Harvester

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The harvester is a type of heavy machinery that is employed in cut to length logging operations for felling, buckling, and cutting up trees. Normally, a harvester is employed alongside a forward that will haul the logs and trees to a roadside landing.

Harvesters were developed in Sweden and Finland, and today they do nearly all of the commercial felling in these countries. They work best for less difficult terrain for the clear cutting area of forest. For steep hills or removing individual trees, chain saws are normally preferred. In the nordic countries, small and agile harvesters are used for thinning operations and manual cutting is only used during extreme conditions or by self employed owners of the forest or wooded area.

The leading manufacturers of harvesters include Timberjack (which is owned by John Deere) and Valmet, which is owned by Komatsu.

Normally, harvesters are built on a robust all terrain vehicle, which can either be wheeled or tracked. Sometimes, the vehicle can be articulated to provide tight turning around obstacles. A diesel engine will provide power for both the vehicle and the harvesting mechanism through a hydraulic drive.

An articulated, extensible boom that is similiar to that of an excavator, will reach out from the vehicle to carry the head of the harvester. There are even some commercial harvesters that are adaptations of excavators with a new harvester head, while the others are purpose built vehicles.

The normal harvester head may consist of:

1. A chain saw to cut the tree at the base and also to cut it to length. The saw is hydraulically powered rather than using a 2 stroke engine of a portable version. It offers a more robust chain and a higher output power than any saw carried by man.
2. Two curved de-limbing knives that can reach around the trunk to remove branches.
3. Two feed rollers to reach out and grasp the tree. The wheels will pivot apart to allow the tree to be embraced by the head of the harvester, and pivot together to hug the tree tight.
4. Two more curved knives for de-limbing.

All of this is controlled by an operator who sits in the cab of the vehicle. A control computer is used to simplify mechanical movements and keep the length and diameter of trees that have been cut.

The length is computed by counting the rotations of the gripping wheels. The diameter is computed from the pivot angle of the gripping wheels that

hug the tree.

Harvesters are normally available for cutting trees up to 900 mm in diameter, built on vehicles that weight up to 20 t, with a boom that reaches up to a 10m radius. The larger, more heavier vehicles do more damage to the forest, although a longer reach will help by allowing more trees to be harvested with less movements required by the vehicle.