















down), reduce the rate of coleoptile growth (slow or reduced emergence), or distort foliar tissue (thickened leaves).

The occurrence and extent of these abnormalities are influenced by complex interactions among the rate of chemical applied, quality of seed, planting depth, and soil environment. Adverse effects for some of these fungicides are most apparent when seed germination is slowed by planting into soil that is hot, cold, dry, or wet. Seed treatment also can have a negative influence on plant growth when seed is old, has mechanical damage, or has been stored for prolonged periods, especially if it was not dried thoroughly.

### **“Disease trading”**

A compound effective against one pathogen may control that pathogen, but it also can create a biological void that favors more aggressive infection by another pathogen that is insensitive to that chemical. This phenomenon is called “disease trading.” For example, if seed is treated only with PCNB, the treatment can reduce infections by pathogens that cause smuts and Rhizoctonia root rot. However, under certain conditions, the treatment also may encourage more root- and crown-rot by *Pythium* and *Fusarium*. Damage from the latter pathogens can be more severe than if seed had not been treated, or if a broad spectrum fungicide had been applied.

Seed treatment is an important component of integrated pest management programs for producing small grain cereals in the Pacific Northwest. Protection against a broad spectrum of organisms is required. It is common for mixtures of several fungicides and an insecticide to be applied to small grain cereals in our region. One

must know the treatments available, why each is important, and how they protect different parts of plants growing from treated seed.

## **For more information**

### **OSU Extension publications**

*Dwarf Bunt of Winter Wheat in the Northwest*, PNW 489 (reprinted 1996). \$1.00

*Pacific Northwest Insect Management Handbook* (2002). \$35.00

*Pacific Northwest Plant Disease Management Handbook* (2002). \$35.00

To order copies of these publications, send the complete title and series number along with a check or money order for the amount listed (payable to Oregon State University), to: Publication Orders, Extension & Station Communications, Oregon State University, 422 Kerr Administration, Corvallis, OR 97331-2119 (Fax: 541-737-0810).

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### **World Wide Web**

You can access our Publications and Videos catalog and many of our publications on the Web at [eesc.orst.edu](http://eesc.orst.edu)

### **Other publications**

*Seed Treatments*. PJB Publications Ltd., Richmond, Surrey, UK (1999).

Many internet sites on the World Wide Web, including sites for most pesticide manufacturers and regional distributors.

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