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## 12<sup>th</sup> Workshop of the Arthropod Mass Rearing and Quality Control Working Group of the IOBC

### A new Canadian Forest Service State-of-the-Art Insect Rearing and Quarantine Facility



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Natural Resources Canada / Ressources naturelles Canada




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  graph TD
    A[Natural Resources Canada] --> B[Canadian Forest Service]
    B --> C[Great Lakes Forestry Centre]
    C --> D[Insect Production Services]
  
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## Insect Production Services

Insectarium



Quality Control



Methods Development




Quarantine



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## Modernizing Federal Laboratories

- \$10 million (7.1 million €) as part of federal government's economic stimulus package
- \$2 million (1.4 million €) contribution from the provincial Ministry of Natural Resources



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## Invasive Species Centre

- Build state-of-the-art research facility to produce and study domestic and alien invasive forest insect pests



- Renovate existing building to bring together all Insect Production and Quarantine Services.

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## Timeline

- Nov 2009: Award Contract for Design & Construction
- Nov 2009 – Mar 2010: Design Phase & Demolition
- Apr 2010 – March 2011: Construction Phase
- 15 March 2011: Occupancy



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## ISC Facility Functionality

- Domestic Species Zone
- Invasive Species Zone
- Variable Utilization Area (i.e., Domestic or invasive)
- Offices and Support Areas.



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## Domestic Species Zone

- maintain colonies of domestic species
- clean-room area designed to keep air-borne pathogens out
- methods development labs for establishing new colonies
- diet kitchen to support both domestic and invasive species zones
- access restricted to Insect Production personnel.





## Invasive Species Zone

- conduct wide variety of research activities
- maintain colonies of invasive species
- clean-room area designed to prevent insect escape (Plant Pest Containment Level-2)
- controlled access.



## Variable Utilization Area

- future expansion of Invasive Species Zone into the Domestic Species Zone.



## Offices and Support Areas



## Space Allocation

	Current Facility (ft <sup>2</sup> )	New ISC (ft <sup>2</sup> )
Domestic Species Rearing	5370 [499m <sup>2</sup> ]	7120 [661m <sup>2</sup> ] (future reduction to 5400; 502m <sup>2</sup> )
Invasive Species Rearing	1300 [121m <sup>2</sup> ]	2958 [275m <sup>2</sup> ] (future expansion to 4678; 435m <sup>2</sup> )
Quality Control	630 [59m <sup>2</sup> ]	447 [42m <sup>2</sup> ]
Common Areas	-	3810 [354m <sup>2</sup> ]
Offices	-	2800 [260m <sup>2</sup> ]
<b>Total</b>	<b>7300 [679m<sup>2</sup>]</b>	<b>17135 [1592m<sup>2</sup>]</b>



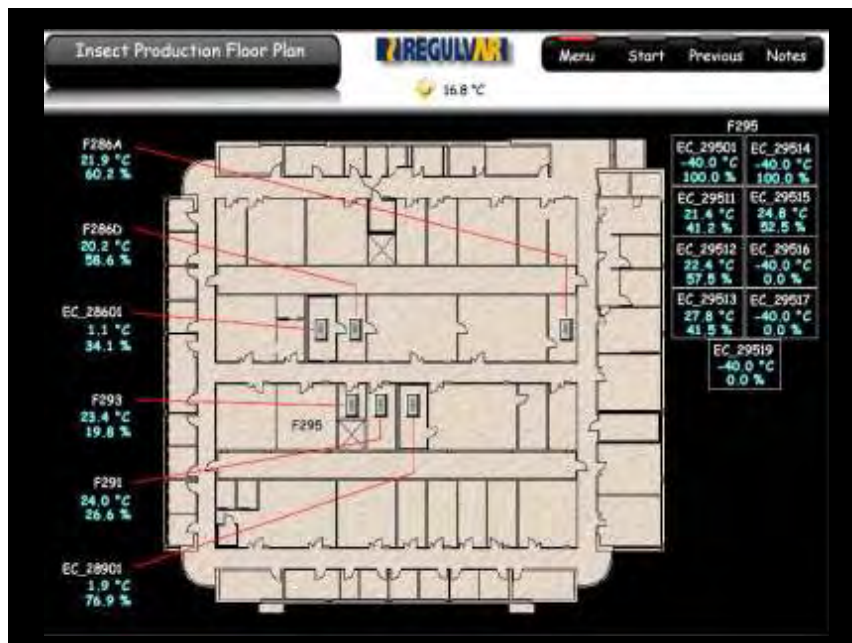
## State-of-the-Art Facility

Telecommunications and  
data cabling systems



## State-of-the-Art Facility

Building Management  
System



Insect Production F286A

REGULVAR

Menu Previous Next Notes

F286A F291 F286D F293 OAT

17.1 °C

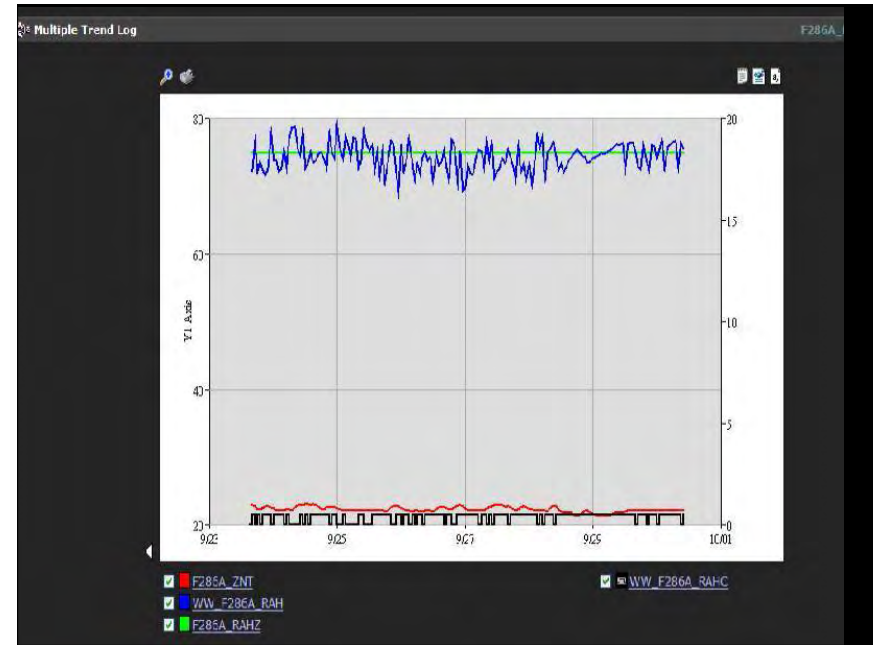
L2 Floor Plan

FA RA SF SA

Humidifier ON

76.0 %RH  
75.0 %RH SP

21.9 °C



Sample Time (Trend 1)	F286A_ZNT	Sample Time (Trend 2)	WW_F286A_RAHC	Sample Time (Trend 3)	F286A_RAHZ	Sample Time (Trend 4)	WW_F286A
20:0/9/23 16:07:00	22.9000	20:0/9/23 16:07:05	72.1687	20:0/9/23 15:27:03	75.0000	20:0/9/23 16:07:03	1
20:0/9/23 17:06:59	22.5000	20:0/9/23 17:07:04	76.5080	20:0/9/23 17:27:02	75.0000	20:0/9/23 17:07:02	0
20:0/9/23 18:06:59	22.4000	20:0/9/23 18:07:04	72.1448	20:0/9/23 15:27:02	75.0000	20:0/9/23 18:07:02	1
20:0/9/23 19:06:59	22.4000	20:0/9/23 19:07:04	73.7013	20:0/9/23 15:27:02	75.0000	20:0/9/23 19:07:02	0
20:0/9/23 20:06:59	22.5000	20:0/9/23 20:07:04	72.4354	20:0/9/23 20:27:02	75.0000	20:0/9/23 20:07:02	1
20:0/9/23 21:06:59	22.5000	20:0/9/23 21:07:04	71.6497	20:0/9/23 21:27:02	75.0000	20:0/9/23 21:07:02	1
20:0/9/23 22:06:59	22.5000	20:0/9/23 22:07:04	72.4423	20:0/9/23 22:27:02	75.0000	20:0/9/23 22:07:02	1
20:0/9/23 23:06:59	22.7000	20:0/9/23 23:07:03	77.5622	20:0/9/23 23:27:01	75.0000	20:0/9/23 23:07:01	0
20:0/9/24 00:06:59	22.5000	20:0/9/24 00:07:03	73.8134	20:0/9/24 00:27:01	75.0000	20:0/9/24 00:07:01	1
20:0/9/24 01:06:57	22.2000	20:0/9/24 01:07:02	73.7618	20:0/9/24 01:27:01	75.0000	20:0/9/24 01:07:01	1
20:0/9/24 02:06:59	22.1000	20:0/9/24 02:07:03	71.3816	20:0/9/24 02:27:01	75.0000	20:0/9/24 02:07:01	1
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20:0/9/24 04:06:59	22.2000	20:0/9/24 04:07:02	75.5853	20:0/9/24 04:27:00	75.0000	20:0/9/24 04:07:02	0
20:0/9/24 05:06:59	22.5000	20:0/9/24 05:07:02	72.8213	20:0/9/24 05:27:00	75.0000	20:0/9/24 05:07:02	1
20:0/9/24 06:06:59	22.3000	20:0/9/24 06:07:01	77.7377	20:0/9/24 06:26:59	75.0000	20:0/9/24 06:06:59	0
20:0/9/24 07:06:57	22.2000	20:0/9/24 07:07:02	78.8332	20:0/9/24 07:27:00	75.0000	20:0/9/24 07:07:00	0
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20:0/9/24 09:06:59	22.2000	20:0/9/24 09:07:01	75.5447	20:0/9/24 09:27:00	75.0000	20:0/9/24 09:07:00	0
20:0/9/24 10:06:59	22.3000	20:0/9/24 10:07:01	74.8089	20:0/9/24 10:26:59	75.0000	20:0/9/24 10:06:59	1
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20:0/9/24 13:06:54	23.1000	20:0/9/24 13:06:59	73.4019	20:0/9/24 13:26:58	75.0000	20:0/9/24 13:06:59	0
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20:0/9/24 16:06:52	22.5000	20:0/9/24 16:06:57	73.7532	20:0/9/24 15:26:56	75.0000	20:0/9/24 16:06:59	1
20:0/9/24 17:06:52	22.7000	20:0/9/24 17:06:57	74.8626	20:0/9/24 17:26:55	75.0000	20:0/9/24 17:06:59	1
20:0/9/24 18:06:52	22.4000	20:0/9/24 18:06:57	74.5694	20:0/9/24 17:26:55	75.0000	20:0/9/24 18:06:59	1
20:0/9/24 19:06:51	22.3000	20:0/9/24 19:06:57	73.5994	20:0/9/24 19:26:55	75.0000	20:0/9/24 19:06:59	1
20:0/9/24 20:06:51	22.6000	20:0/9/24 20:06:57	72.7071	20:0/9/24 20:26:55	75.0000	20:0/9/24 20:06:59	1
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20:0/9/25 00:06:49	22.5000	20:0/9/25 00:06:55	78.8188	20:0/9/25 00:26:53	75.0000	20:0/9/25 00:06:53	0

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## State-of-the-Art Facility

Differential Air pressure monitoring

Canada



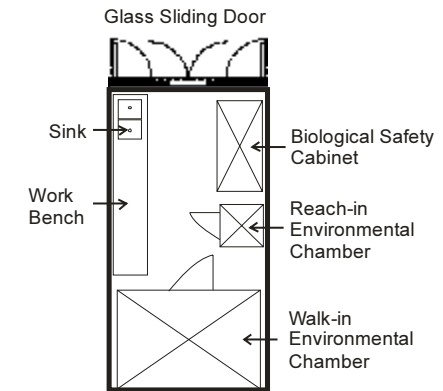
## State-of-the-Art Facility

Variable Utilization Area



## State-of-the-Art Facility

Modular design



## State-of-the-Art Facility

Clean-Room Technology



- HEPA filtered air supply
- Pressurization of room air
- HEPA filtered Air Curtains at access points to the quarantine zone
- Dehumidification capability throughout entire facility, including environmental chambers
- Clean-room floor and wall finishes
- Pass through double-door autoclaves
- HEPA filtered central vacuum systems
- Services to walk-in environmental chambers and cold rooms accessible from outside of clean-room areas.



## State-of-the-Art Facility

Security

- Electronic swipe card access
- All of our systems are connected to the Building Management System
- Redundant alarms controlled by BMS
  - On-site audible alarms
  - 24h Security desk
  - Day-shift engineer
  - Computer work stations
  - Email and telephone notification
- Emergency generators for essential systems





[www.insect.glfc.forestry.ca](http://www.insect.glfc.forestry.ca)



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