Diagnóstico de Problemas en Plantas y Envío de Muestras para Diagnosis

Laboratorio de Enfermedades de Plantas de la Universidad Estatal de Oregón

Clínica de Plantas

OSU
Oregon State University
Hermiston Agricultural Research & Extension Center

Robert Cating, Ph.D.
Laboratorio de Patología
Gerente/Diagnosticador
OSU/HAREC
Hermiston, OR
Robert.Cating@oregonstate.edu
541-567-8321

Washington State University

Jenny Rebecca Glass
Diagnosticadora
WSU Puyallup REC
2606 West Pioneer
Puyallup, WA
jennyglass@wsu.edu
253-445-4582

Qué hacemos:

Determine la causa de los problemas en las plantas

- Estrés abióticos
  - Dificiencias nutricionales
  - Daño mecánico
  - La contaminación del aire
- Enfermedades de plantas
  - Virus
  - Bacterias
  - Hongos
  - Fitoplasmas
  - Nematodos

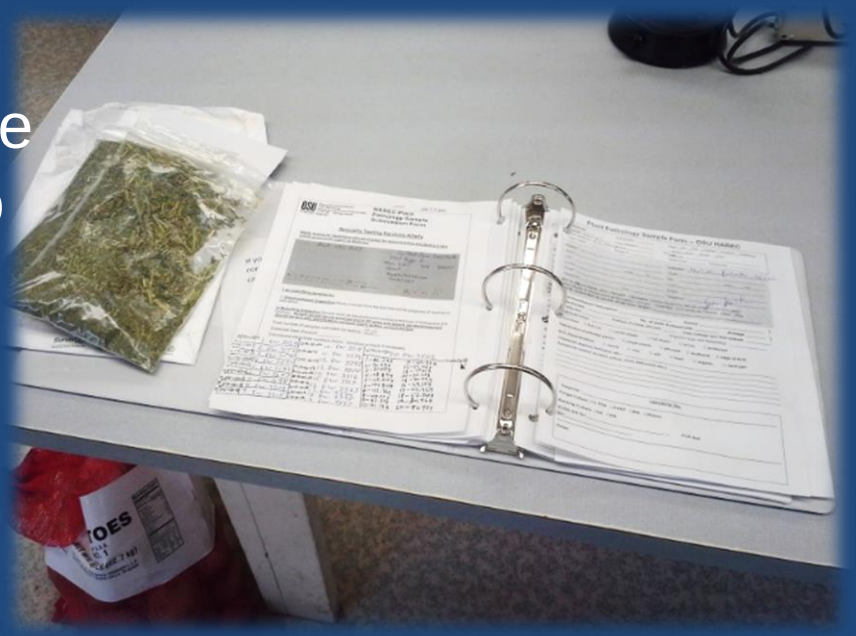
¿Que está dañando las plantas y por qué?

- Algunos laboratorios ofrecen servicios de identificación de artrópodos (insectos)

¡Examinen, no adivinen!

¿Cómo hacemos esto?

- Colectar información
  - Fecha, variedad, el porcentaje afectado, cultivo anterior, tipo de riego, exposición al sol, distribución, historia de aplicaciones de químicos



OSU Oregon State

Extension Plant Pathology
Oregon State University
Hermiston Agricultural Research & Extension Center
2121 South 1st Street
Hermiston, OR 97838
541-567-8321

HAREC Plant Pathology Sample Submission Form

Office use:
Date Rec.____
PCE#_____

Grower: _____ **Submitter:** _____
Street: _____ Street: _____
City: _____ State_____ Zip_____ City: _____ State_____ Zip_____
County_____ County_____
E-mail: _____ E-mail: _____
Telephone: _____ Fax_____ Telephone: _____ Fax_____

Bill to (Must check one): □Grower □Submitter (General Sample Fee: $60.00; additional fees may apply)
Send results to (Please check all that apply): □Grower □Submitter Send results via: □E-mail □Mail □Fax

Host/Plant: _____ **Variety:** _____
Date Planted: _____ **Number of years at present site:** _____
Previous crops: _____
Acreage: _____ **% Affected:** _____ **Number of plants affected:** _____
Exposure: □ full sun □ partial shade □ full shade □ windy □ protected
Distribution of affected plants: □ single plants □ grouped □ scattered □ edge of field
Soil characteristics: □ sandy □ clay □ silt □ loam □ organic □ hard pan
Irrigation type and frequency: _____
Fertilizer Applications (product, rate, frequency):_____
Pesticide Applications (Insecticides, Fungicides, Herbicides, rates, frequency, etc.):_____
_____
Date damage was first noticed: _____
Symptoms: Circle all that apply.

Leaves		Stems		Fruit		Roots	
Wilting	Misshaped	Stunting	Wilting	Spots	Holes	Rotten	Stunting
Yellowing	Curling	Spots	Misshaped	Misshaped	Sticky	Discolored	Sparse
Chlorosis	Spots	Brittle	Cracks	Discolored		Shallow Growth	Dry/Brittle
Browning	Discolored	Streaking	Lodging	Rotten		Misshaped	
Early Drop	Tattered	Exuding Sap		Streaking		Easily Uprooted	
Brittle	Mosaic	Holes		Early Drop		Bumps	
Rotting		Discolored		Cracks		Streaking	

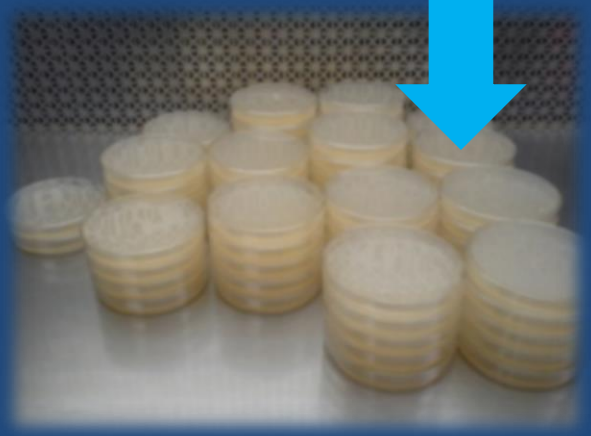
Additional Symptoms:

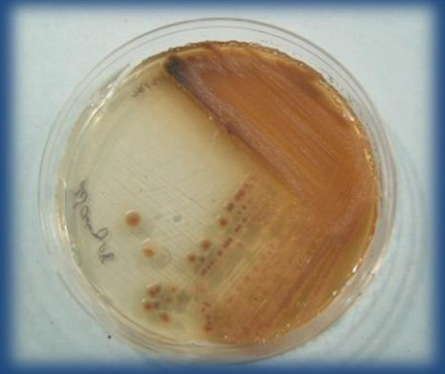
¿Cómo hacemos esto?

Examen inicial

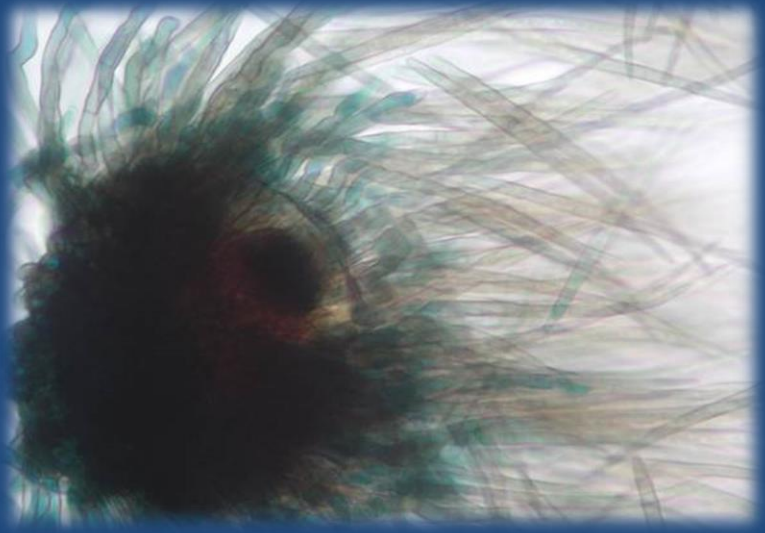
- Raíces, tallos, hojas, tubérculos, frutas
- Síntomas
- Signos

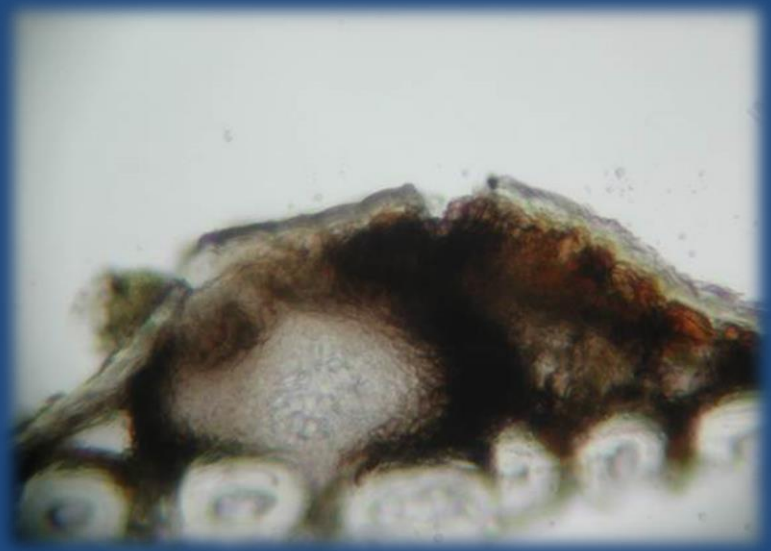
¿Qué debemos hacer?





¿Cómo hacemos esto? Microscopía



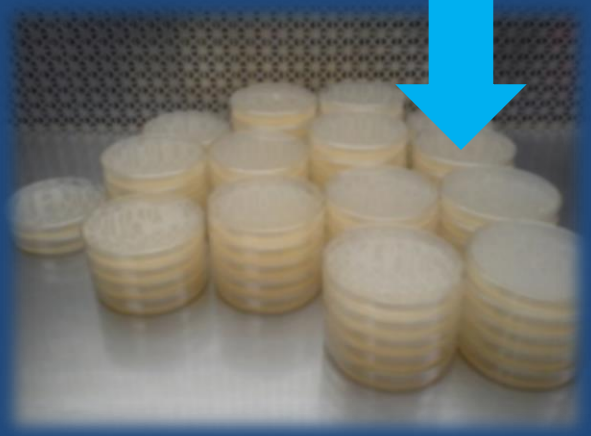


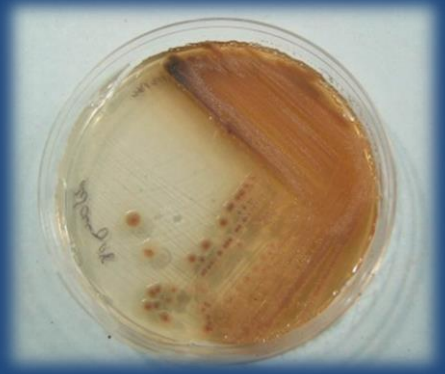
¿Cómo hacemos esto?

Examen inicial

- Raíces, tallos, hojas, tubérculos, frutas
- Síntomas
- Signos

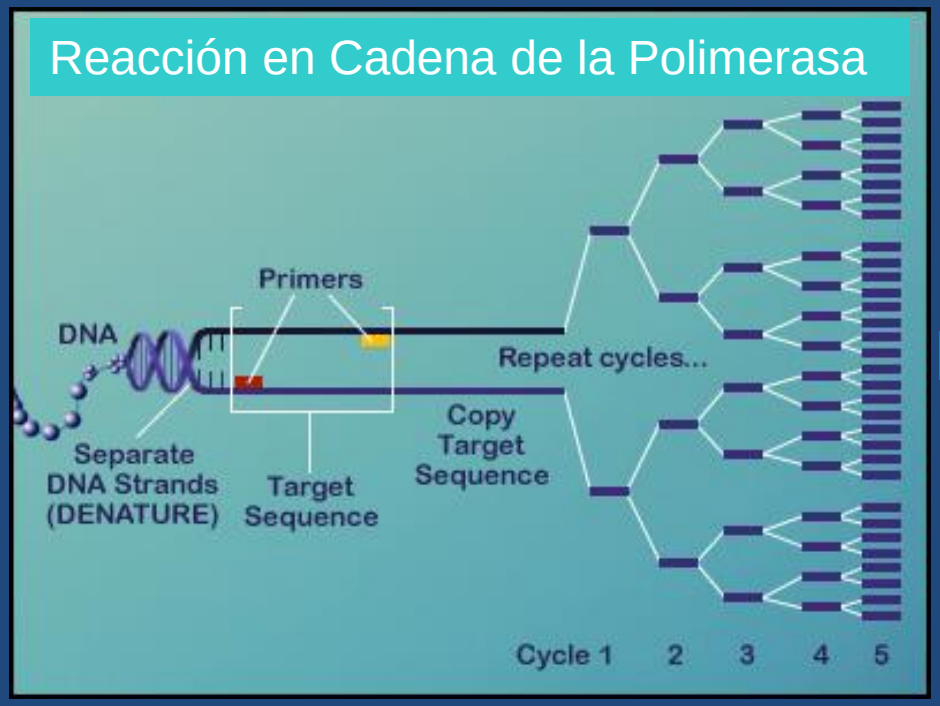
¿Qué debemos hacer?

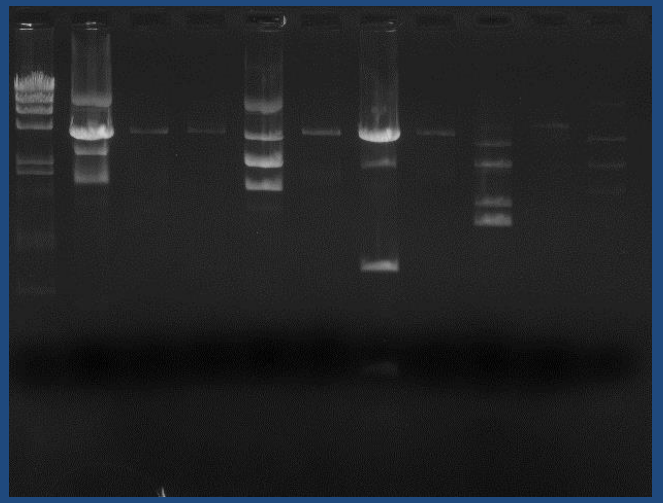




¿Cómo hacemos esto? Ensayos de PCR

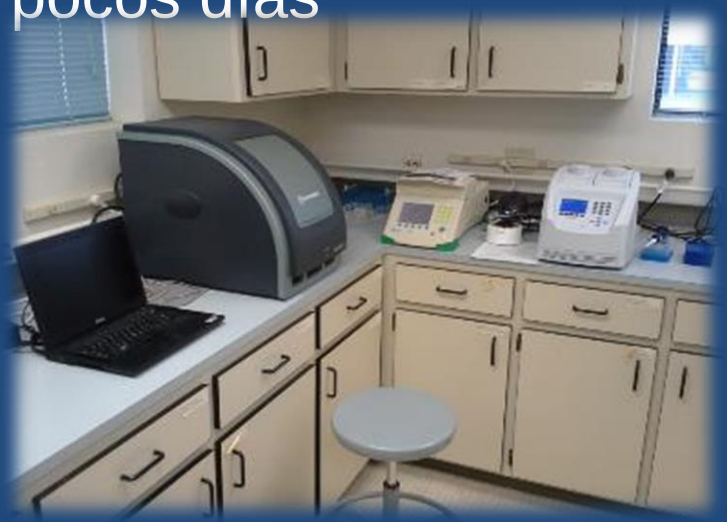
- Virus
- Fitoplasmas
- Otros organismos que no se pueden cultivar o son difíciles de cultivar

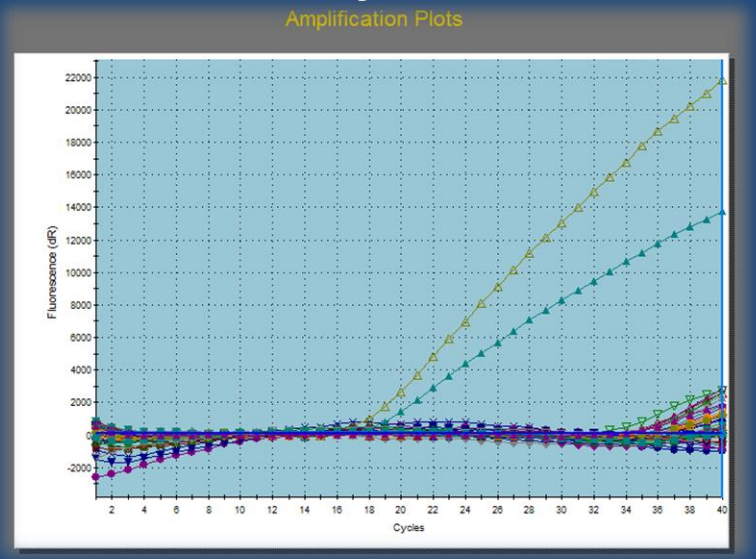




¿Cómo hacemos esto?
Ensayos de PCR

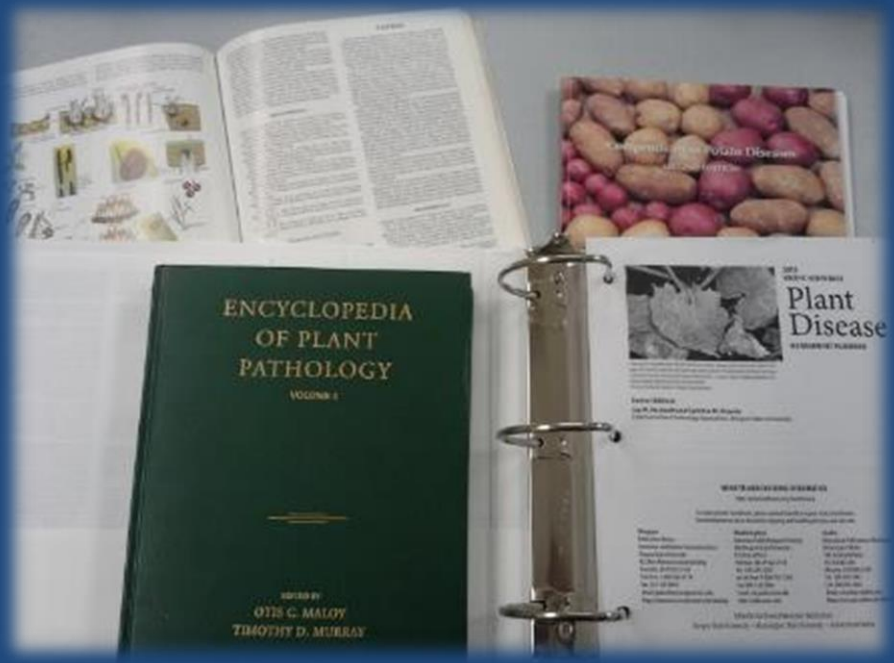
- PCR aumenta el nivel de detección, incluso para patógenos latentes
- Puede detectar organismos y genes de interés
  - La mayoría de los virus
  - Fitoplasmas
  - Bacterias
  - Hongos
- Nuevos iniciadores pueden ser diseñados y ordenados en pocos días





Resultados

- ¿Son los resultados consistentes con los síntomas, la distribución, y la historia del campo?
- En otras palabras, a partir del las pruebas encontradas, ¿cual es la causa?
- Determine el diagnóstico




OSU Oregon State

Extension Plant Pathology Laboratory
Hermiston Agricultural Research and Extension Center

Plant Pathology Laboratory Results

Contact:
PCE #: 013-297
Report Date: 10/16/2013

Crop/Sample: Potato
Diagnosis: NEGATIVE for Zebra Chip

This report is regarding the potato tubers submitted to the OSU HAREC Plant Pathology Lab to be tested for the Candidatus Liberibacter solanacearum (Lso), the bacterium that causes zebra chip (ZC) disease in potatoes.

Each tuber was cut and examined for symptoms consistent with ZC. After gross examination, the tubers were grouped into groups of 4 and tissue samples were taken and pooled for DNA extraction (12 tubers into 3 groups). DNA extraction was performed using the Deligenia DNA extraction technique and a conventional PCR was performed on each DNA extraction using ZC specific primers Clipo-F and O126, amplifying a1070 bp fragment.

In addition to conventional PCR, high-fidelity PCR, which is more sensitive in the presence of plant tissue (Coring, R.A., Hoy, M.A., and Peterson, A.J. 2012. Plant Disease 96: 488-495) was performed using primer pair Clipo-F and O126.

The conventional and high-fidelity PCR results were NEGATIVE.

If you have any questions about these results please contact Robert Cating at the E-mail address or phone number below.

Robert A Cating, Ph.D.
Extension Plant Pathology Laboratory
Oregon State University
Hermiston Agricultural Research & Extension Center
2121 S. 1st Street
Hermiston, OR 97838
541-567-8321
Robert.cating@oregonstate.edu

Cómo seleccionar muestras de plantas

La selección de muestras de plantas

- Envie la planta entera si es posible
  - Raíces, tallos, hojas, suelo, etc.
  - Excave el suelo para sacar la planta completa, si es posible
- Escoja las plantas en diferentes etapas de la enfermedad, no solamente las peores plantas
- Las muestras deben ser lo más frescas posible

Cómo enviar muestras de plantas

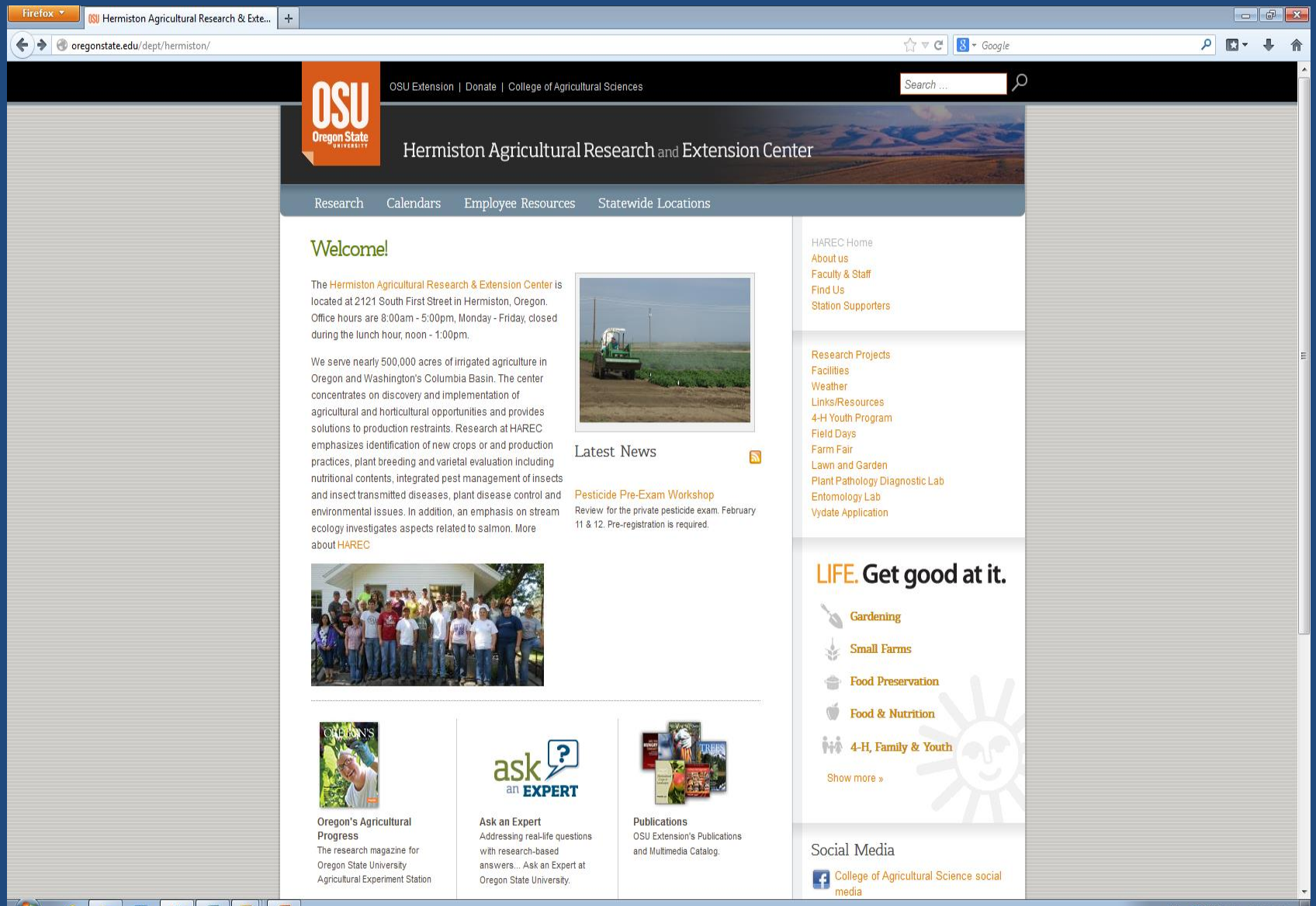
- Envie las muestras en la noche o al día siguente
- Evite enviar muestras los fines de semana
- Guarde las muestras en lugares frescos y secos
- Envuelva las raíces en una toalla húmeda y póngala en una bolsa de plástico
- Envie las muestras en una caja

Qué debe enviar con las muestras de las plantas

- Llene el formato diagnóstico
- Proporcione toda la información posible
- Qué, cuándo, dónde, cómo….
- Fotos son muy útiles
  - Fotos de cerca
  - Fotos del campo

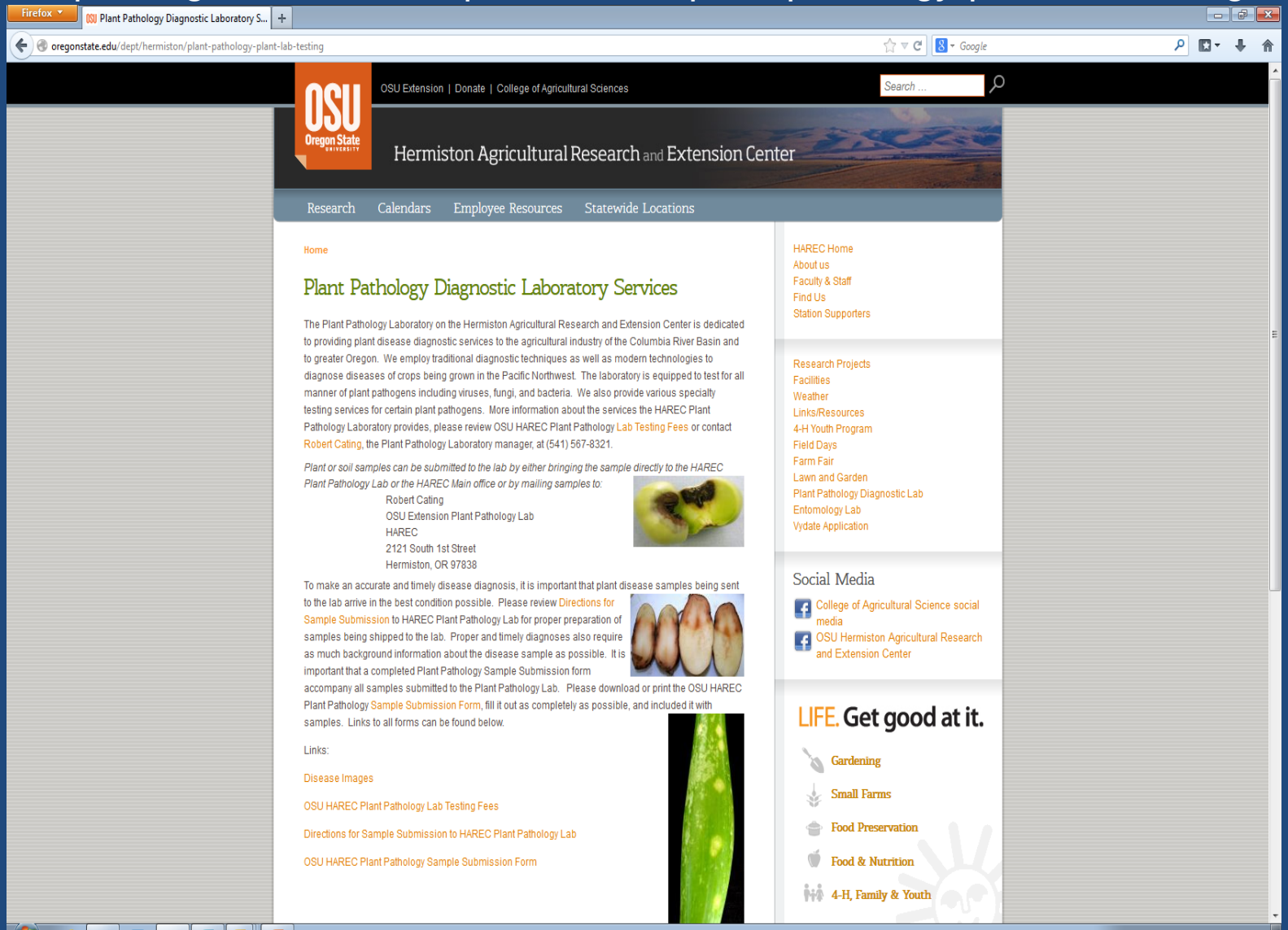
Oregon State University OSU Hermiston Agricultural Research & Extension Center

OSU Hermiston
http://oregonstate.edu/dept/hermiston/

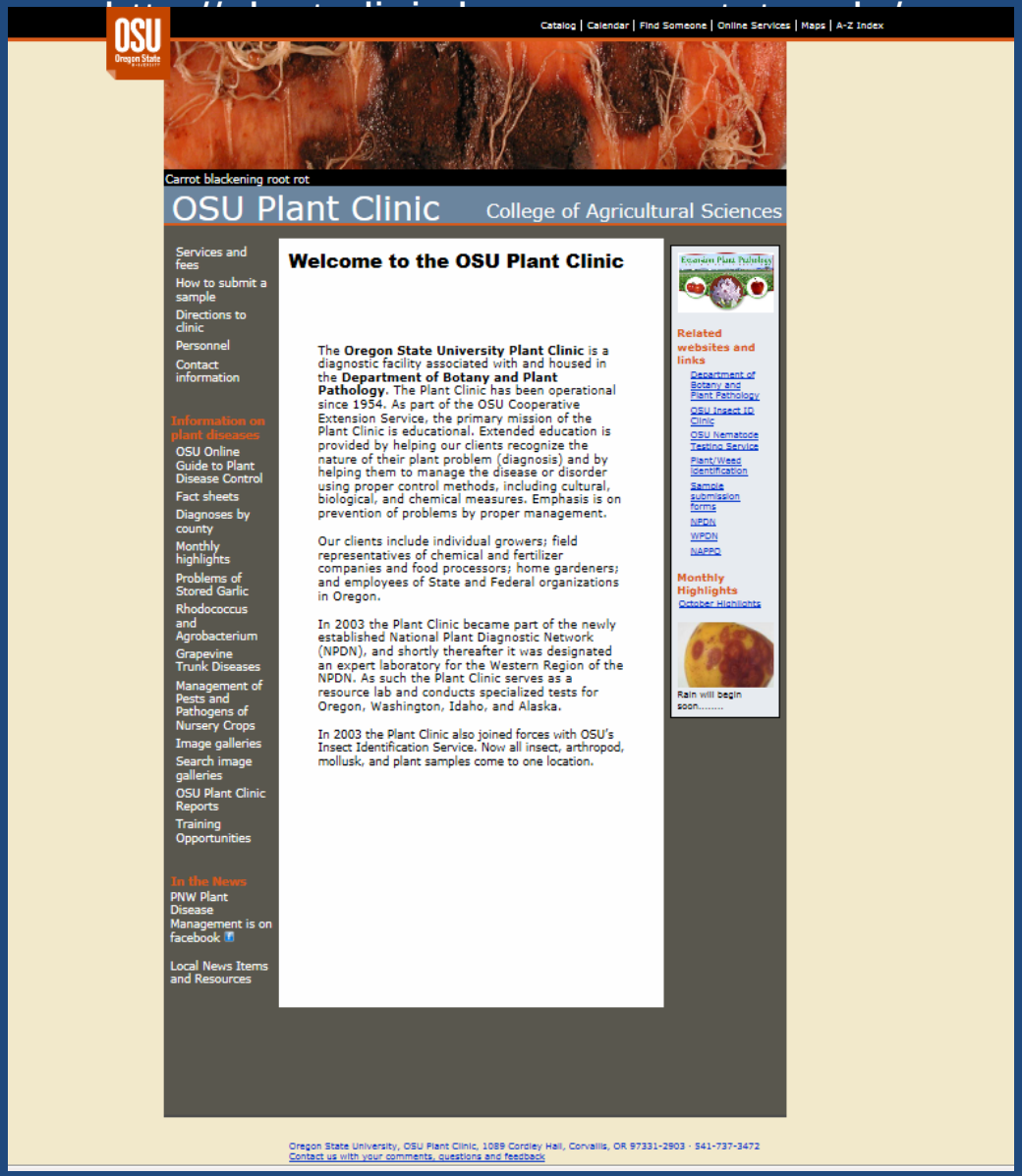


Laboratorio de Diagnóstico de Enfermedades de Plantas, Hermiston, OR

http://oregonstate.edu/dept/hermiston/plant-pathology-plant-lab-testing

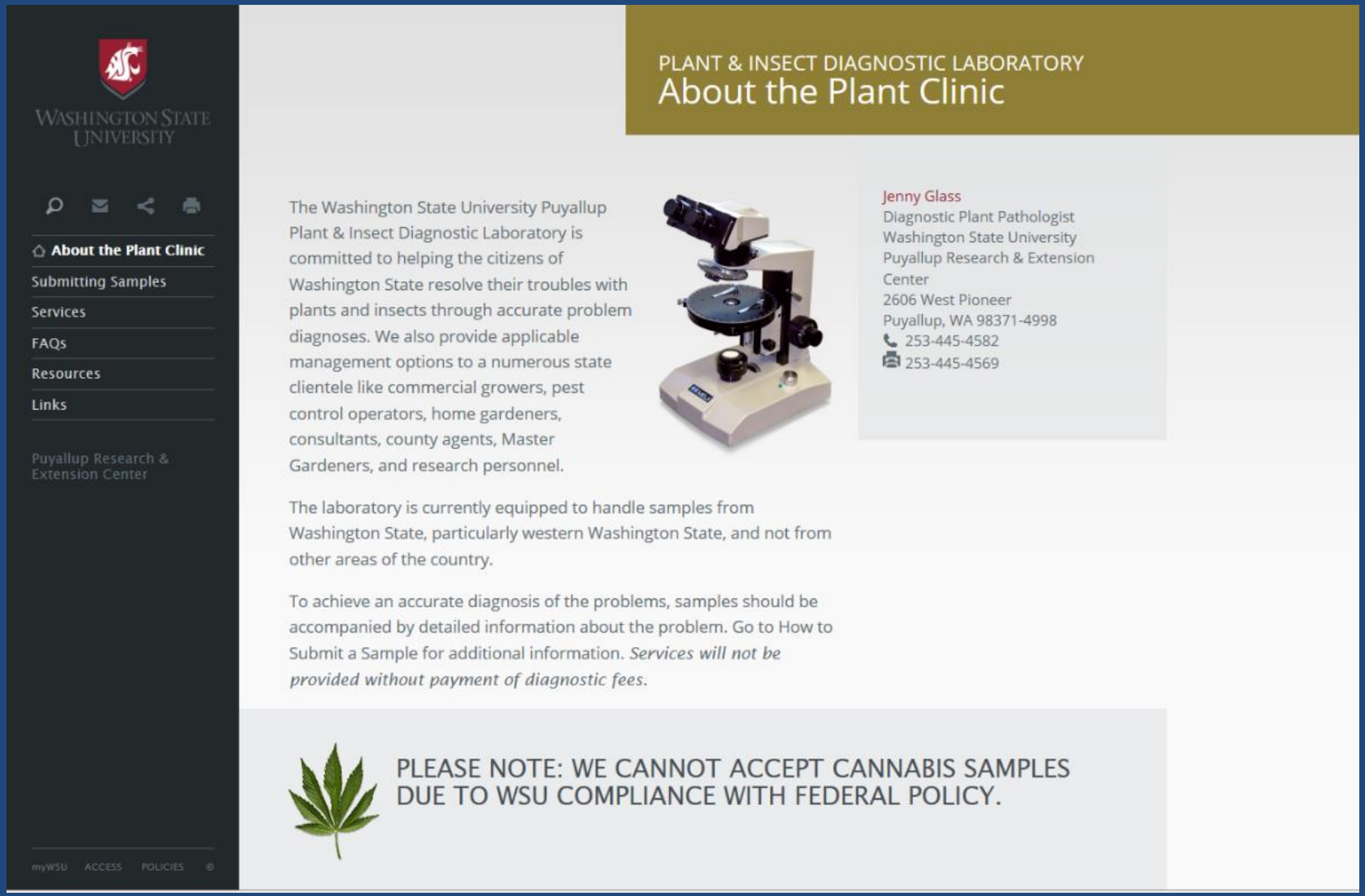


Clínica de Plantas de la Universidad Estatal de Oregón, Corvallis



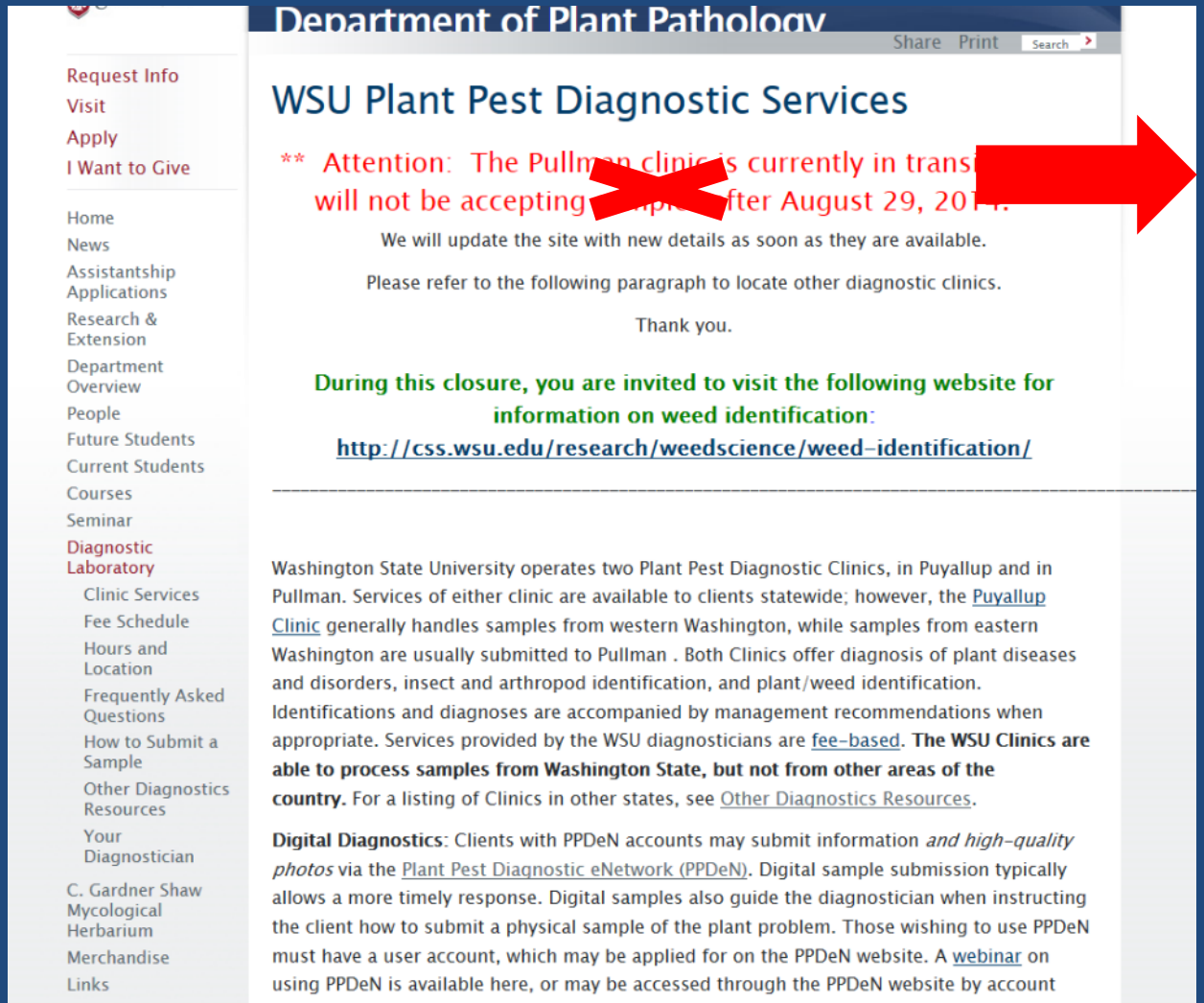
Laboratorio de Diagnóstico de Plantas de la Universidad Estatal de Washington, Puyallup

http://puyallup.wsu.edu/plantclinic/



Clínica de Diagnóstico de Plagas de Plantas de la Universidad Estatal de Washington, Pullman

http://plantpath.wsu.edu/diagnostics/



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- Your Diagnostician

C. Gardner Shaw Mycological Herbarium
Merchandise
Links

WSU Plant Pest Diagnostic Services

** Attention: The Pullman clinic is currently in transi
will not be accepting [illegible] after August 29, 2014.

We will update the site with new details as soon as they are available.

Please refer to the following paragraph to locate other diagnostic clinics.

Thank you.

During this closure, you are invited to visit the following website for information on weed identification:
http://css.wsu.edu/research/weedscience/weed-identification/

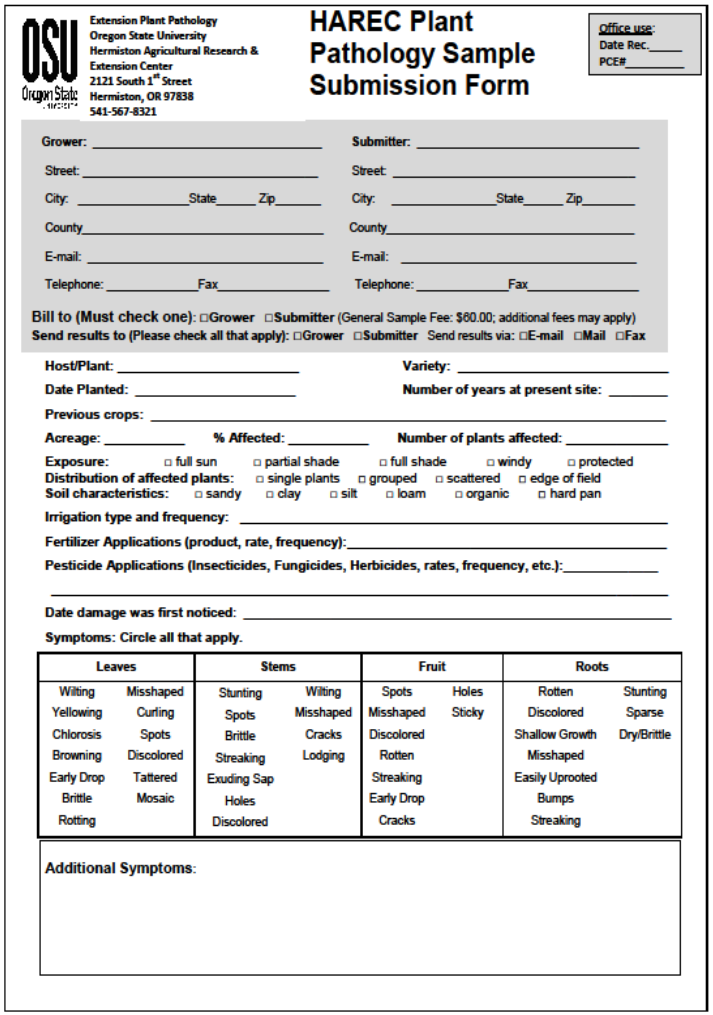
Washington State University operates two Plant Pest Diagnostic Clinics, in Puyallup and in Pullman. Services of either clinic are available to clients statewide; however, the Puyallup Clinic generally handles samples from western Washington, while samples from eastern Washington are usually submitted to Pullman . Both Clinics offer diagnosis of plant diseases and disorders, insect and arthropod identification, and plant/weed identification. Identifications and diagnoses are accompanied by management recommendations when appropriate. Services provided by the WSU diagnosticians are fee-based. **The WSU Clinics are able to process samples from Washington State, but not from other areas of the country.** For a listing of Clinics in other states, see Other Diagnostics Resources.

Digital Diagnostics: Clients with PPDeN accounts may submit information *and high-quality photos* via the Plant Pest Diagnostic eNetwork (PPDeN). Digital sample submission typically allows a more timely response. Digital samples also guide the diagnostician when instructing the client how to submit a physical sample of the plant problem. Those wishing to use PPDeN must have a user account, which may be applied for on the PPDeN website. A webinar on using PPDeN is available here, or may be accessed through the PPDeN website by account

Vuelve abrir Diciembre 2015

plant.clinic@wsu.edu

Formato de Diagnóstico



Extension Plant Pathology
Oregon State University
Hermiston Agricultural Research & Extension Center
2121 South 1st Street
Hermiston, OR 97838
541-567-8321

HAREC Plant Pathology Sample Submission Form

Office use:
Date Rec.____
PCE#_____

Grower: _____ Submitter: _____

Street: _____ Street: _____

City: _____State_____ Zip_____ City: _____State_____ Zip_____

County_____ County_____

E-mail: _____ E-mail: _____

Telephone: _____Fax_____ Telephone: _____Fax_____

Bill to (Must check one): □Grower □Submitter (General Sample Fee: $60.00; additional fees may apply)
Send results to (Please check all that apply): □Grower □Submitter Send results via: □E-mail □Mail □Fax

Host/Plant: _____ **Variety:** _____

Date Planted: _____ **Number of years at present site:** _____

Previous crops: _____

Acreage: _____ **% Affected:** _____ **Number of plants affected:** _____

Exposure: □ full sun □ partial shade □ full shade □ windy □ protected
Distribution of affected plants: □ single plants □ grouped □ scattered □ edge of field
Soil characteristics: □ sandy □ clay □ silt □ loam □ organic □ hard pan

Irrigation type and frequency: _____

Fertilizer Applications (product, rate, frequency): _____

Pesticide Applications (Insecticides, Fungicides, Herbicides, rates, frequency, etc.): _____

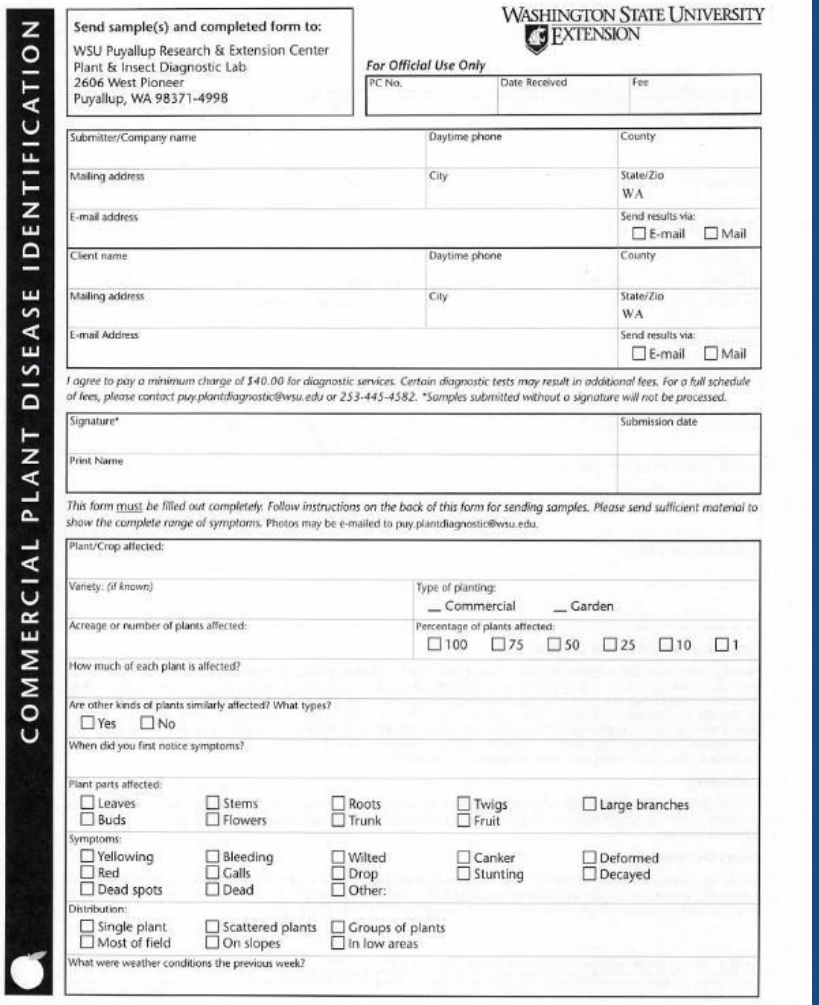
_____

Date damage was first noticed: _____

Symptoms: Circle all that apply.

Leaves		Stems		Fruit		Roots	
Wilting	Misshaped	Stunting	Wilting	Spots	Holes	Rotten	Stunting
Yellowing	Curling	Spots	Misshaped	Misshaped	Sticky	Discolored	Sparse
Chlorosis	Spots	Brittle	Cracks	Discolored		Shallow Growth	Dry/Brittle
Browning	Discolored	Streaking	Lodging	Rotten		Misshaped	
Early Drop	Tattered	Exuding Sap		Streaking		Easily Uprooted	
Brittle	Mosaic	Holes		Early Drop		Bumps	
Rotting		Discolored		Cracks		Streaking	

Additional Symptoms:



COMMERCIAL PLANT DISEASE IDENTIFICATION

Send sample(s) and completed form to:
WSU Puyallup Research & Extension Center
Plant & Insect Diagnostic Lab
2606 West Pioneer
Puyallup, WA 98371-4998

WASHINGTON STATE UNIVERSITY EXTENSION

For Official Use Only

PC No.	Date Received	Fee

Submitter/Company name	Daytime phone	County
Mailing address	City	State/Zip WA
E-mail address		Send results via: ☐ E-mail ☐ Mail

Client name	Daytime phone	County
Mailing address	City	State/Zip WA
E-mail Address		Send results via: ☐ E-mail ☐ Mail

*I agree to pay a minimum charge of $40.00 for diagnostic services. Certain diagnostic tests may result in additional fees. For a full schedule of fees, please contact puy.plantdiagnostic@wsu.edu or 253-445-4582. *Samples submitted without a signature will not be processed.*

Signature*	Submission date
Print Name	

This form must be filled out completely. Follow instructions on the back of this form for sending samples. Please send sufficient material to show the complete range of symptoms. Photos may be e-mailed to puy.plantdiagnostic@wsu.edu.

Plant/Crop affected:

Variety: *(if known)* | Type of planting: ___ Commercial ___ Garden

Acreage or number of plants affected: | Percentage of plants affected: ☐100 ☐75 ☐50 ☐25 ☐10 ☐1

How much of each plant is affected?

Are other kinds of plants similarly affected? What types?
☐ Yes ☐ No

When did you first notice symptoms?

Plant parts affected:
☐ Leaves ☐ Stems ☐ Roots ☐ Twigs ☐ Large branches
☐ Buds ☐ Flowers ☐ Trunk ☐ Fruit

Symptoms:
☐ Yellowing ☐ Bleeding ☐ Wilted ☐ Canker ☐ Deformed
☐ Red ☐ Galls ☐ Drop ☐ Stunting ☐ Decayed
☐ Dead spots ☐ Dead ☐ Other:

Distribution:
☐ Single plant ☐ Scattered plants ☐ Groups of plants
☐ Most of field ☐ On slopes ☐ In low areas

What were weather conditions the previous week?

¿Preguntas?

Agradecimientos:

PNVA

www.pnva.org

PNW-VEG

http://mtvernon.wsu.edu/path_team/vegpath_team.htm