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EXPERIENCES WITH PHOTODEGRADABLE MULCHES IN FLORIDA

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Abstract. **Photodegradable plastic mulches that proved satisfactory for summer growing seasons in the north had to be modified to suit Florida full (raised) bed growing conditions. Results of large scale field evaluation in the 1979-80 season of the modified products have been satisfactory. A development project combining photodegradability with super-strength, and having a low methyl bromide transmission rate has performed excellently.**

The plastic mulch system as used in the production of vegetables in Florida has been discussed in this publication on several occasions. Water control, fertilizer placement, cultivation, and fumigation are among the advantages most discussed. The greatest disadvantage of the system is the removal and destruction of the plastic after the crop is harvested.

The usefulness of a plastic mulch is dependent upon the requirements for satisfactory field performance. Before adding photodegradation this criterion must first be considered:

(1) Dimensional stability on the roll so it unwinds in a straight line.
(2) Good quality cores that are water and crush resistant.
(3) Protected stacking on pallets to prevent blocking and flattening on shipment.
(4) Roll length, width, weight, and gauge must meet grower needs.
(5) Good tear and impact resistance to withstand the stresses encountered in the laying operation.

Once the film has been produced that satisfies these requirements, attention can be given to the aspects of degradation. Biodegradation is a word that comes to mind, but consideration must be given to the fact that to have that portion of the plastic degrade which has it held in place is not practicable. Photodegradation is the natural alternative.

In Florida plastic is laid from July through February. The ultraviolet light intensity during this time span varies greatly. The temperature during the July to October period is such that the mulch must be reflective in order to prevent the soil temperature reaching the point that the plant is destroyed as well as to protect the plastic itself. This can be achieved during manufacturing or by coating with a white paint after the plastic has been laid. A photodegradable plastic does not lend itself to being painted because it then becomes impossible to predict the time necessary for degradation. For a photodegradable plastic to survive the necessary 120 days during this period it must reflect the light as well as absorb enough to degrade. As the November-February period approaches, it is necessary that the photodegradable plastic absorb more of the light in order to increase the temperature of the soil. This dictates a change of color as well as the chemistry of the plastic. Once the plastic becomes photodegraded it is necessary that it be biodegradable so that when it is incorporated into the soil it does not become a problem.

The Ecolyte Company has developed a photodegradable mulch that does perform under Florida conditions. The film is a polymer which will totally degrade within two years after being photodegraded and incorporated into the soil. This prevents a build-up of plastics as is happening in the fields at this time. The removal cost is reduced to that which would ordinarily be spent for discing and leveling the field after the crop.

Recent developments have resulted in the production of high-barrier films have proven successful in field trials and have allowed the growers to reduce the amount of methylbromide by up to 25%. This savings, coupled with the savings of removal cost, should prove to be valuable to the grower.

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EFFECT OF CDEC AND AMOUNT OF WATER CARRIER ON CRISPHEAD LETTUCE YIELD, QUALITY AND WEED CONTROL[1]

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Abstract. **CDEC (2-chloroallyl diethyldithiocarbamate) was applied to 'Minetto' lettuce at 0, 2, 4, or 8 lb ai/A in 1978, 8 and 22 days after seeding in addition to the standard preemergence CDEC treatment (5 lb ai/A). Lettuce injury occurred when postemergence treatments were made 22 days after seeding. Treatments 8 days after seeding had little or no effect on lettuce yield and quality. Postemergence applications of CDEC enhanced weed suppression and decreased weed growth compared to lettuce treatments with only preemergence application. In 1979, CDEC at 0, 2, or 4 lb ai/A was applied postemergence in all possible combinations with 30, 60, or 90 gal water/A to 'Montello' 10 days after seeding. Postemergence treatments were made subsequent to a 4 lb ai/A application of CDEC at seeding. Yield measured by weight and number of marketable heads was not affected by CDEC rate or amount of water used in application. Mean head weight was significantly decreased by the use of 60 gal of water/A compared to 30 and 90 gal**

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