The suitable solvent for varietal identification of F1 hybrid sweet corn via Ultrathin-layer isoelectric focusing (UTLIEF) technique was determined using 3 cultivars of commercial F1 hybrids as the model. Three different solvents, water, phosphate buffer and urea were compared. The results demonstrated that sweet corn cultivars could be distinguished using any of the tested solvents. However, using water for proteins extraction showed the clearer and the better resolution of the protein bands than those of phosphate buffer and urea. The used of water as solvent for seed protein extraction was reconfirmed with six commercial F1 hybrids sweet corn. The pair wise comparison revealed the 4-11 different protein bands. The hybridity test of sweet corn and waxy corn were then analyzed using the same protocol. For sweet corn, nine protein bands could be used as the indicators for the hybridity test. For waxy corn, only three protein bands could be observed. However, in one of the waxy corn seed, there were two distinct bands found which indicated that the seed was not an F1 hybrid seed.