

VEGETABLE CROPS

COOPERATIVE EXTENSION • NEW YORK STATE • CORNELL UNIVERSITY
potato early blight

Alternaria solani Sorauer

DISEASES OF POTATOES

Potato Early Blight

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Date: 7-1984



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INTRODUCTION

Early blight (EB) is a disease of potato caused by the fungus *Alternaria solani*. It is found wherever potatoes are grown. The disease primarily affects leaves and stems, but under favorable weather conditions, and if left uncontrolled, can result in considerable defoliation and enhance the chance for tuber infection. Premature defoliation may lead to considerable reduction in yield. The disease can also be severe on tomatoes, and can occur on other solanaceous crops and weeds.

DISEASE CYCLE

The fungus overwinters either on potato tubers (Fig. 1) or in dead, infected plant debris either in the soil or on the soil surface. The concentration of initial or primary inoculum from these reservoirs is usually low. Therefore, primary infection is difficult to predict since EB is less dependent upon specific weather conditions than late blight. Environmental factors and plant vigor also help to determine when the first EB lesions are found. Infection can occur from early to mid July in New York when frequent rains or dews occur and daytime temperatures remain near 75-80 F. The fungus can penetrate the leaf surface directly through the epidermis and spots begin appearing in 2-3 days. Lesions are most numerous and pronounced on lower, older, and less vigorous leaves and on early maturing varieties (Fig. 2). The lesions are dark brown and appear leathery with faint, concentric rings giving a "target-spot" effect. At first the spots are small (1/8" in diameter) and oval or angular in shape, but later the spots can enlarge to about 1/2". In many cases they are bounded by the larger leaf veins (Fig. 3). More spores are produced on the EB spots and lesions may coalesce (Fig. 4), greatly increasing the secondary spread of wind-borne conidia between plants and between fields. At harvest time, spores from blighted vines (Fig. 5) may be deposited onto tubers. These spores germinate during wet and warm weather and invade the tissue, primarily through cuts, bruises, or wounded surfaces.

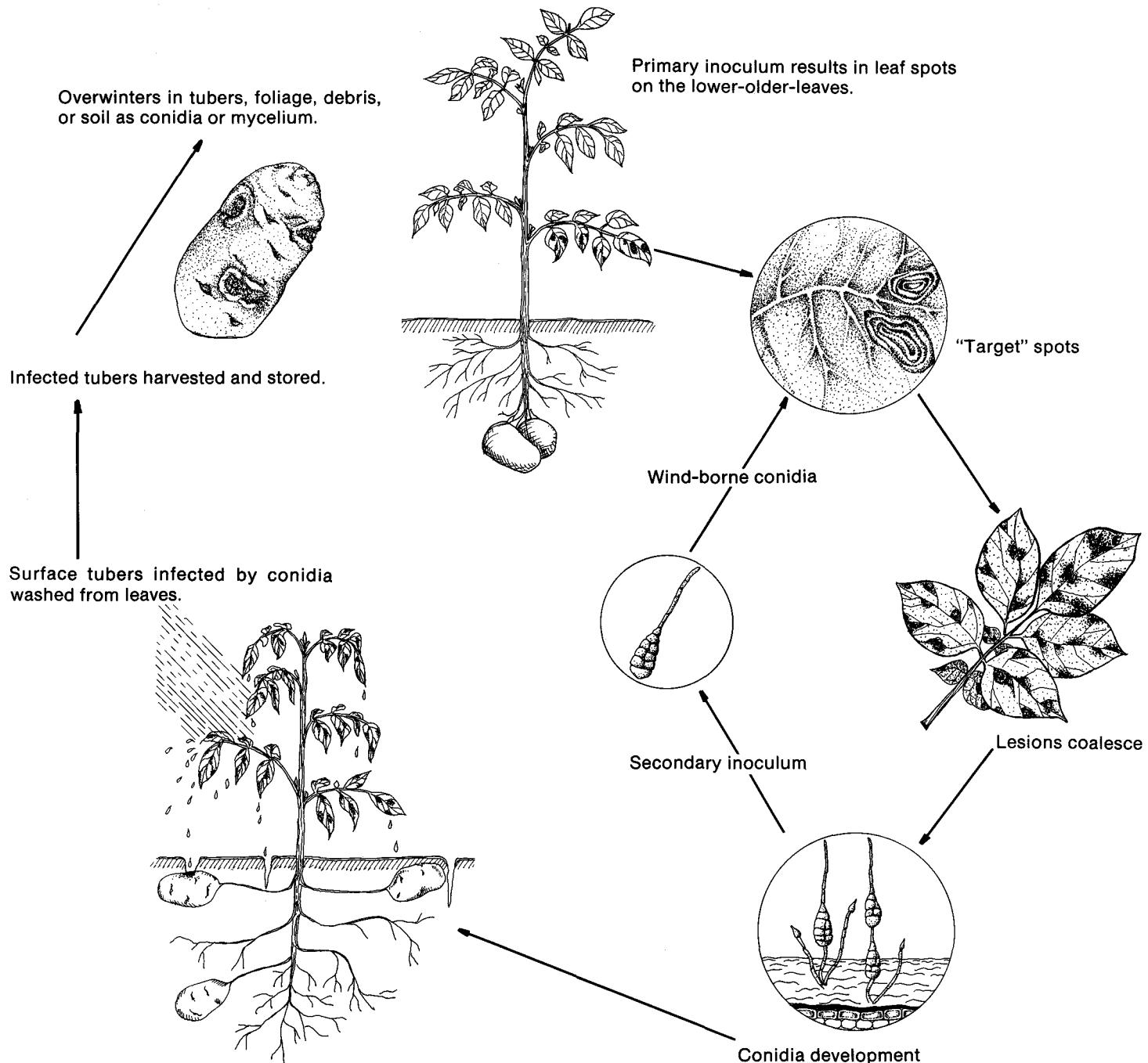
Tuber infections appear as generally small, irregular, brownish-black spots which are usually slightly sunken (approx. 1/16") (Fig. 1). Externally the spots resemble those caused by late blight, but internally they are shallower and darker in color. The rotted tuber tissue is firm, hard, and somewhat corky. EB tuber rot develops slowly and may not be severe until quite late into the storage period. This decay may allow the entry of secondary organisms such as *Fusarium* fungi and soft rot bacteria.

CONTROL

The following measures will help prevent the occurrence of serious EB outbreaks. (1) Plant only disease-free, certified seed. (2) Follow a complete and regular foliar fungicide spray program. (3) Practice good hill-ing techniques to lessen tuber infections. (4) Allow tubers to mature before digging, dig when vines are dry, not wet, and avoid excessive wounding of pota-toes during harvesting and handling. (5) Plow under all

plant debris and volunteer potatoes after harvest. (6) Avoid replanting potatoes (and tomatoes or egg-plants) in the affected fields for at least 2 years if severe outbreaks have been experienced. (7) Although no cultivar is immune to EB, several cultivars are moderately resistant and should be planted if blight is a continuing problem.

Consult your local cooperative extension office for the current information on resistant cultivars and disease management strategies.



Early Blight Disease Cycle

Adapted in part from North Dakota State University Extension Bulletin 26, 1976, 'Potato Production'. Used with permission of North Dakota State University.

Published by the New York State Agricultural Experiment Station, Geneva, A Division of the New York State College of Agriculture and Life Sciences, A Statutory College of the State University, Cornell University, Ithaca. Authored by Thomas A. Zitter, Department of Plant Pathology, Ithaca. Funded in part by an Extension Service—USDA, IPM Grant.