

Closed Loop Control of a Root Harvester GB Patent 1462770

The Ransomes Sovereign potato harvester of 1976 included a novel patented depth control for the digger unit. The depth (diabolo) roller was connected mechanically by linkage to a hydraulic control valve with a specially tuned spool to provide proportional movement of the raising and lowering of the digger unit. The greater the movement of the roller, the faster the digger unit would correct itself to the required depth. An adjustable spring was included above the roller to control movement to a pre-set optimum force from the roller. In use the spring's installed deflection would be set to optimise sufficient force (ground pressure) to control the required depth without crushing the ridge, thus reducing the risk of damage to the crop as it was being lifted from the ground, whilst still aiding the breaking of the lifted soil. The complete assembly was rig tested during development to ensure satisfactory in-phase response at the highest anticipated forward speed of the harvester.

