



## Management of foliar diseases of lentils, chickpeas, and field peas

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# Management of foliar diseases

lentils, chickpeas, and field peas

## 1. Sources of Ascochyta disease outbreaks

A subject of critical importance given increases in chickpea acreage, new chickpea producers





# Review

## Etiology – Ascochyta of lentils, field peas, and chickpeas

**Different pathogens cause Ascochyta on chickpeas, field peas, and lentils.**

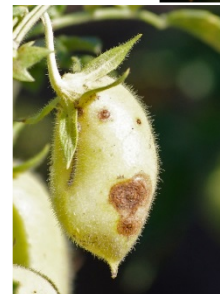
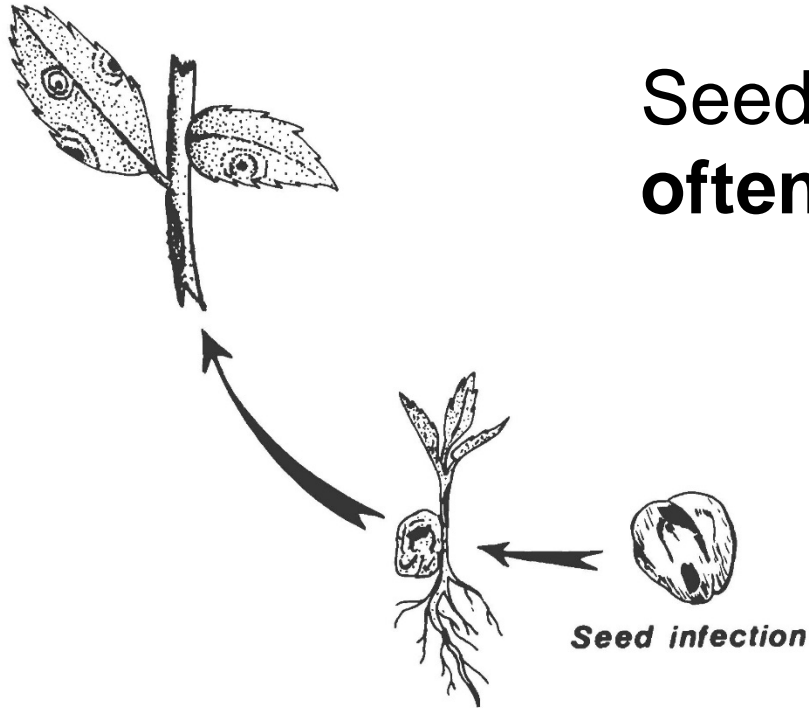
- the causal pathogens are different for each crop
- ... but the biology of each pathogen is similar



# Initial introduction of *Ascochyta* blight

Transmission of disease from infected seed to seedlings.

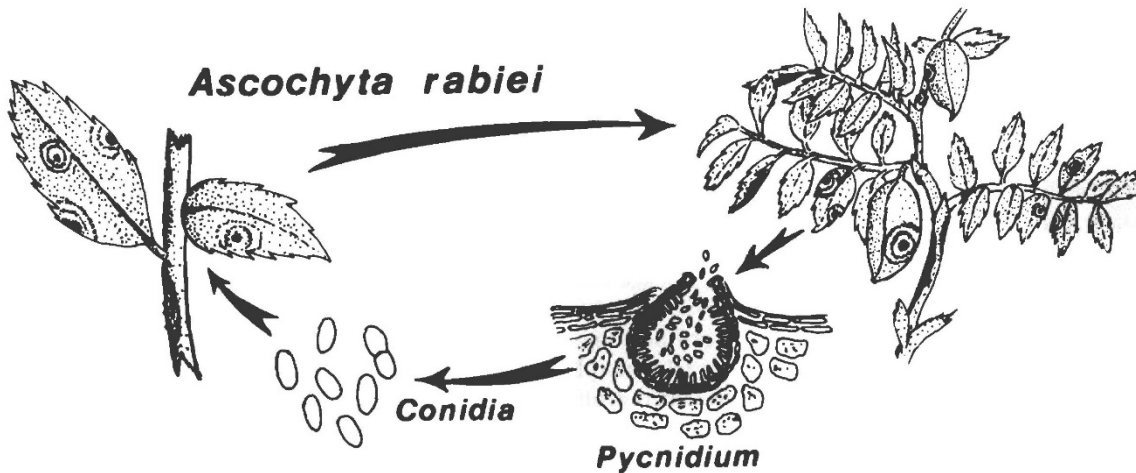
Seeds within diseased pods are often infected with *Ascochyta*



# Local, in-season movement of *Ascochyta*

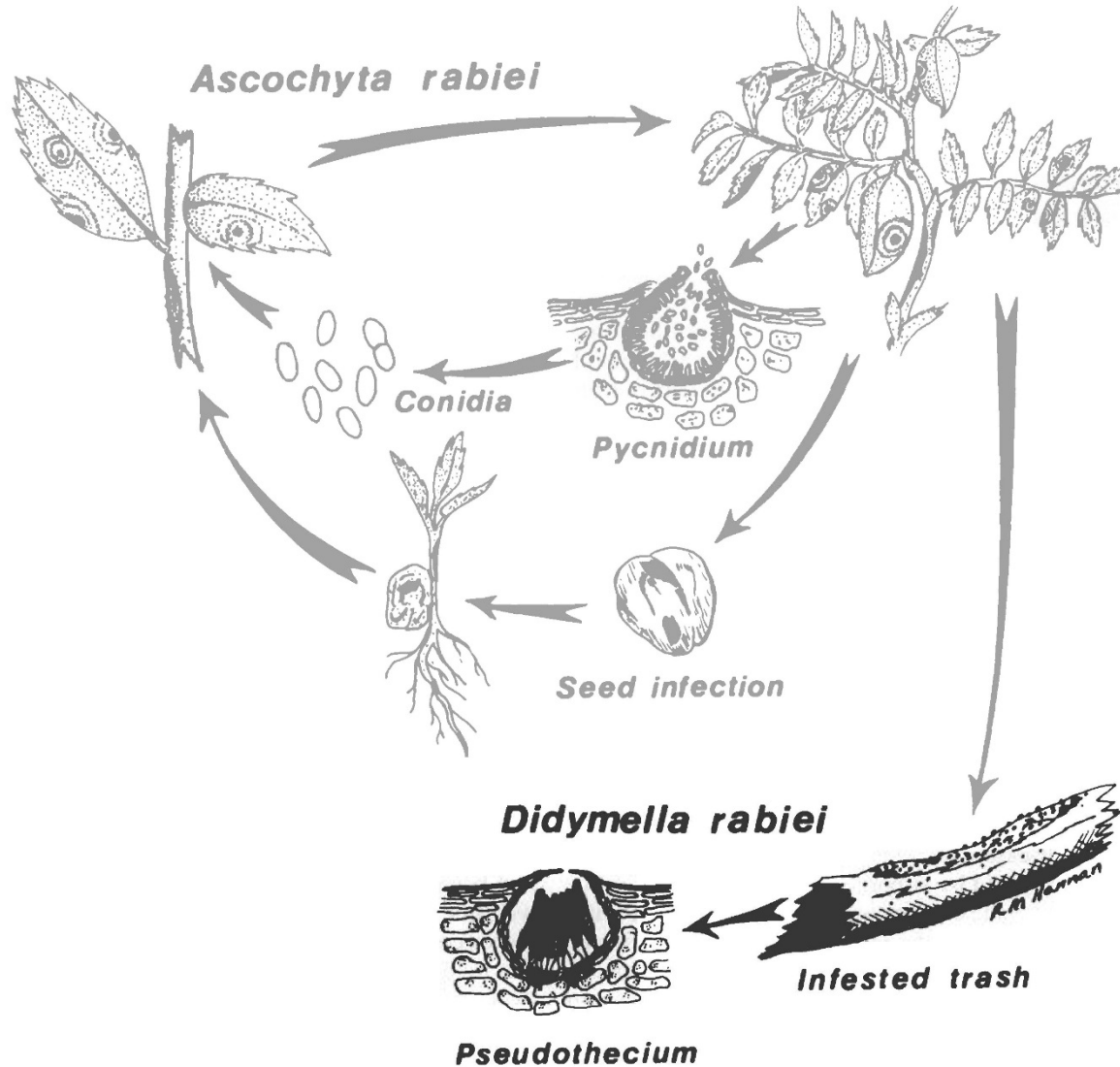
Spores produced on diseased tissue

Spores produced on disease lesions **move short distances** via **splash dispersal, wind-driven rain**



# Long-distance movement of *Ascochyta*

Spores produced on overwintered crop residues



Sexually produced ascospores are produced on overwintered infested residues.

Can be **carried aloft by air currents**



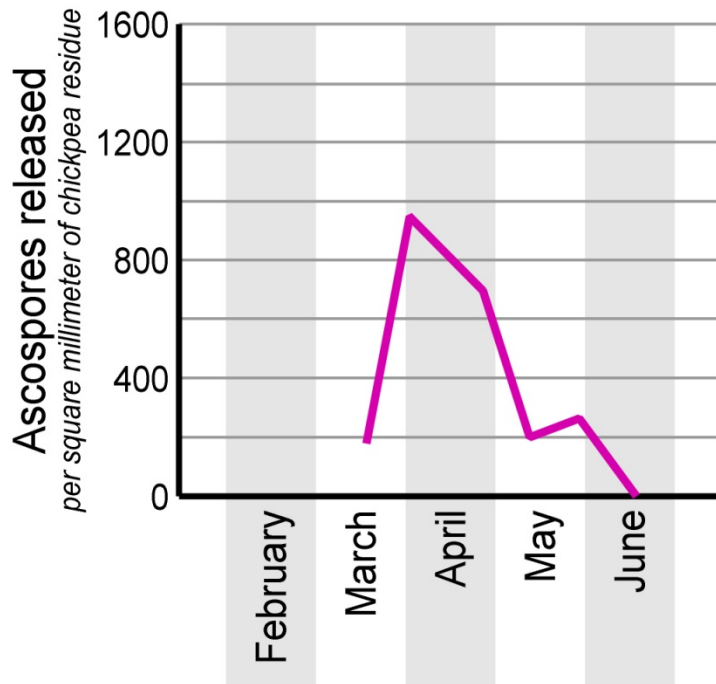
# Long-distance movement of *Ascochyta*

## Spores produced on overwintered crop residues

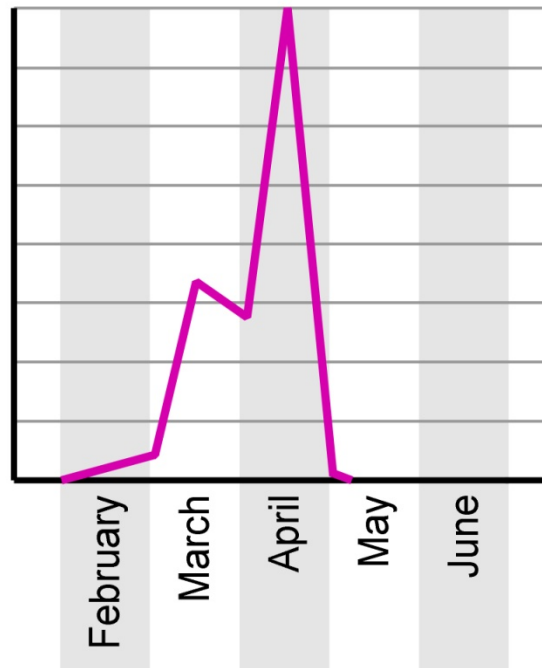
**The release of ascospores from overwintered residues can be significant:**

200-1,600 ascospores/mm<sup>2</sup> per day recorded in Pacific NW

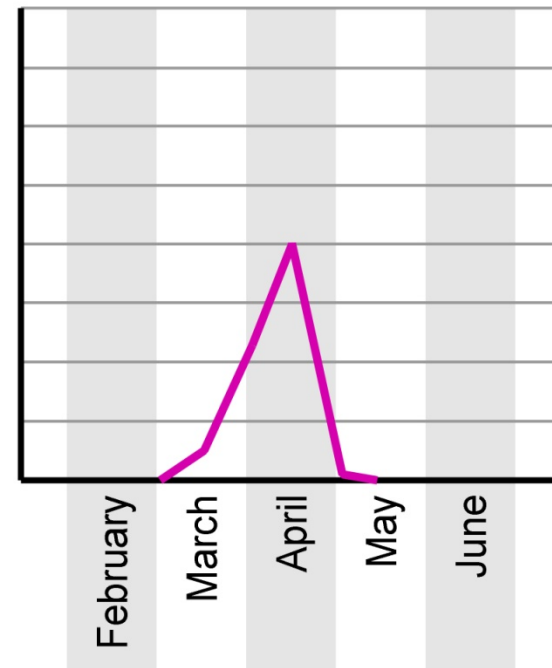
**Genesee, ID**  
1985-1986



**Genesee, ID**  
1986-1987



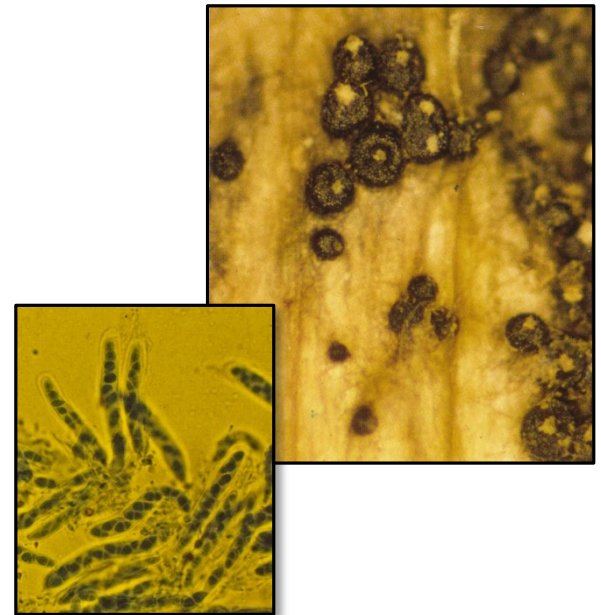
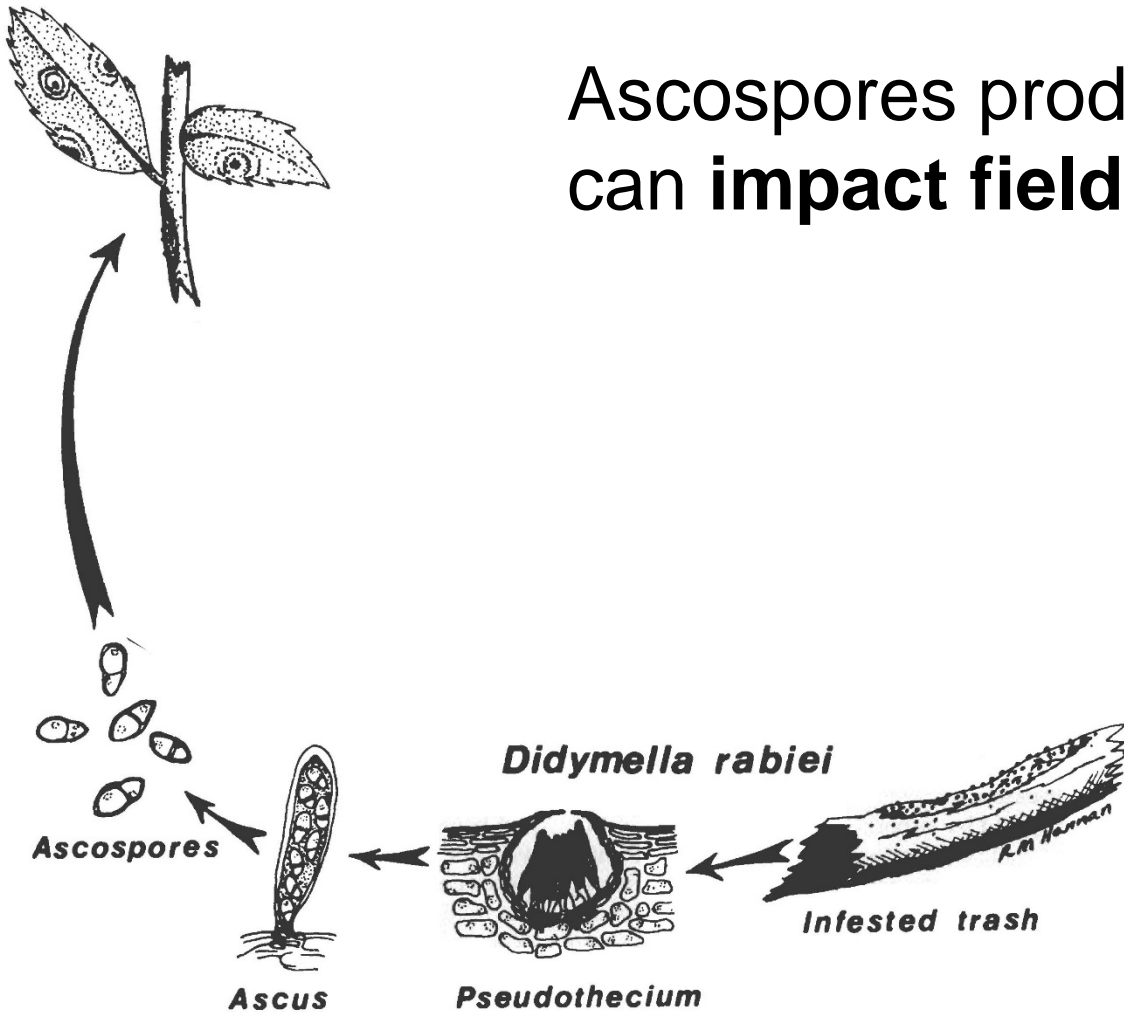
**Pullman, WA**  
1986-1987



# Long-distance movement of Ascochyta

Spores produced on overwintered crop residues

Ascospores produced on residues can **impact fields miles away.**





# Long-distance movement of *Ascochyta*

The experience from Washington and Idaho

**Pre-1983:** No *Ascochyta* blight known to occur in Washington or Idaho

**1983:** *Ascochyta* blight observed in chickpea variety trials in Pullman, WA

SOURCE:

Walter J. Kaiser

Plant pathologist (retired), USDA-ARS in Prosser, WA

Kaiser 1997. **Can. J. Plant Pathology** 19(2):214-224

# Long-distance movement of *Ascochyta*

## The experience from Washington and Idaho

**1984:** *Ascochyta* blight observed in 23 of 30 commercial chickpea production fields in northern Idaho

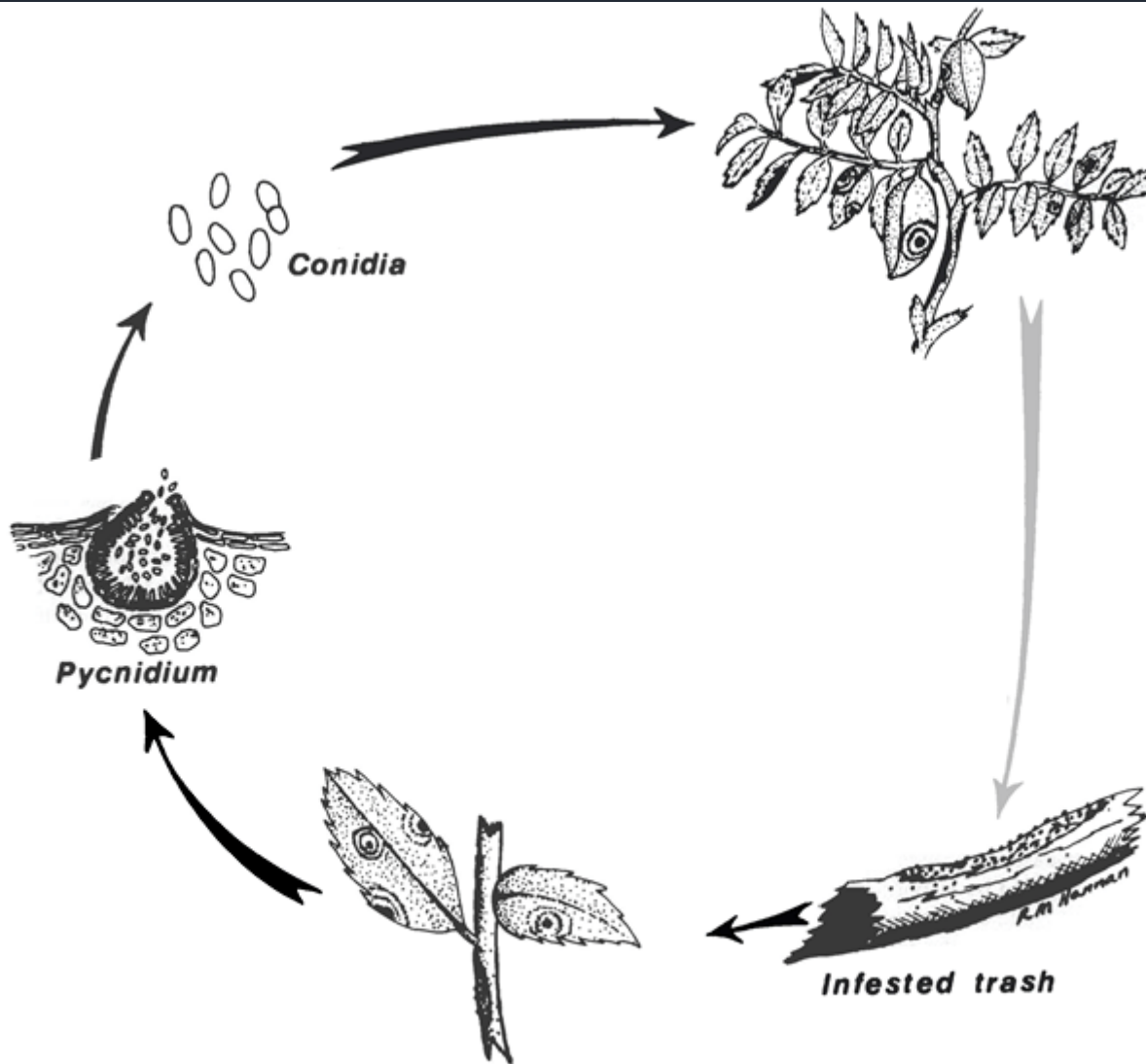
Pullman, WA



**1987:** Over 50% of the chickpea crop in Washington and Idaho severely impacted by *Ascochyta* blight

# Persistence of Ascochyta in the soil

Disease transmission from residues directly to a new crop



**When crop rotation intervals are short, Ascochyta can be directly transmitted, infested residues to new crops**



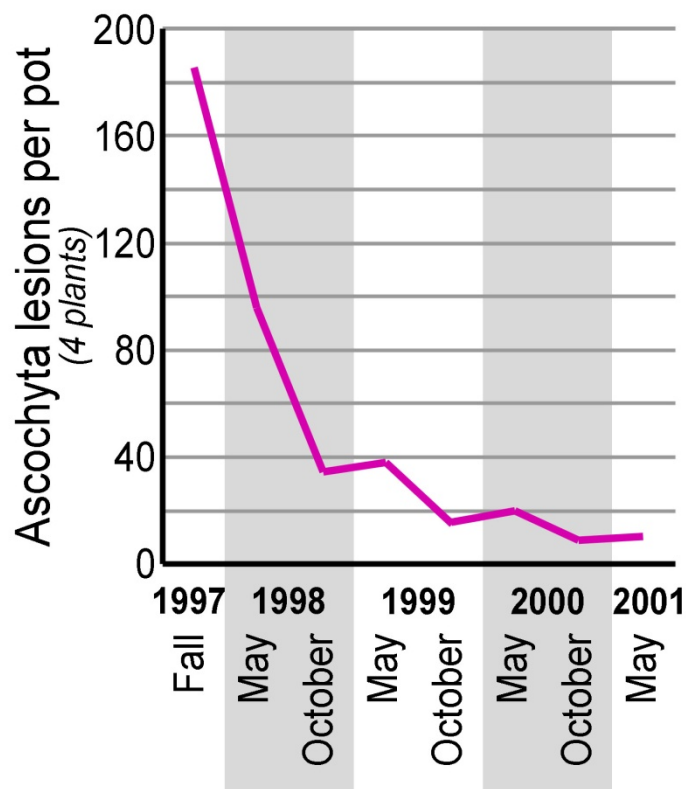
# Transmission of Ascochyta blight from residues / infested soil

Disease transmission from Ascochyta-infected **chickpea residues** can occur for at least 4 years after harvest

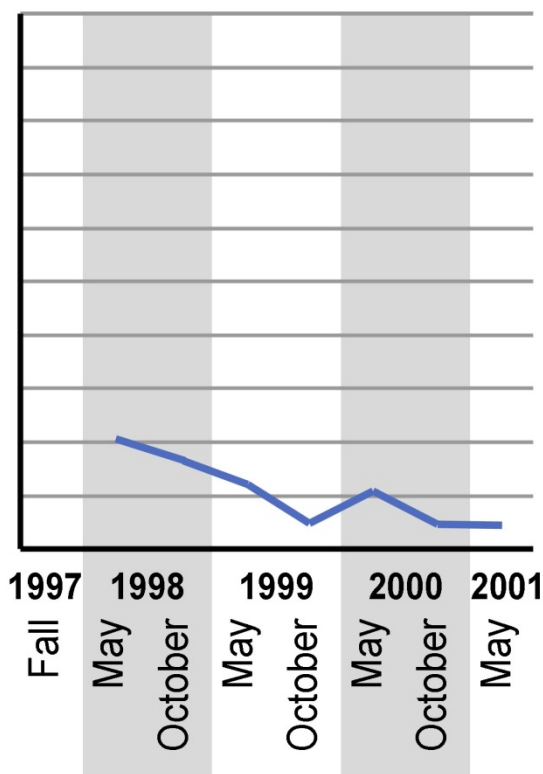
## Ascochyta-infected chickpea leaf residues

Saskatoon, Saskatchewan - *heavy clay loam soil*

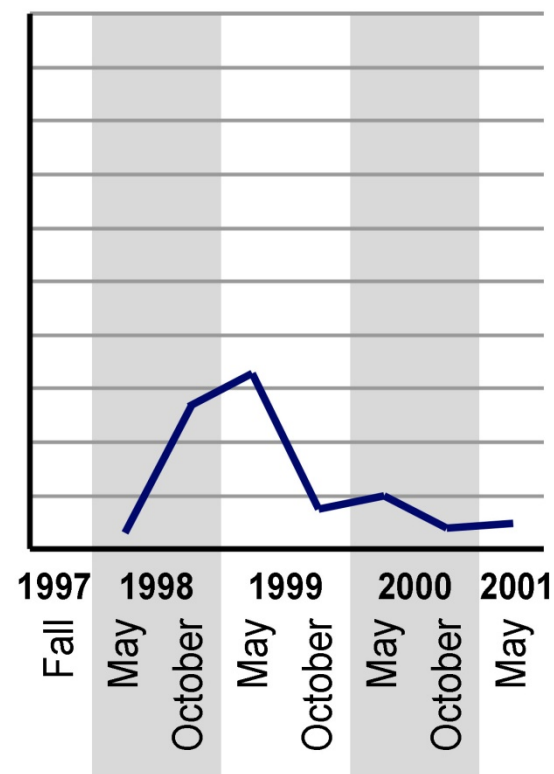
### Residues on surface



### Residues buried 2 in.



### Residues buried 4 in.

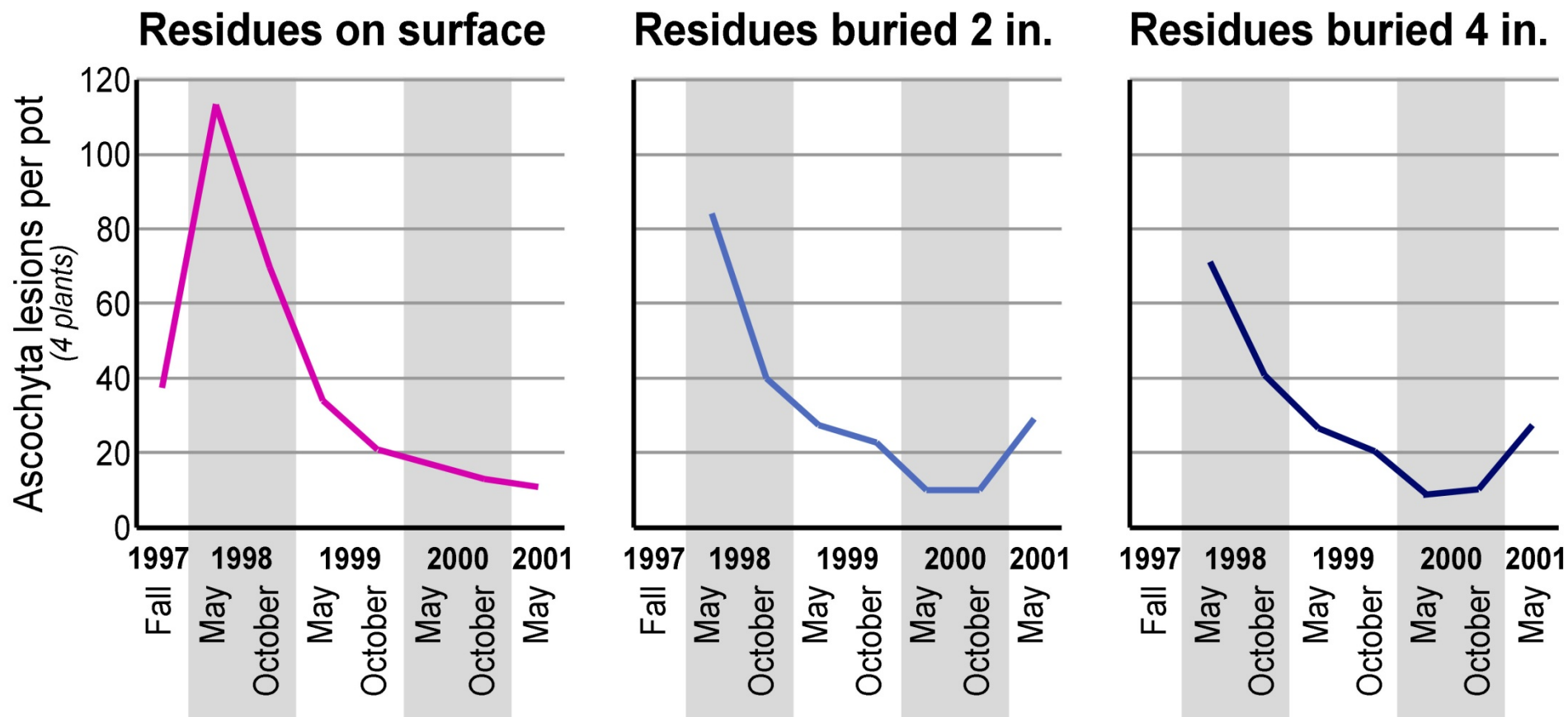


# Transmission of Ascochyta blight from residues / infested soil

Disease transmission from Ascochyta-infected **chickpea residues** can occur for at least 4 years after harvest

## Ascochyta-infected **chickpea stem residues**

Saskatoon, Saskatchewan - *heavy clay loam soil*

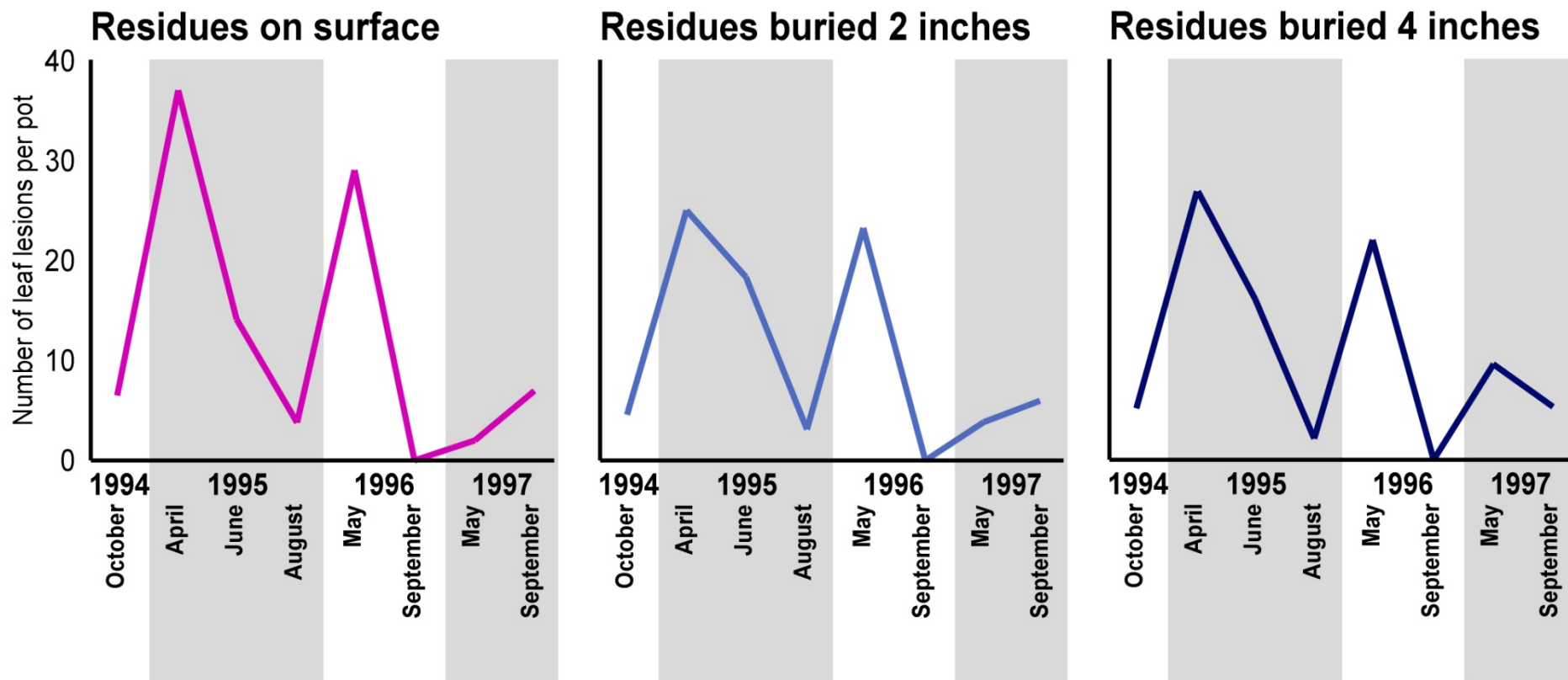


# Transmission of Ascochyta blight from residues / infested soil

Disease transmission from Ascochyta-infected **lentil residues** can occur for at least 3 years after harvest

## Ascochyta-infected **lentil leaf and pod residues**

Saskatoon, Saskatchewan - *heavy clay loam soil*



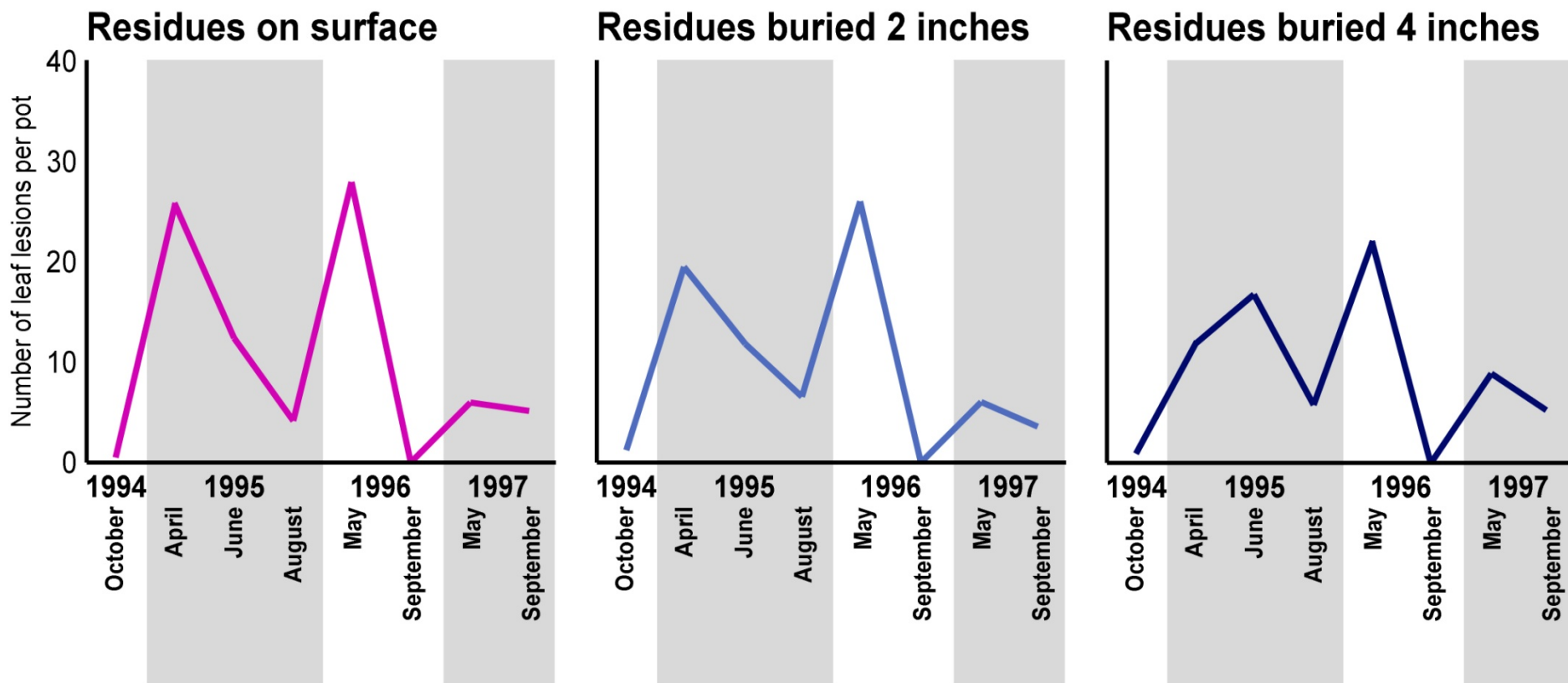


# Transmission of Ascochyta blight from residues / infested soil

Disease transmission from Ascochyta-infected **lentil residues** can occur for at least 3 years after harvest

## Ascochyta-infected **lentil stem residues**

Saskatoon, Saskatchewan - *heavy clay loam soil*



# Ascochyta blight management

lentils, chickpeas, and field peas

1. Clean seed
2. Long crop rotation intervals
3. More rigorous fungicide usage may be needed when *Ascochyta* outbreaks occurred in last 1-2 years within region

