EFFECT OF BLACK PLASTIC MULCH ON YIELD OF DRYLAND TARO PRODUCTION

TED M. HORI

County Extension Agent, Cooperative Extension Service
Hawai'i Institute of Tropical Agriculture and Human Resources
University of Hawai'i, Honolulu, HI 96822

Abstract

Seventeen cultivars were evaluated for dryland taro production under a black plastic mulch with irrigation. Within the cultivars, the development of keikis (off shoots) was erratic. Some mother plants were heavy producers of keikis, while others did not produce any. Closer observation indicated that the plastic mulch had inhibited the development of keikis and they could not penetrate the mulch, causing their death and thereby reducing the total yield of the taro plant.

Introduction

The use of black plastic mulch can affect yields in dryland taro production by inhibiting the growth of keikis (suckers). The developing keikis cannot penetrate the plastic mulch, and they eventually die from the lack of sunlight for proper development.

The primary objectives of using the black plastic mulch are for weed control and to maintain a moist soil in the production of dryland taro. The mulch eliminates the use of chemical herbicides. Maximum yields in dryland taro production require optimum soil moisture.

Materials and Methods

A variety taro trial is being conducted at the Low Elevation Extension Demonstration Farm in Kahului, Maui. The elevation of the site is about 25 feet. The farm is in an area which has high winds and is very dry. The farm was formally in sugar cane production. There are 17 varieties in this trial; 11 are named varieties and six are hybrids developed by Dr. Ramon de la Peña, agronomist at the Kaua'i Experiment Station of the University of Hawai'i.

The hulls were planted in early February, 1992 in a black plastic mulch, 4 mils in thickness. Water is being delivered by a drip irrigation system, which was laid under the plastic mulch.

Fig. 1. Mother plants without keikis.
Results and Discussion

Three months after transplanting of the hulis, some of the mother plants within a variety did not have any keikis (Fig. 1). Our conclusion was that individual plant characteristics were involved, some being prolific in producing keikis while others were incapable of producing keikis. In June, we noticed that around the base of the mother plant there was a bulge in the plastic mulch. Upon tearing the plastic at the bulge, there were several keikis. Because the keikis could not penetrate the plastic mulch, many were dead or were dying. These keikis could have contributed to the total yield of the plant.

Conclusion

In the planting of taro in plastic mulch, one must be aware of the size of the huli (planting set) relative to the slit as it grows. There is no opening for the keikis to sprout out of the plastic mulch, and they cannot produce corm. Therefore, the slits made in the plastic mulch must be larger than the hulis to be planted, accounting for the development of the mother plant as well as for the development of the keikis at planting time. The slit could also be enlarged as the plant grows.
The Editor

L. Ferentinos is the Project Coordinator of the Taro Production Systems Project at the University of Hawai‘i at Manoa.

Jane C. Muench, an independent editor with J.C.M. Office Services, provided technical support.

Publication was supported in part by a grant from the USDA/CSRA Sustainable Agriculture Research and Education Program (formerly called L.I.S.A.). Additional support was provided by American Samoa Community College, College of Micronesia, Northern Marianas College, University of Guam, Yap Institute of Natural Science, and the University of Hawai‘i under the Agricultural Development in the American Pacific (ADAP) Project.

All reported opinions, conclusions, and recommendations are those of the authors (contractors) and not those of the funding agency or the United States government.