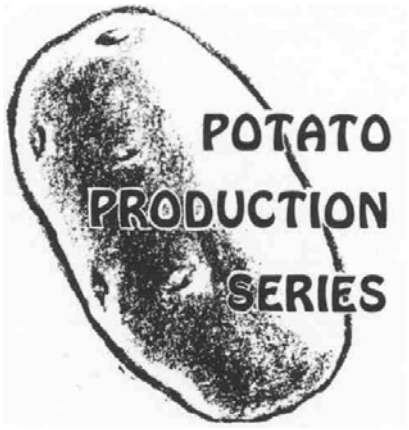
POTATO HARVESTING



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Harvesting the potato crop is a critical part of the entire potato production and marketing operation. Crop yield and quality cannot be increased during harvest, but they can be decreased, sometimes drastically.

The results of many studies have indicated how tuber quality can be reduced. The principal cause of quality loss, as these studies have pointed out, occurs by not observing proper procedures during harvest. Certain cultural practices, such as excess nitrogen, excess water, and poor soil aeration, can predispose tubers to the development of more severe damage. However, most of the actual damage occurs during digging, loading, and transporting operations.

While harvesting cannot be accomplished without some damage to the tubers, the severity of damage can be altered to a point of insignificance by properly controlling harvesting operations and by changing excessively damaging procedures.

PRE-DIGGING PRACTICES

DO NOT harvest immature potatoes. Immature potatoes have very thin skins that rub off easily during harvest handling. As plant maturity increases tuber yield also increases, and the tuber skin becomes thicker, tougher, and more firmly attached. Skinned areas brown and darken, allow dehydration, and are often the starting places for decay.

Harvesting before full maturity is a profitable procedure only when a premium price is paid for immature potatoes that are to be sold immediately.

DO stop irrigation 2 to 3 weeks before harvest. If frost does not kill vines or if rainfall is not a factor, this practice allows a slow decline of the vines. This hastens and enhances skin set.

DO pre-harvest sprinkle dry soils. Most soils form clods when drying. These clods are very abrasive, causing tuber skinning and bruising during the harvest operation. A light sprinkler irrigation softens the clods and minimizes the potential damage.

DO eliminate vines before digging. Vines can cause mechanical difficulties in the digging operation. They can also harbor certain insects and diseases which, if not removed, will come in contact with the tubers during harvest. Whether chemicals, frost, or natural senescence has caused the death of vines, it is worthwhile to eliminate the vines from the top of the beds. This can be accomplished by flaming or by using mechanical shredders or beaters.

DIGGING AND LOADING OPERATIONS

DO cover all conveyor belts with rubber. If a tuber hits steel, the energy involved is absorbed by the tuber. The only way the tuber can dissipate this energy is by skinning, cutting, or bruising (crushing of internal cells). If a tuber hits rubber, much of the energy is absorbed by the rubber, leaving very little to be dissipated through tuber damage.

DO coordinate the harvester and conveyor speeds. The potato tubers should be carried up the draper chains at nearly the same speed as, or slightly faster (5 to 10 percent) than, the machine moves forward. If the conveyors move too slowly, the tubers bunch up, causing mechanical problems and increasing damage due to bumping against each other. If the conveyors move too fast, the tubers also move rapidly. This means that when they hit another tuber or a part of the machine, there is a higher probability of more damage.

DO carry soil up the draper chain. Carry soil as far up the draper chain as possible and still allow

separation of the tubers from the soil. The soil on the chain provides a cushion for the tubers.

DO minimize all drops and sharp corners. Every time a potato falls or turns a corner, it has to hit something. The effects of all these hits are cumulative--that is, two short drops can be as bad as one big drop if it hits the same area on the tuber.
Also eliminate any unnecessary rolling, particularly if dirt and clods are mixed with the potatoes. Skinning occurs rapidly under these conditions.

DO minimize the drop into the truck. This can be accomplished by lowering the boom as far as possible. If bulk trucks are used, feather the load from one end to the other to minimize the distance any given tuber has to fall. A canvas sling in the truck bed can also help reduce the distance the first potatoes have to drop into the truck. Another useful device is a rubber-fingered shoot, approximately 3 feet long, attached directly to the boom. As the potatoes fall, their velocity is slowed by the many fingers in the shoot.

DO cover the truck with canvas. This practice is recommended for long hauls, short hauls, or just sitting. It is most critical in hot weather to prevent drying, surface browning, greening, and other heat induced disorders, and to prevent freezing in cold weather. A shaded area for loaded trucks waiting to be unloaded reduces the possibility of heat damage. At any temperature, however, wind damage and drying occur if the truck bed is not protected.

GENERAL PRECAUTIONS

DO NOT take soil clods from the field. These clods can cause damage because of their abrasive nature. This damage can occur in the trucks, at the packing shed, or in storage. It is particularly important to keep clods out of storage. The clods are abrasive and can reduce air circulation in storage, thus prohibiting proper temperature and humidity control.

DO NOT take rotten and damaged potatoes from the field. Such potatoes have no economic value and can only cause further disease and damage to the other potatoes if mixed together.
DO NOT harvest in extremely hot weather. The coolest part of the day is from early morning to early afternoon. Harvesting from hot soil and in warm air temperatures can result in surface browning, black heart, soft rot, and/or greening.

DO use extra care in cold weather. Cold potatoes are more turgid and crack and bruise more easily than warm potatoes. Slow the operation and take extra care at all stages of the harvest operation. If at all possible, avoid harvesting or handling tubers when temperatures are below 45' F.

DO NOT hurry. It is better to pack or store half of a high quality crop than it is to try to market a full crop that has been ruined by careless harvesting` and handling.

DO sell quality. High quality potatoes sell first in any market situation. Poor quality potatoes stack up on the grocer's shelf, reducing sales. Processing outlets will dock the price for inferior quality. A reputation for quality can increase sales

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