EXECUTIVE SUMMARY

TITLE OF PROJECT: Processing Cauliflower Cultivar Evaluation

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OBJECTIVES: Evaluate processing cauliflower cultivars for suitability for Ontario requirements, in terms of yield and various quality parameters.

MATERIALS AND METHODS: Seventeen processing cauliflower cultivars were included in this year's trial. Cauliflower was seeded on June 7, 2001 and transplanted into the field on July 6. Cultivars were arranged in a randomized complete block design with four replications. Plots consisted of a single 15 m long row with a row spacing of 1.0 m and 0.45 m between plants. Fertilizer was applied as: preplant incorporated, 230 kg/ha N as 34-0-0 + 50 kg/ha P_2O_5 + 130 kg/ha K_2O as 0-0-60; sidedress, 35 kg/ha N as 34-0-0 (July 31), 35 kg/ha N as 34-0-0 (Aug. 21). Weeds, insects and diseases were controlled using recommended practices . Plants were tied starting Sept. 15 and ending on Nov. 21. The inside 10 m of each plot was harvested with the first harvest on Sept. 18 and the last on Nov. 28. Plots were irrigated (1 ½") on July 10, 17, Aug. 3, Sept. 14.

RESULTS AND DISCUSSION: Highest number one yields were from the earlier cultivars while yield of mid season to later types were lower. We believe this was a result of warmer temperatures delaying curd induction, which is consistent with known cauliflower physiology. The top five yielding cultivars were Fremont, Phoenix, Freedom, Quasar, and Apex. Percent one and two grade ranged from 37 to 77 % over cultivar. The five cultivars with the highest percent of No. 1 grade were Phoenix, Skywalker, HMX 0227, Fremont, and Balboa. Loose curds were a main reason for downgrading, although soft rots and alternaria black spot were found on a number of cultivars.

Over the last few years, loose curds have been a major reason for reduction in grade. Curds are often observed to be firm on top, but the lowest florets loose. Two known factors that affect curd quality are temperatures and nitrogen nutrition. Dutch cultivars are developed in a cooler climate and about 10° of latitude further north with much different daylength than ours. Our warmer climate and swings between warm and cold periods may be impacting quality.

Cole crops are well known to utilize high amounts of nitrogen and that under low nitrogen conditions, cauliflower curds can button or become loose reducing yield and quality. Dutch nitrogen recommendations are much higher than ours, 300 kg/ha - soil nitrate at planting. Thus, their cultivars have been selected under high nitrogen conditions. Without a low nitrogen control, it is impossible to tell if this years results were due to climate or nitrogen or both. There appears to be considerable scope for studies on the physiology of cauliflower climatic adaptation and nitrogen utilization for improving cauliflower management.