I. INTRODUCTION

Tomato (*Lycopersicon esculentum*. Mill) is considered as the most widely grown vegetable crop in Egypt. It is used in local food consumption as sauce and fresh salad and recently as export crop. The cultivated tomato area has increased from 237459* Faddans (F = 4200 m^2) in 1970 which increased to be 394320 * Faddans in 1994.

In Egypt tomato is cultvated throughout the year. However, plants which are cultivated in summer season suffer greatly from viral diseases. Among these diseases is tomato yellow leaf curl (TYLC) agent which may be considered as the most serious one.

Severe symptoms of this agent cause drastic drop in fruit yield and great losses in fruit quality. This disease is transmitted by white fly (***Bemisia tabaci***) and grafting (**Olivares *et al.*, 1972; Yassin, 1973; Zaher, 1973; Verma, 1974 and Yamauchi *et al.*, 1976**).

However, in these days there is a great tendence to reduce the utilizing of insecticides. Breeder thrives to obtain tomato varieties, which are genetically resistant to such viral disease.

It was suspected earlier that there is a certain degree of resistance to (TYLC) in some wild tomato species; i.e.; ***Lycopersicon peruvianum*** and ***Lycopersicon chilinse*** (**Pilowsky, 1976; Hogenboom, 1972; Hermsen and Taylor, 1979 and Verma *et al.*, 1980**).

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* Economic and Statistical Dept. Ministry of Agric, , Egypt. 1994.

However, it was found that, it is mostly difficult to make hybridization between these wild types and the cultivated species. Therefore, it was mostly difficult to transmit gene(s) for this degree of resistance via hybridization.

This work is an attempt to search for a method for performing useful hybridization between certain wild types and cultivated tomato. Some, workers tried to perform hybridization between ***L. esculentum*** with ***L. peruvianum*** and ***L. chilinse***, none is succcessful by conventional method .

Many workers have reported presence of unilateral incompatibility in esculentum pollen tubes which may be governed by single gametophytic factor which is either linked or allelic to the self-incompatibility locus(*S-locus*). These findings were discussed with refernce to recent report which indicate that unilateral incompatibility is controlled , in peruvianum styles, by a number of different dominant genes.

The *S-locus* of self-incompatibility and the gametophytic factor regulating the unilateral reaction in esculentum pollen seems to belong to the same linkage group (**Nettancourt *et al*,1974**).

Recently, plant tissue culture technique has been available to the plant breeder for more than two decades. Besides, some workers had succeeded to obtain hybrids between ***L. esculentum*** and ***L.peruvianum*** via protoplast fusion (**Wijbrandi and Koornneef, 1988**).

Also Smith in 1944 has succeeded to obtain tomato hybrid between ***L. esculentum*** and ***L. peruvianum*** through embryo culture technique.

Now embryo callus technique is used to produce interspecific hybrids between ***L. esculentum*** and ***L. peruvianum*** (**Thomas and Partta, 1981-a; Segeren *et al.*, 1993**). Recently, improvement in selection, hybridization and fertilizer application will undoubtedly increase production of good yield and high resistance to insects and plant diseases. Advantage of callus and embryo culture method repersent a rapid vegetative propagation of vegetable crops difficult to be crossed or grafted by conventional methods.