUSCO MAESTRI** | VCR 1 | 1 CLONE
**LAMBRUSCO MARANE** | R2 | 1 CLONE
**LAMBRUSCO SALAMINO** | R5, VCR 1, VCR 20, VCR 23 | 8 CLONES
**LAMBRUSCO VADANENSE** | VCR 12, VCR 13, VCR 15 | 3 CLONES
**GIATICO** | VCR 295 | 1 CLONE
**LIBBIO** | VCR 294 | 1 CLONE
**MALBEC** | IPV 8 | 1 CLONE
**MALOR GNITE** | VCR 98, VCR 69, VCR 70 | 3 CLONES
**MALVASIA R LUNCA** | R2, VCR 10 | 2 CLONES
**MALVASIA CANDRA** | R5 | 1 CLONE
**MALVASIA ISTRANA** | VCR 8, VCR 22, VCR 28, VCR 133, VCR 134, VCR 135 | 6 CLONES
**MAIMHIO** | VCR 402 | 1 CLONE
**MANSHIARI** | VCR 399, VCR 291 | 2 CLONES
**MARZEDINO** | VCR 5, VCR 114 | 2 CLONES
**MATEO** | VCR 15 | 1 CLONE
**RABOSO PIAVE** | R1, VCR 19, VCR 20, VCR 21 | 4 CLONES
**RABOSO VR.** | VCR 3 | 1 CLONE
**RIFUACO NORTELANO** | VCR 1, VCR 470, VCR 475, VCR 476 | 3 CLONES
**RIELA** | VCR 100 | 1 CLONE
**RISLING B.** | R2, VCR 3 | 1 CLONE
**RIPONDA** | VCR 91 | 1 CLONE
**RISANATTO** | VCR 236 | 1 CLONE
**SAUVIGNON** | R1, VCR 320 | 2 CLONES
**SCHIAPA GENTILE** | R1 | 1 CLONE
**SCHIAPA GIROPA** | R2, R3, VCR 12, VCR 14, VCR 21 | 3 CLONES
**SCHIOVINIETTO** | VCR 402 | 1 CLONE
**SULTANAPA** | VCR 122 | 1 CLONE
**VITANOVA VREHUE** | VCR 225 | 1 CLONE
**SYRIIAH** | IPV 8 | 1 CLONE
**TEMPRANILLO** | VCR 39, VCR 472, VCR 473 | 3 CLONES
**TEOBRIGIO** | VCR 159 | 1 CLONE

**VARIETY** | **CLONES** | **TOT. CLONES**
--- | --- | ---
**MILLO** | R1, R2, R3, VCR 1, VCR 27, VCR 28, VCR 100, VCR 102, VCR 499, VCR 499, VCR 499 | 13 CLONES
**MOLINARA** | R2, VCR 12 | 2 CLONES
**MONTPELUCIANO** | R7, VCR 106, VCR 499, VCR 499, VCR 499, VCR 499, VCR 499, VCR 499, VCR 499 | 9 CLONES
**MOSCATI BIANCO** | R2, VCR 1, VCR 231, VCR 105 | 3 CLONES
**MOSCATI GIALLO** | R2, VCR 1, VCR 185, VCR 185 | 2 CLONES
**MOSCOFILERO** | VCR 292, VCR 291 | 2 CLONES
**MULLER THERGAI** | VCR 1, VCR 294, VCR 295 | 4 CLONES
**NEBBIOLO** | R1, R2, VCR 130, VCR 135, VCR 139, VCR 180, VCR 181, VCR 172, VCR 179, VCR 490 | 10 CLONES
**NEBBIOLO (CHIAV.)** | R6, VCR 297, VCR 299, VCR 299, VCR 488 | 4 CLONES
**NERO AMARO** | VCR 18, VCR 123, VCR 449, VCR 489, VCR 489 | 5 CLONES
**ORTICIO** | VCR 292 | 1 CLONE
**PASSERINA** | VCR 6, VCR 495 | 2 CLONES
**PTORINO** | VCR 417 | 1 CLONE
**PIDERIISO** | VCR 294, VCR 296, VCR 296, VCR 145 | 4 CLONES
**PIATO** | VCR 397 | 2 CLONES
**PIONGOLITTO** | VCR 1, VCR 421 | 2 CLONES
**PIOTRIO BIANCO** | R1, VCR 5, VCR 7, VCR 8 | 3 CLONES
**PIOTRIO GOLDI** | R6, VCR 1 | 1 CLONE
**PIOTRIO NOBBI** | R4, VCR 1, VCR 18, VCR 26, 4942 | 1 CLONE
**PRIMITIVO** | VCR 397, VCR 360, VCR 396 | 3 CLONES

**VARIETY** | **CLONES** | **TOT. CLONES**
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**TOSCA FRELADO** | R1, R4, VCR 4, VCR 11, 113 | 6 CLONES
**TOSCA ROSO (GRENACHE)** | VCR 1 | 1 CLONE
**TRAMER** | R2, VCR 4 | 2 CLONES
**TREIBRANO ABITRZI** | VCR 3 | 1 CLONE
**TREIBRANO ROMAGNOLO** | R2, VCR 426, VCR 429, VCR 436 | 4 CLONES
**TREIBRANO TOSCANO** | R4, VCR 8 | 2 CLONES
**IVA DI TOSA** | VCR 3 | 1 CLONE
**VERB** | VCR 115 | 1 CLONE
**VERBILLO** | R1, VCR 3 | 1 CLONE
**VERCHI** | R2, VCR 3, VCR 28, 145, 147 | 3 CLONES
**VERDEO** | VCR 185 | 1 CLONE
**VERDEO FRELADO** | R1, VCR 2, VCR 498, VCR 598, VCR 599, VCR 163 | 5 CLONES
**VERMET** | R1, VCR 22, VCR 26, 485 | 3 CLONES
**VERDICTA 9-0** | VCR 257, VCR 258, VCR 259, VCR 260, VCR 261, VCR 262, VCR 263, VCR 264, VCR 265, VCR 266 | 9 CLONES
**VIRIDIANO** | VCR 289 | 1 CLONE

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E. Sartori - VCR: AN 80-YEARS LASTING LEGEND
Haifa seminar: "From a Grafted Vine to a Glass of Wine" - September 2013

<table>
<thead>
<tr>
<th>VARIETY</th>
<th>CLONES</th>
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<td>110 PAUSEN</td>
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**TOT. 346 HOMOLOGATED CLONES THAT MEANS MORE THAN 30% OF THE CLONES ENTERED ON THE ITALIAN NATIONAL REGISTER**

1996 – SCION MOTHER BLOCKS CENTRE IN GRADO:
50 ha, 182 varieties, 690 clones

2003 – SCION MOTHER BLOCKS CENTRE IN RIMINI:
30 ha, 9 varieties, 52 clones

E. Sartori - VCR: AN 80-YEARS LASTING LEGEND
NEW VINE-GROWING NURSERY TECHNIQUES: AUTOMATION OF THE MULTIPLE CLEFT GRAFTING

PREPARING THE ROOTSTOCKS AND THE SCIONS FOR CLEFT GRAFTING
CLEFT GRAFTING

«OMEGA» TYPE GRAFTING
Haifa seminar: "From a Grafted Vine to a Glass of Wine" - September 2013

«OMEGA» TYPE
GRAFTING

MULTIPLE CLEFT-GRAFTING

CELERINA PLUS

E. Sartori - VCR: AN 80-YEARS LASTING LEGEND
Haifa seminar: "From a Grafted Vine to a Glass of Wine" - September 2013

CONTACT SURFACE
CELERINA PLUS vs OMEGA

CONTACT SURFACE
CELERINA PLUS vs OMEGA

ROOTSTOCK DIAMETER mm

CONTACT SURFACE mm²

E. Sartori - VCR: AN 80-YEARS LASTING LEGEND
VCR: LEADER IN THE VINE-GROWING NURSERY FOR 80 YEARS

VCR presence in more than 30 Countries in the world means an export reaching almost 50% of its production.
THE STAGES OF VCR EXPANSION IN THE WORLD

<table>
<thead>
<tr>
<th>Year</th>
<th>Company</th>
<th>Grafted Vines</th>
</tr>
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<tbody>
<tr>
<td>1986</td>
<td>Agromillora Ibera S.L.</td>
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<tr>
<td>1991</td>
<td>Vitro Hellas</td>
<td>1.5 millions</td>
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<tr>
<td>1996</td>
<td>NovaVine</td>
<td>2.5 millions</td>
</tr>
<tr>
<td>1995</td>
<td>Chalmers</td>
<td>1 million</td>
</tr>
<tr>
<td>2002</td>
<td>VCR France</td>
<td>6 millions</td>
</tr>
<tr>
<td>2006</td>
<td>VCR-Kuba</td>
<td>2.3 millions</td>
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A CONTINUATIVE PRESENCE IN ALL VINE-GROWING COUNTRIES
THE FUTURE
A new engaging and promising project has been undertaken by VCR, the Applied Genomics Institute of Udine (IGA) and the Vine Genetics Institutes of Chisinau (Moldavia), Novi Sad (Serbia) and Novocerkassk (Russia) regarding the creation and the agronomic and oenological evaluation of new disease-resistant cultivars (fourth-generation hybrids).

IN VCR EXPERIMENTATION AND SCION MOTHER BLOCKS CENTRE OF GRADO 34 FOURTH-GENERATION HYBRIDS ARE BEING CULTIVATED
### MAIN CHARACTERISTICS OF WHITE GRAPE CULTIVARS

<table>
<thead>
<tr>
<th>CULTIVAR</th>
<th>CLUSTER</th>
<th>RUD BURST</th>
<th>RIPENING TIME</th>
<th>PRODUCTION</th>
<th>RESISTANCE TO DOWNY MILDEW</th>
<th>RESISTANCE TO POWDERY MILDEW</th>
<th>SENSITIVENESS TO BOTRYTIS</th>
<th>FROST RESISTANCE</th>
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### MAIN CHARACTERISTICS OF RED GRAPE CULTIVARS

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<th>RUD BURST</th>
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<th>PRODUCTION</th>
<th>RESISTANCE TO DOWNY MILDEW</th>
<th>RESISTANCE TO POWDERY MILDEW</th>
<th>SENSITIVENESS TO BOTRYTIS</th>
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</table>
INNOVATION…
THE BEST
ANTIDOTE
AGAINST CRISIS