The University of Wisconsin - Madison

Agricultural Engineering Department
(Biological Systems Engineering Department)
Research History – 1933-1978

H. D. Bruhn
UW-Madison
Early Bench Marks

1883 – All Agriculture was in South Hall
1887 – Ag. Experiment Station Established
1889 – College of Agriculture Established
1889 – Agricultural Physics Department Established
1904 – Farm Engineering Department Established
653. Horticultural, Dairy and Agricultural Buildings, University of Wisconsin, Madison, Wis.
This dairy barn was built in 1897.
A National Historic Landmark.
Early Wisconsin Crops were Wheat, Oats, Barley & Hops

Then

Cinch Bugs, primary crop pest

Then

Dairy Cattle
Early Agricultural Engineering Activity

Agricultural Physicist

F. H. King

Barn Ventilation
Draft of Plows
Silo Design

UW-Madison, 1888-1901
Early Agricultural Engineering Activities

- Land Clearing
- Drainage
- Building Ventilation
- Farm Structure Design
- Water Supply
- Machinery
- Silo Design
Undated photo believed to be pre-1905

Early agricultural engineering class
<table>
<thead>
<tr>
<th>Name</th>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>George Knapp</td>
<td>1904 – 1905</td>
</tr>
<tr>
<td>Charles Ocock</td>
<td>1905 – 1913</td>
</tr>
<tr>
<td>Frank White</td>
<td>1913 – 1918</td>
</tr>
<tr>
<td>E. R. Jones</td>
<td>1918 – 1937</td>
</tr>
<tr>
<td>F. W. Duffee</td>
<td>1937 – 1962</td>
</tr>
<tr>
<td>H. D. Bruhn</td>
<td>1962 – 1966</td>
</tr>
</tbody>
</table>
Agricultural Engineering Building
completed in 1907, 460 Henry Mall
American Society of Agricultural Engineers
ASAE
Founded at 460 Henry Mall
December, 1907
In 1908 campus ended at Ag Hall
Early Outreach/Extension Used Visuals on Truck
Background Buildings: Soils, Hiram Smith and Ag Hall

Horse Power back in 1918
Ag Hall in background

Students posing with tractors in 1931
Agricultural Engineering Laboratory
540 Elm Drive
(at intersection of Elm Drive and Observatory Drive)
Agricultural Engineering Laboratory
540 Elm Drive
(Construction phases)
Forage Harvesters and Blowers
Duffee 1926 – 1962 (Forage harvester 1926, hay loader and ensilage cutter)
Experimental Forage Harvester Built by Case Co
(1929 Based on Duffee Specifications)
Fox Tractor Co. Manufactured First Harvester Based on Duffee’s Experience – First Marketed in 1936
Dairy Cattle Housing
Stanchion Barn
Loose Housing
Milking Parlor
Witzel, 1941-1951
Bulk Milk Handling
Pipe Line Milkers
Bulk Coolers
Cramer & Witzel
1951-54

Bulk Milk Cooler

First Grade A Milk Truck
Free Stall Dairy Cattle Housing
Cramer
1970 to Present
Swine Farrowing House
Passive Solar Heating
and
Earth Berm
Cramer & Witzel
1954 – 1957

12 Sow Farrowing house
Midwest Plan Service
Soil Erosion Control Dams  O. R Zeasman – 1930 -
Soil Erosion Control - O. R Zeasman – 1930 -
(Grass water way-green strip of grass)
Mechanical Tree Planting
Bruhn & Trenk - 1943
Mechanical Tree Planting
Bruhn & Trenk - 1954
Irrigation Well Pumping Test
Bruhn 1939 - 1961
Irrigation Well Pumping Test
Bruhn 1939 - 1961
Solid Set Irrigation of Potatoes

Bruhn
Irrigation System – Center Pivot
Snowmobile Trail Leveler (Bruhn and Massie – 1969)
Hay Dryer Fan – Electric Motor Driven
Bruhn – 1952 (On-farm)
Barn Dryer – Engine - 1953
Engine Driven Barn Drying

Bruhn – on Farm
Hay Drying Ductwork in Barn Hay Mow
Crop Drying Building – Hay, Corn, Pine Cones
(Bruhn and Cramer, 1955)
Wagon Hay Drying System – 1952
(Bruhn)

Wagon Drying Floor
First Corrugated Roller Forage Conditioner, 1954
First Tandem Roller Hay Conditioner, 1955
Corrugated roller and tie core rubber roller
Control Chamber and Instrumentation (1967)
Study of drying rate of mechanical and chemically treated forages
Forage pellets, Wafers, Cubes
Bruhn 1953-59
Hay Pellet Feeding Trials
Mechanical Cherry Harvesting
Bruhn and 5 graduate students 1961-1969
The front steerable traction wheel – powered hydraulically on the cherry harvester
Harvester Shaker Clamped to a Tree Limb
Harvested Cherries Falling onto the Catching Frames
Harvested Cherries Accumulate in a Belt Conveyor between the Two Frames
Elevating Conveyor at the End of One Frame Discharging Harvested Cherries into Box of Chilled Water
Aquatic Vegetation Harvesting (Lake Weeds)
Koegel & Bruhn 1969 - 1977

Aquatic Vegetation Problem
Aquatic Vegetation Harvesting

Manual Harvesting

Machine Harvesting
Wide Sweep Lakeweed Harvester
Alfalfa Dewatering and Protein Extraction
Koegel, Straub, Bruhn - 1970 - 1983

Roller Mill for Protein Extraction
Dewatering – Protein Extraction Equipment
Small Screw Press for Protein Extraction
Spontaneous Ignition, Barn and Silo Fires
Koegel & Bruhn 1955 - 1970
Spontaneous Ignition in Baled Hay
Agricultural Engineering Building
460 Henry Mall