

PRODUCTION OF UH SUNUP TRANSGENIC PAPAYA SEED IN HAWAII

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SUMMARY

Transgenic UH SunUp papaya seed is produced by HARC under contract with the Papaya Administrative Committee (PAC). UH SunUp is an inbred variety that breeds true from seed. The seed is produced conventionally, from self-pollinated fruits of hermaphrodite trees. Cultural practices do not differ from commercial papaya production fields, except for seed harvest and cleaning. Fruits are harvested by hand and the seed is mechanically cleaned. The seed is air dried, bagged and shipped to the PAC for distribution.

Introduction

Prior to the introduction of transgenic UH Rainbow hybrid papaya by the University of Hawaii on May 1, 1998, Hawaiian solo papaya varieties were all true-breeding inbred lines. Seed was produced by self-pollination of hermaphrodite trees. Transgenic UH SunUp papaya is also an inbred line, derived by genetically engineering the Sunset papaya to contain the papaya ringspot virus (PRSV) protein coat gene construct (Fitch et al., 1992), which confers resistance to PRSV infection. UH SunUp is intended to replace Sunrise and Sunset papaya varieties in areas affected by PRSV.

Methods

Cultural methods and seed handling procedures are as reported in the HARC publication TF1, *Production of Transgenic Hybrid Papaya Seed in Hawaii*, which can be found on the HARC Internet site at www.hawaiiag.org/harc. For UH SunUp

seed production, pollination is allowed to occur naturally. The first production was done with unprotected self pollination on isolated trees on the island of Kauai; current production is being done with protection of unopened buds with paper covers to avoid outcrossing with other varieties growing in nearby areas on the island of Oahu.

Conclusion

Transgenic UH SunUp papaya seed is produced by conventional means at HARC in conjunction with UH Rainbow hybrid papaya seed production. The demand for UH SunUp seed is much lower than for UH Rainbow. Not more than ten percent of the total transgenic seed production is the UH SunUp variety.

Reference

Fitch, M.M.M., R.M. Manshardt, D. Gonsalves, J. Slightom and J. C. Sanford. 1992. Virus resistant papaya plants derived from tissues bombarded with the coat protein gene of papaya ringspot virus. *Bio/technology* 10:1466-1472.