

Effect of Intercropping Bulb Onion and Vegetables on Purple Blotch and Downy Mildew

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Abstract: Field experiments were conducted over two growing seasons to determine the effectiveness of vegetable intercrops in the management of downy mildew (*Peronospora destructor*) and purple blotch (*Alternaria porri*) of bulb onion. Vegetable intercrops evaluated, were carrot (*Daucus carota*), spider plant (*Cleome gynandra*) and French bean (*Phaseolus vulgaris*). The efficacy of the vegetable intercrops in reducing the foliar diseases was compared to a fungicide Tata Master™ (metalaxyl 8%+mancozeb 64%). Each vegetable was intercropped with three onion varieties (Bombay Red, Red creole and Orient F1) and downy mildew and purple blotch development were determined until physiological maturity. Vegetable and bulb yields were also determined at harvest. The vegetable intercrops significantly reduced downy mildew and purple blotch severity but had no significant effect on disease incidence. Spider plant was the most effective vegetable intercrop in reducing downy mildew severity by up to 21% and purple blotch severity by 18%. Onion varieties Red creole and Bombay red had low disease levels compared to orient F1. Although intercropping onion with vegetables reduced bulb yield, it improved the gross return per unit area. The results showed that intercropping bulb onion with vegetables could be beneficial in reducing foliar diseases and improving gross return per unit area. However, further studies are necessary to determine the optimal spatial arrangements of onion and vegetable intercrops in foliar disease management.

Key words: Downy mildew, intercropping, onion, purple blotch, vegetables, yield
