



ORGANIC SEED TREATMENTS TO IMPROVE CROP ESTABLISHMENT IN BARLEY

Introductory Research Report E2007-33

BACKGROUND

Reduced crop establishment is a growing concern on organic farms, which can lead to higher weed pressure and reduced yields and farm income. Poor establishment can result from the use of lower-quality seed, slow or hindered crop seed germination, or inappropriate soil management practices that lead to elevated weed or disease pressures. These occurrences can affect both the quality of harvest and weed seed presence for years to follow.

Seed is often saved or shared among organic farmers, but such common or ungraded seed may not be subjected to the same quality-control measures as seed purchased from a certified seed producer. The quality of seed a farmer chooses to use will directly affect the resulting crop establishment and final yield. Methods for growing, harvesting, cleaning, and storing seed are major determinants of seed quality, which is typically indicated by germination rate, vigour and purity. A variety of organic-approved seed treatments are commercially available, which claim to offer developmental advantages to germinating crop seeds and young plants and thereby promote healthier and higher-yielding crops. In such cases, treated crop seeds may grow faster and with fewer limitations, gaining an advantage over competing weeds and pathogens. The treatments may eliminate or reduce disease-causing organisms, or promote growth-supporting factors such as beneficial microbes and their supportive plant interactions.

RESEARCH APPROACH

In this study, samples of barley and oat seed are being collected in 2006 and 2007 from organic grain farms in the Maritimes. Seed quality is being evaluated using purity, germination and vigour tests, and farm seed samples will be compared to certified seed in terms of quality.

Seven commercial organic seed treatments are being evaluated for their effects on seedling vigour,

crop establishment and grain yield. The selected seed treatments include ASL TP Seaplant Extract, Biodynamic Preparation #504, CB-QGG, HeadsUp, MycoApply, NanoGro, and SuperBio SoilBuilder. Treated barley seed is being subjected to various vigour tests in a growth chamber to assess seed treatment effects under simulated cold-seedbed conditions, as well as their effects on overall seedling growth. Treated barley seed will also be planted in field-plot experiments at three sites in 2007 to test the seed treatments' effects on crop establishment, in-field seedling vigour, and yield.

APPLICATION OF RESULTS

Analysis of seed samples is expected to reveal if, or to what extent, seed quality appears to be a limiting factor in crop establishment on organic small-grain farms. Recommendations may follow in an effort to improve the quality of farm-saved seed, or to encourage the use of certified seed. The performance of barley under the influence of selected seed treatments may indicate the merits and suitability of organically treated seed in small-grain farms in the Maritimes.

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