

CHEMICAL CONTROL OF SEED-BORNE FUNGAL PATHOGENS OF SUNFLOWER

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Abstract

Five fungicides, namely Tecto, Benlate, Bayton, Topsin and Derosal were evaluated for their effect on seed germination and control of major seed-borne pathogens of sunflower. Two sunflower cultivars, HO-1 and NK-212, naturally infected with important seed-borne fungi were treated with these fungicides @ 1.5, 2.0, 2.5, 3.0 g/kg. All the fungicides under study controlled the seed-borne fungi and increased the germination of sunflower seed to various levels. Tecto and Benlate in both the cultivars gave better performance in reducing fungal population and increase in seed germination. Topsin and Derosal also reduced the fungal population at higher dosage but there was no considerable improvement in germination. The use of fungicides @ 2.5 g/kg provided almost complete elimination of fungi and 8-10 per cent increase in seed germination as compared to the use of fungicide @ 2 g/kg.

Introduction

Sunflower (*Helianthus annuus* L) is the second important non-conventional source of vegetable oil seed in the world after soybean (Sackston, 1981). In Pakistan, sunflower was introduced as an oilseed crop in early 1960's and efforts are under way since 1980 to increase both its area and yield to bridge the edible oil gap in the country (Beg, 1980). Although, the national average yield has increased from 750 to 1500 kg per hectare, but it is still quite low as compared to other sunflower growing countries of the world (Anonymous, 1994). Low yield can be contributed to several constraints including damage caused by parrots at maturity, lack of organization for hybrid seed production, lack of suitable sunflower threshers and number of parasitic and non-parasitic diseases (Muhammad and Khan 1981). So far more than a dozen diseases have been recorded (Ahmad 1988, Maserevic *et al.*, 1987, Mirza and Beg 1983, Ahmad *et al.*, 1992). Various types of leaf spots and rots are reported to be the main pathological field problems (Bhutta *et al.*, 1993). Most of the diseases causing microorganisms in sunflower are reported to be seed-borne in nature (Richardson, 1990). It is reported that seed-borne fungi caused 20-30 per cent reduction in germination in sunflower (Jamaria *et al.*, 1975).

Some work has been done on the chemical control by Majid and Ilyas (1983) who found that in *in vitro* evaluation, *Macrophomina phaseolina* mycelium was more sensitive to Tilt, Granosan, Benlate and Daconil and least sensitive to Sicarol. These fungicides has not studied for treatment of seed for control of seed-borne diseases of sunflower in Pakistan. No adequate information is available on seed treatment of sunflower seed except some work done by Jamaria *et al.*, (1975) and

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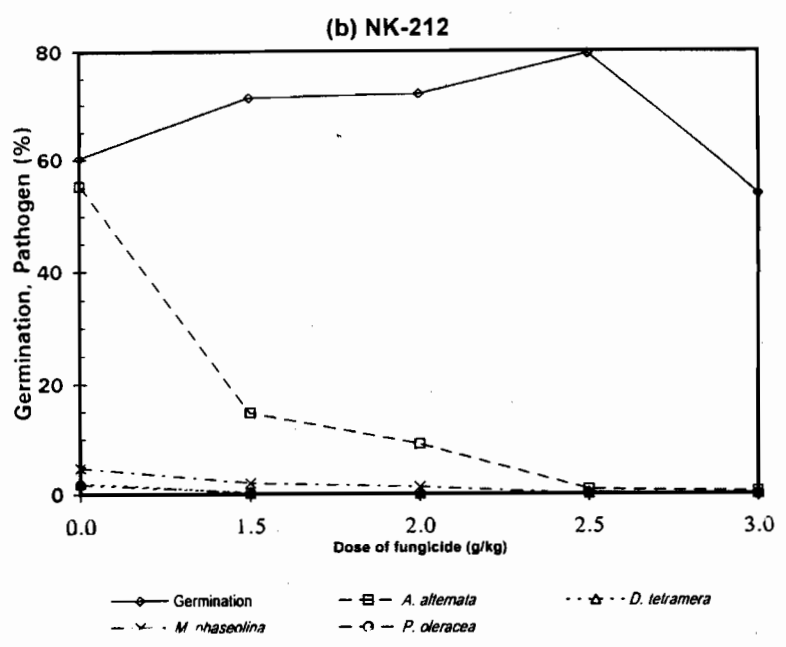
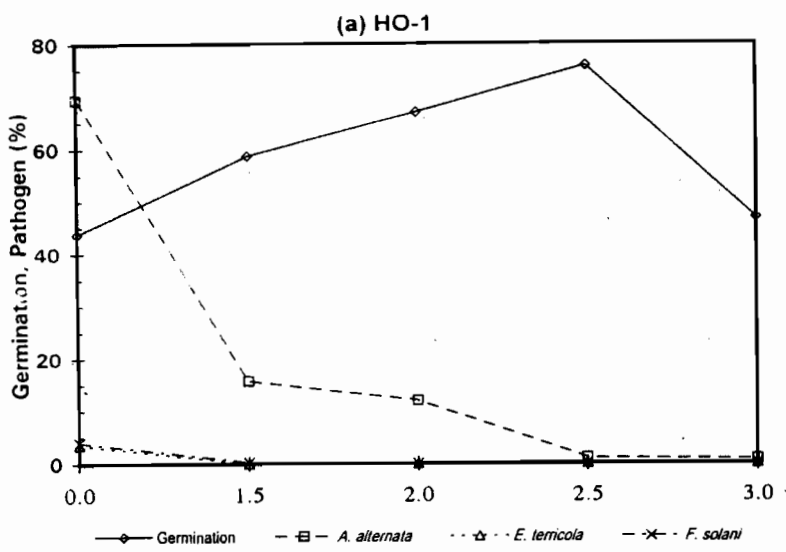


Figure 1. Effect of TECTO on seed borne fungal population and seed germination of sunflower.

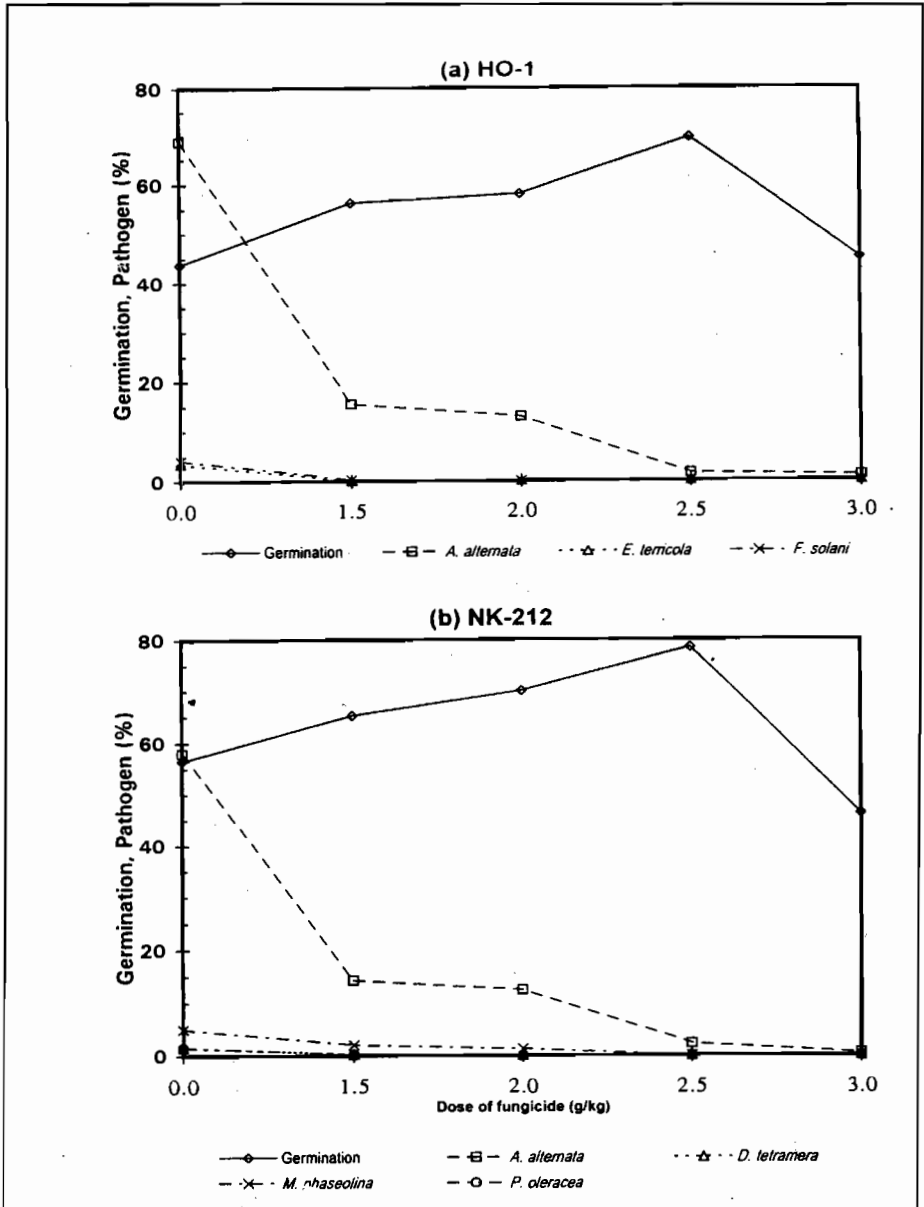


Figure 2. Effect of BENLATE on seed borne fungal population and seed germination of sunflower.

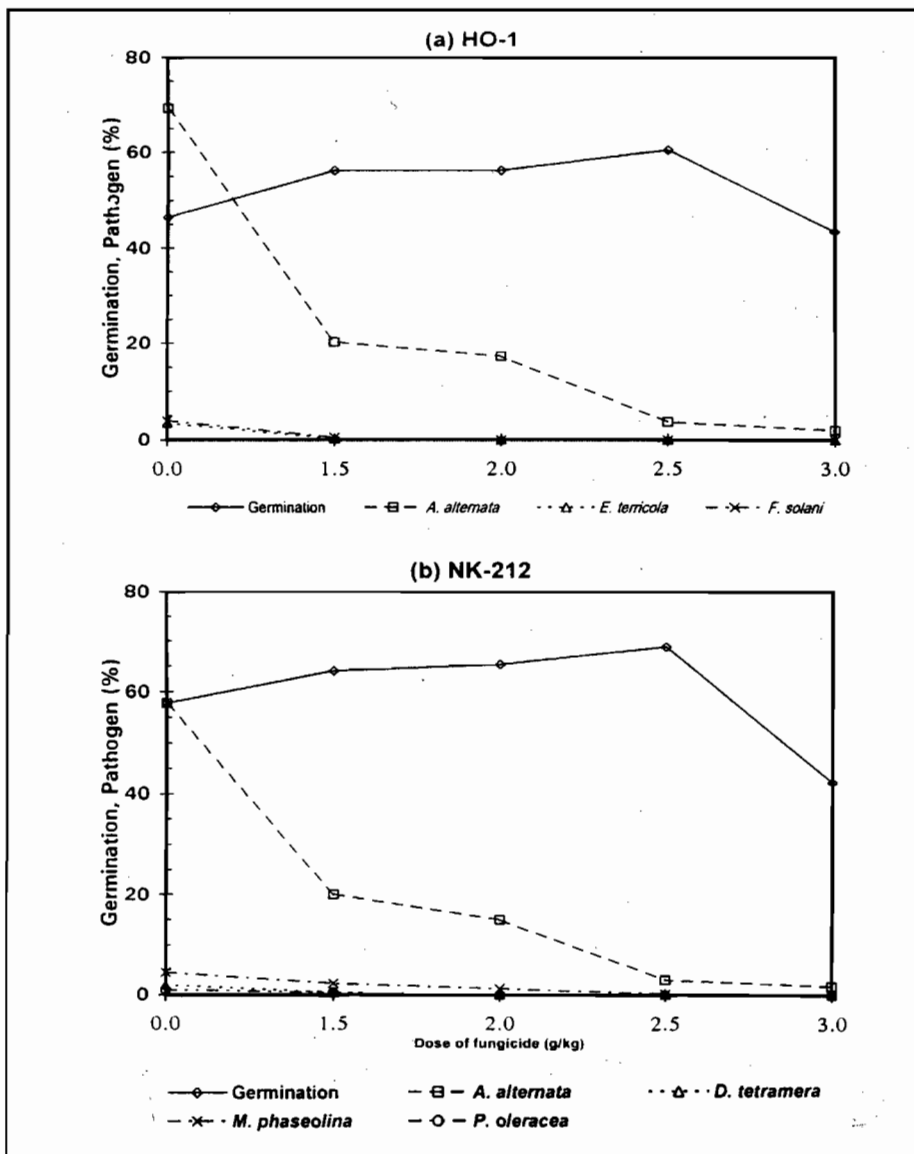


Figure 3. Effect of BAYTAN on seed borne fungal population and seed germination of sunflower.

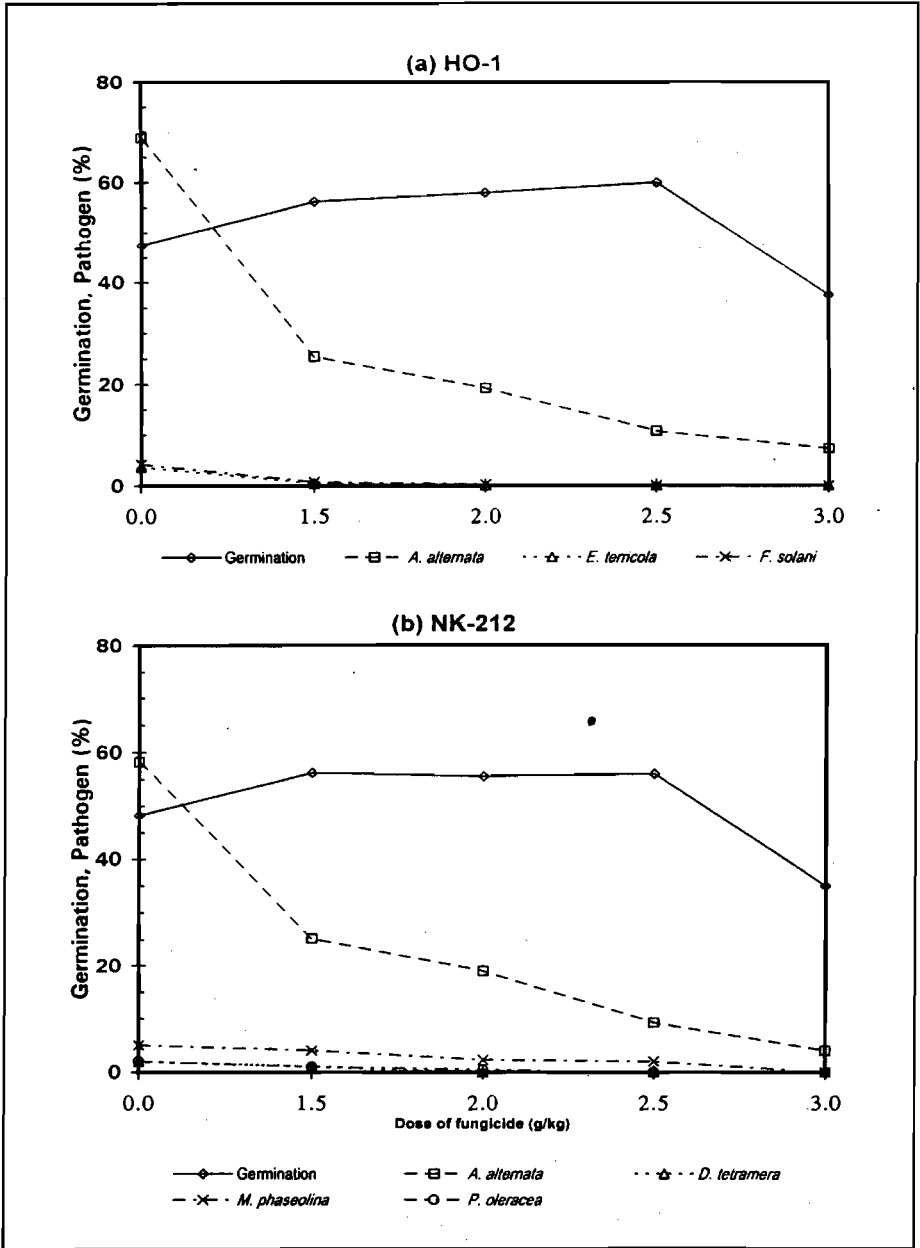


Figure 4. Effect of TOPSIN on seed borne fungal population and seed germination of sunflower.

Fig. 5. Effect of DEROSAL on seed borne fungal population and seed germination of sunflower

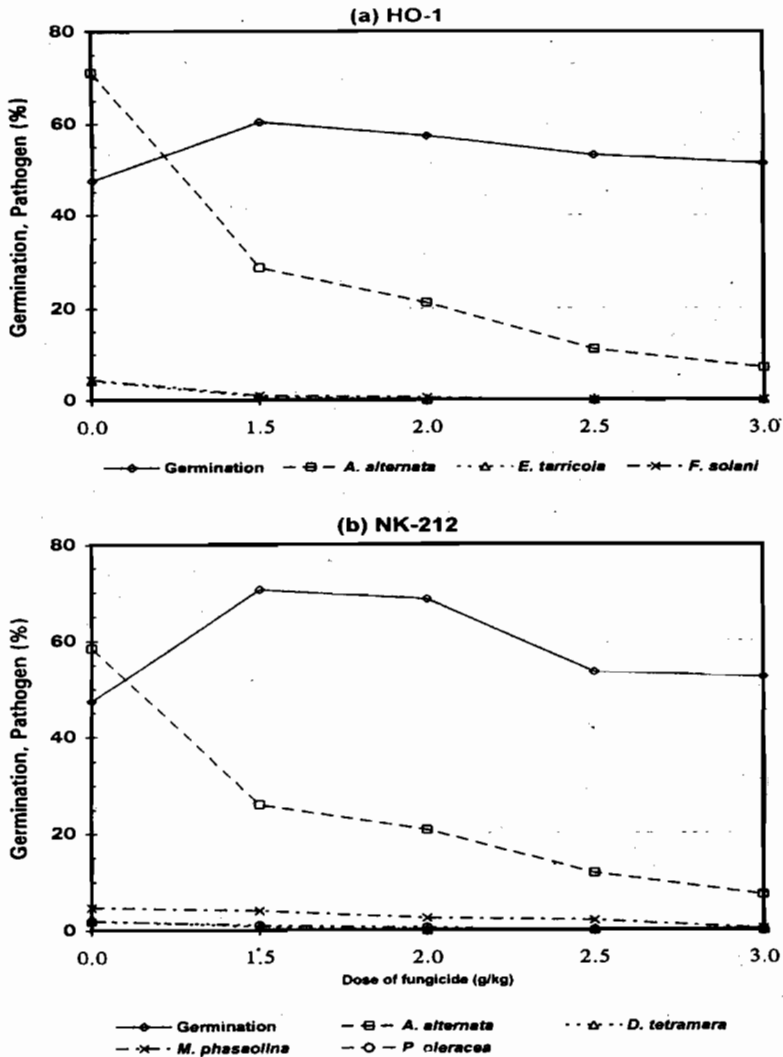


Figure 5. Effect of DEROSAL on seed borne fungal population and seed germination of sunflower.

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