

POTATO BLIGHT CONTROL

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both medusahead and soft chess was made about the middle of May, when the seed heads of these two grasses started to show in the Potter Valley section of Mendocino County. Seeds were collected at weekly intervals until the end of June at which time both plants had mature seed in the head. Visual characteristics of the stages of plant development were recorded during collections.

Germination tests show that the viable seed of medusahead develops at least 20 days later than that of soft chess. As early as May 17, soft chess had about 35 per cent seed germination while medusahead showed none and did not attain an equivalent germination until after June 9, three weeks later. Between June 9 and 16 seed from soft chess began to shatter while medusahead was still green and germination varied from 6 to 43 per cent.

With this spread of maturity between the two species, burning could be arranged to favor the more desirable soft chess plants. Burning as soon as soft chess is shattering seed—and while medusahead seed is still intact—would favor the seed survival of soft chess during a fire. For the year of this study this date was approximately June 16.

Timing would also vary somewhat depending on whether animals were in the area to be burned. Animals grazing or walking in an area tend to dislodge medusahead seeds from the heads earlier than otherwise. Other factors that must also be considered when burning, in addition to the time of seed maturity, include the condition of other fuel, weather, terrain, and time of day.

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Data from two years of trials—using both air and ground application—indicate that zineb, maneb, Phaltan, and captan fungicides gave good control of early blight (*Alternaria solani*) on sprinkler irrigated potatoes during the fall season. Tests were conducted in the Hemet Valley, Riverside County.

In the 1960 tests maneb, zineb, and Phaltan were applied by airplane on October 4, 17 and 29. Rates used each test date were: 2 pounds of 80 per cent maneb, 2 pounds of 78 per cent zineb, and 2 pounds of 50 per cent Phaltan—in 10 gallons of water per acre, with spreader-sticker. Applications were made early in the morning when the wind velocity was low and drift negligible. Each application was made immediately following a sprinkler irrigation. The plots were irrigated twice between fungicide applications. Treatments were arranged in strips 50 feet wide (approximately 17 rows) and one mile long in randomized complete blocks of three replications each.

Blight control effectiveness in the 1960 plots was rated by assigning index numbers ranging from 0 to 10. Zero signified no evidence of blight, and 10 indicated a complete collapse of vines in the areas rated.

Index ratings checked at 99 locations on November 12 were: maneb, 1.7; zineb, 2.2 and Phaltan, 2.7. Ratings on November 18 (at 42 locations) were: maneb, 5.4; zineb, 5.8 and Phaltan, 6.4. Both maneb and zineb showed significantly better control than Phaltan on November

12 but only maneb was significantly better than Phaltan on November 18. It should be noted that the indexes on November 18 were taken 20 days after the last fungicide application.

Ground applications

Ground-applied test plots were made using knapsack hand sprayers to apply zineb, maneb, captan, and copper during the 1959 fall season. The fungicides were applied in 100 gallons of water per acre at a pressure of 40 pounds per square inch. Actual amounts of material used per acre were 1.2 pounds each of zineb, maneb, captan, and 2 pounds of copper. Four ounces of spreader-sticker were used with each 100 gallons of water. Treatments were arranged in a randomized complete block of 4 replications, each consisting of four 32-inch wide rows, 50 feet long. Treatments were applied on October 2, 14, 28 and November 9.

Effectiveness of the treatments was measured by collecting random samples of leaves and rating the degree of infection from 0 to 6. Zero signified no infection; 1 signified 1 to 5 per cent of the leaf area infected; 2, 6 to 20 per cent; 3, 21 to 40 per cent; 4, 41 to 75 per cent; and 5, 76 to 100 per cent of the leaf area infected. The following results were obtained on November 18: zineb, 1.3; maneb, 1.7; captan, 2.0; copper, 2.9 and in the untreated check, 3.3. Data were also taken on November 24 following a light frost the night before. Because of the damage done by frost, a rating system of 1 to 10, as in the 1960 air-applied plots, was used. The following results were obtained: zineb, 3.0; maneb, 4.5; captan, 4.5; copper, 5.5; and 7.5 for the untreated check. Maneb, zineb, and captan were considered significantly better than the untreated check.

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Financial assistance in these studies was provided by California Long White Potato Advisory Board.

Plant Development and Maximum Seed Germination Comparison Between Medusahead and Soft Chess

Collection date	MEDUSAHEAD		SOFT CHESS	
	Plant development	Max. % germ.	Plant development	Max. % germ.
5-17-60	Green, heads partially in sheaths	0	Green, some lower leaves dry, seeds in milk stage.....	35
5-26-60	Green, heads completely out of sheaths	0	Green upper part, lower half plant dry...	80
6- 1-60	Green, awns starting to curl slightly	0	Drying, heads starting to brown somewhat	92
6- 9-60	Green, awns showing definite curling	6	Dry, seeds starting to shatter easily.....	76
6-16-60	Drying lower part of plant, heads purple tinged:.....	43	Dry, seeds shattering, heads brown.....	97
6-23-60	Dry, heads purple tinged.....	94	Dry, seeds shatter readily.....	96
Control	Mature dry plants.....	96	Mature dry plants.....	99