

## Effluent irrigation aids aspen growth

Growers of aspen trees for pulpwood may wish they could "latch onto" irrigation water from the nearest municipal sewage plant. Experiments at The Pennsylvania State University have found that aspens irrigated with sewage effluent reach marketable size 12 to 14 years sooner than aspens not irrigated.

Average age of the trees treated with effluent was 17

years while the untreated trees averaged 28 years. Increased fiber length in the irrigated trees produced a better fiber length to width ratio, considered an advantage to pulp strength.

The experiments were carried out by Dr. Wayne K. Murphey, professor of wood technology, and Joseph J. Bowier, former graduate student in the School of Forest Resources. The

researchers were concerned with wood developed through a specific time period and chose equal-sized trees rather than equal-age trees. All trees sampled were 10 to 13 inches in diameter at breast height.

Irrigation was continuous from 1965 to 1973 when growth and fiber length of irrigated and unirrigated trees were compared. The trees were growing on an old

field near University Park where Penn State scientists study the effects of effluent irrigation on field crops and forests. The effluent was sprayed at a rate of 2 inches per week. By 1974 a total of about 800 inches of effluent had been applied. On a per acre basis, the spraying put on about 1335 pounds of nitrogen, 1024 pounds of chlorine, 252 pounds of potassium, 299 pounds of

phosphorus, 959 pounds of calcium, 400 pounds of magnesium, 600 pounds of sodium, and varying amounts of trace elements.

Average annual growth in the crowns (tops) was significantly larger than at the mid-boles or the bases. Trees were sampled from the interior of treated and untreated stands to avoid border effects.

Earlier studies at Penn State showed the value of recharging ground water reserves with effluent.

Water and nutrient benefits to field crops have likewise been proven.

### THE GOOD WORD from the Bible

Lo, all these things worketh God oftentimes with man. To bring back his soul from the pit, to be enlightened with the light of the living.

Job 33: 29, 30

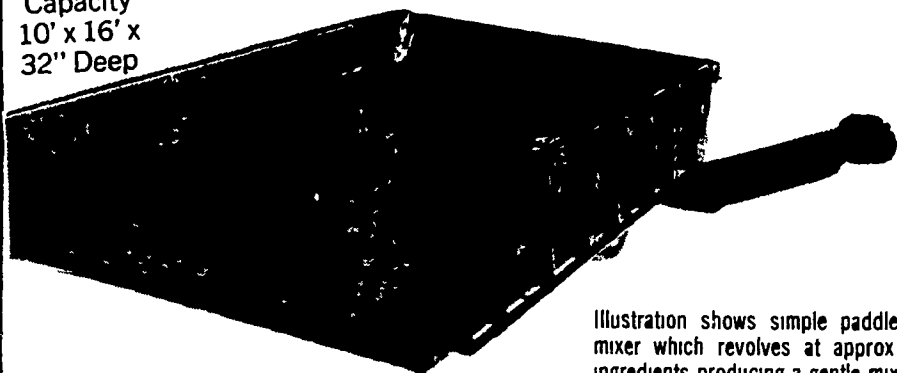
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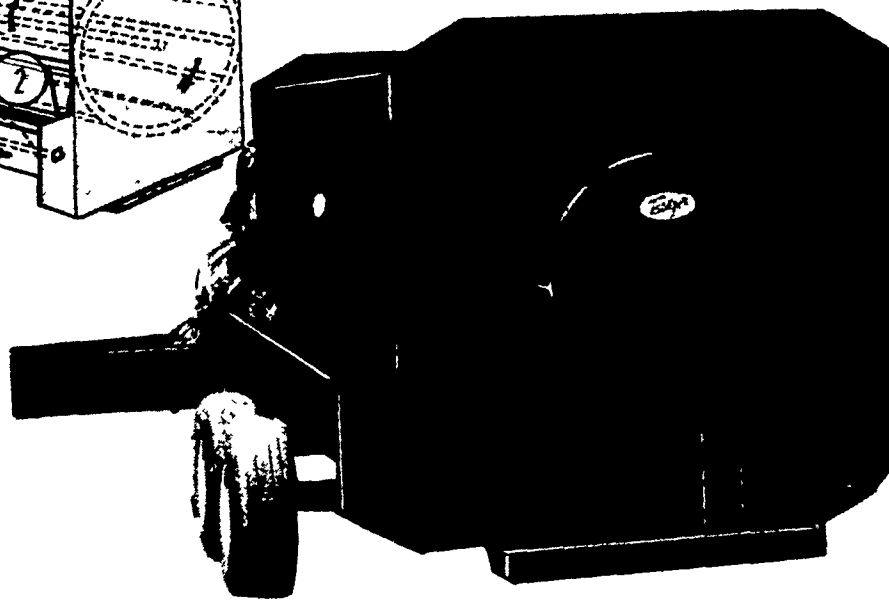
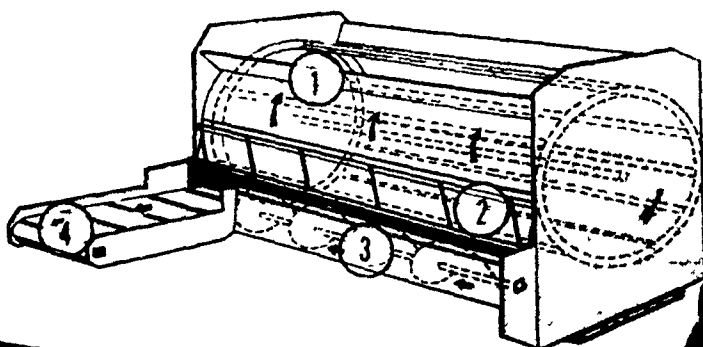


Illustration shows simple paddle construction (1) inside mixer which revolves at approx 5 RPM tumbling the ingredients producing a gentle mixing action. No packing or jamming possible. The feed then moves through full length discharge gate (2) into auger conveyor (3) picking up the ingredients the full length of the mixer then placing the thoroughly blended feed on the side conveyor elevator.

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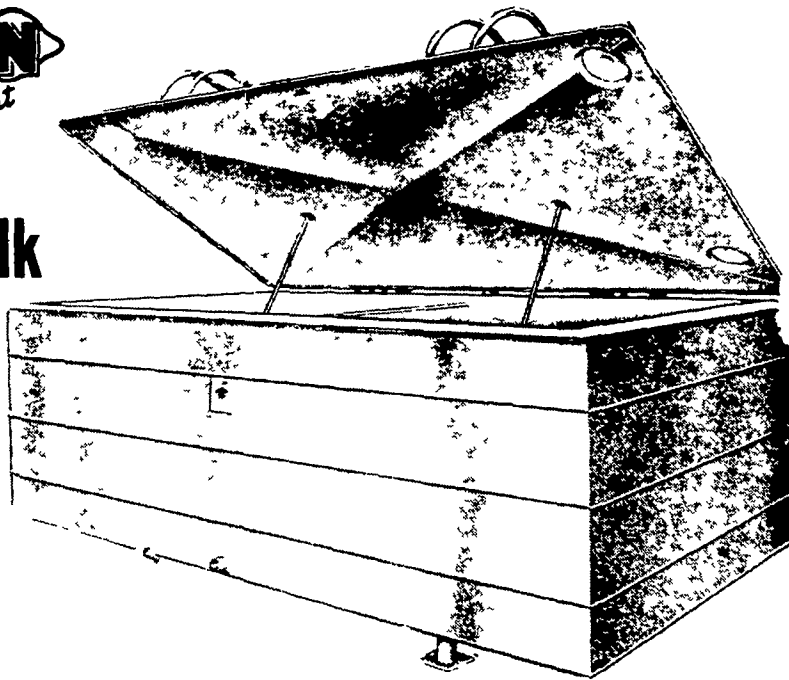
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