INIA - REMEHUE
Sustainable vegetables production systems for the South of Chile in Climate Change context.

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Latitud 40° - 43° South
SOUTHERN CHILE

Volcanic ash soils
- Andisols mainly
- High soil organic matter
- High acidification and P fixation

Climate
- 800 - 3000 mm /yr
- Rainfall 70% in winter
- 11.2 °C (6 - 17 °C)
RESEARCH AND EXTENTION LINES

INIA Remehue regional center directs its research lines to the sustainable production of livestock systems for ruminants, the production of potato crops, and the aggregation of value of agricultural products through functional foods and stamps of origin. In the last 4 years irrigation, fruit and vegetables production systems have been incorporated because there are interest of the productive sector in these matters and the current climate condition (Climate Change).
RESEARCH LINES

• Crop production systems (5 Researcher)
• Livestock systems for ruminants (4 Researcher)
• Environment and greenhouse effect gases (5 Researcher)
• Food (process and quality) (2 Researcher)
• Climate Models (1 Researcher)
• Sustainable vegetable production (1 Researcher)
• Fruit production (1 Researcher)
Remehue >> 63 Proyects (Currently) Research(35) and Extension (28)

3 WAY FUNDS:

• Ministry of Agriculture.

• Regional Government.

• Other competitive funds (National and International).
Cattle Production Systems based on pasture
INIA potato breeding program
LABORATORIES (9)

* Services for research and outside customers

2. Environment
3. Food Quality
4. Animal Biotechnology
5. Phytopathology
6. Seeds
7. Vegetal biotechnology
8. NIRs
9. Nutrients (Fertilization)
AGROMET NETWORK

http://agromet.inia.cl.

Network of weather stations in all the country. General advising about the effect of weather in the different production systems (Monthly report).

Early adverticing about potato phytopathological risk (Phytophtora infestans L.)
TECHNOLOGICAL SUPPLIES

The area of technological inputs produces seeds of potatoes (minitubers C-1), and bovine and ovine reproducers.
For this regional center the extension is a priority. The extension projects and activities are coordinated in the territory, generating alliances with key actors of both regions in favor of the farmers and in relation with the regional political strategies.
VEGETABLE PRODUCTION IN THE SOUTH OF CHILE (SPECIALY IN THE LOS RÍOS AND LOS LAGOS REGIONS)

100% Of the vegetables production is in the hand of small farmers. The main species are: Lettuce and other leafy vegetables >> field and in greenhouse.

Now there is a new opportunity for sustainable vegetables production >>> WHY?

- Climate change >> opportunity for new crops.
- Regional strategy about healthy food and enviroment care.
- Growers are looking for another production systems and agri- bussines to replace traditional crops.
Indigenous Technological Transference Groups
2016 – 2019
A succesfull pilot experience in Chile
EXTENTION TO GROWERS IN GENERAL
(Other institutions and other regions)
Technological Transference and Extention in Technical Institutes of the region
EXTENTION TO EXTENTION TEAMS OF OTHER INSTITUTION (more irradiation impact)
SUSTAINABLE VEGETABLE PRODUCTION SYSTEMS IN PROTECTED CONDITIONS
CUCUMBER

PLANTATION > VEGETATIVE DEVELOPMENT > FLOWERING > FRUCTIFICATION > HARVESTING

AGO-SEP > >

GREENHOUSE (H °R AND T °) + PLASTIC MULCH + IRRIGATION DRIP + FERTILIZATION THROUGH ORGANIC INPUTS

NOV-ABRIL
Phytopathological problems
TOMATO PLANTATION > VEGETATIVE DEVELOPMENT > FLOWERING > FRUCTIFICATION > HARVESTING
AGO-SEP > > DIC - ABRIL
GREENHOUSE (H ° R AND T °) + PLASTIC MULCH + IRRIGATION DRIP + FERTILIZATION THROUGH ORGANIC IMPUTS
INDETERMINATED AND DETERMINATED VARIETIES
TOMATE PRUNNING
HARVESTING
HARVESTING
PEPPER

PLANTATION > VEGETATIVE DEVELOPMENT > FLOWERING > FRUCTIFICATION > HARVESTING

AGO-SEP > > > ENE - ABRIL

GREENHOUSE (H ° R AND T °) + PLASTIC MULCH + IRRIGATION DRIP + FERTILIZATION THROUGH ORGANIC IMPUTS
PRUNNING
APHYDS PROBLEMS AND SUCCESSFULL USE OF REPELENT PLANT (TOBACCO)
HARVESTING
LETTUCE

PLANTATION > VEGETATIVE DEVELOPMENT > HARVESTING

AROUND THE YEAR > >

FIELD/GREENHOUSE + PLASTIC MULCH + IRRIGATION DRIP + FERTILIZATION THROUGH ORGANIC IMPUTS

TODO EL AÑO
EVALUATING OPPORTUNITIES FOR EXPAND VEGETABLES PRODUCTION IN OUTSIDE CONDITIONS
ZUCCINI

PLANTATION > VEGETATIVE DEVELOPMENT > FLOWERING > FRUCTIFICATION > HARVESTING
SEP - OCT > > > > > > > > NOV - MAR
FIELD / PLASTIC MICRO TUNNEL + PLASTIC MULCH + IRRIGATION DRIP + FERTILIZATION THROUGH ORGANIC IMPUTS
HARVESTING AND FLOWER PRUNING
CABBAGE/CAULIFLOWER/ BROCCOLI

PLANTATION > VEGETATIVE DEVELOPMENT > HEAD DEVELOPMENT > HARVESTING

AGU – 10 FEB > > > > > > MAR - JUL

OPEN FIELD

IRRIGATION (RISING / SPRINKLER)

• EARLY/ MEDIUM SEASON / LATE VARIETIES
NURSERY > PLANTATION > VEGETATIVE DEVELOPMENT > BULB FORMATION > HARVESTING

JUNIO – JULIO

OPEN FIELD TRADITIONAL / DRIP / SPRINKLER IRRIGATION

FEBRERO - MARZO

WINTER ONION
IMPROVING THE MANAGEMENT OF PRODUCTION FACTORS

EXAMPLE: AUTOMATIC VENTILATION WITH TEMPERATURE SENSORS
CUADRO 1  Medias de temperatura (°C), humedad relativa (%) y DPV (kPa), para el tratamiento de 25 y 75% de ventilación, para la temporada otoño-invernal y estival

<table>
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<tr>
<th>Tratamiento</th>
<th>Temporada otoño-invernal</th>
<th>Temporada estival</th>
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<tr>
<td></td>
<td>°C</td>
<td>% HR</td>
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<tr>
<td>25% ventilación</td>
<td>10</td>
<td>91</td>
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<tr>
<td>75% ventilación</td>
<td>11</td>
<td>90</td>
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<tr>
<td>Diferencia</td>
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**FIGURA 19** Incidencia de *B. cinerea* y su relación con el DPV, durante la temporada otoño-invernal (1°) y estival (2°), para el tratamiento de 25 y 75% de ventilación. Flechas indican puntos de inflexión de la curva (dy/dx<1).
Thank you
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