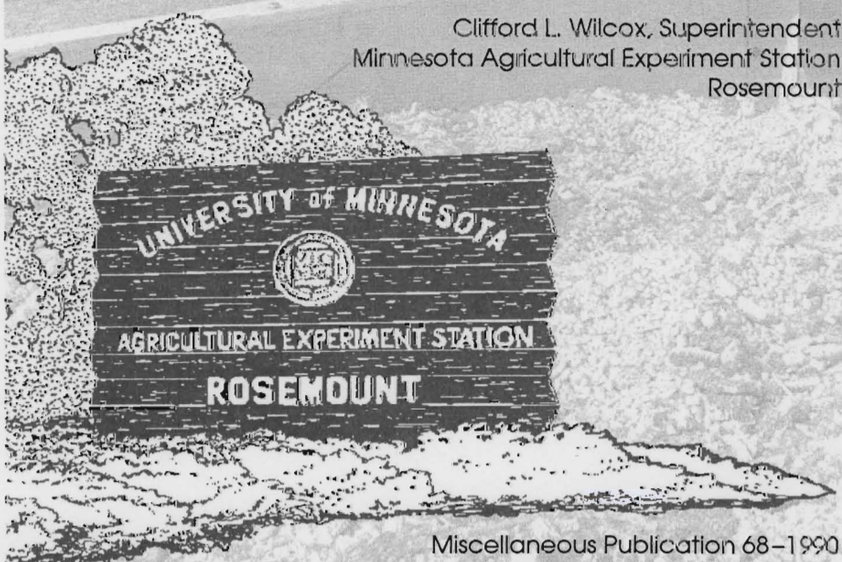
# Meeting an Agricultural Research Mission

## *The Rosemount Branch of the Minnesota Agricultural Experiment Station 1965–1990*

Clifford L. Wilcox, Superintendent
Minnesota Agricultural Experiment Station
Rosemount




Miscellaneous Publication 68–1990
Minnesota Agricultural Experiment Station
University of Minnesota

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## 1965–1990

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University of Minnesota

St. Paul, Minnesota

***Author***

Clifford L. Wilcox has been the Superintendent at the Rosemount Branch of the Minnesota Agricultural Experiment Station since 1965.

***Acknowledgements***

This volume has been prepared to summarize the development of the Rosemount Branch of the Minnesota Agricultural Experiment Station under the direction of the author, in anticipation of his retirement from that position at the end of November 1990. Assistance in the preparation of the manuscript was provided by many of the departments which do research at the Rosemount Station.

Office staff at the station, Patti Schwarz, Carol Estrem and Karen Schuller, have assisted in gathering data, typing, and many other tasks in preparing the manuscript. Ken Walter, assistant to the superintendent, has helped to summarize data and search out missing information.

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***Availability***

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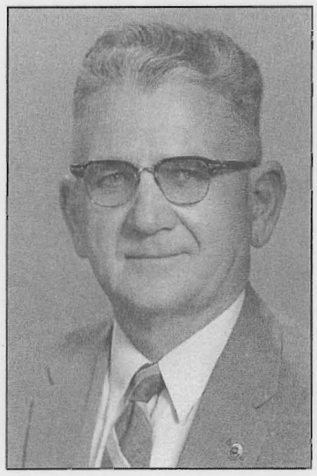
*Clifford L. Wilcox*
*Superintendent*
*1965–1990*



*Albert C. Heine*
*Superintendent*
*1949–1965*

*Theodore H. Fenske*
*Director of Field Operations,*
*St. Paul Campus (including*
*Rosemount 1947-1949)*

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# Unique From Its Inception

*Meeting an Agricultural Research Mission*

*The Rosemount Branch of the*
*Minnesota Agricultural Experiment Station*
*1965-1990*

The University of Minnesota Agricultural Experiment Station, Rosemount, has been in operation for more than four decades. Over that time, the Experiment Station site has had unusual continuity in its leadership. With the retirement of current station superintendent Clifford L. Wilcox, only now is the facility seeking its fourth head.

The Rosemount Station opened in the fall of 1947 under the supervision of Theodore H. Fenske, director of field operations on the University of Minnesota's St. Paul campus. Because Rosemount was relatively close to St. Paul, the new station was seen as an extension of the experimental fields and livestock facilities on the St. Paul campus.

From its inception Rosemount has had many unique characteristics, compared to the other branch stations of the Minnesota Agricultural Experiment Station. These include the way it spreads out over ten sites, and how it has no academic faculty assigned directly to it.

Albert C. Heine, who had served as assistant superintendent at the West Central School and Experiment Station at Morris, was appointed the first resident superintendent in July 1949. He served as superintendent until his retirement in June 1965. Clifford L. Wilcox, extension dairy specialist in the department of Animal Science, was appointed superintendent in July 1965.

Mr. Heine prepared a history of the station from its inception in 1947 to his retirement.

This current volume continues the history of the station. It isn't the intent of this publication to cover the early development of the station, since

Mr. Heine provided excellent coverage of that period. Reference, however, will be made to several matters in that earlier report, which will help in understanding how the station was organized and how it has developed since.

Early in 1942, the federal government acquired 12,000 acres of land south and east of the small rural community of Rosemount. Its purpose in acquiring the property was to build a munitions plant for producing gun powder in support of the nation's efforts in World War II. E.I DuPont de Nemours and Company was architect, building contractor and operating engineer of the plant, which became known as the "Gopher Ordnance Works." *

The University of Minnesota acquired 8,000 acres of the Gopher Ordnance Works tract in 1947. The other 4,000 acres were returned to their original owners. Administrators in the Institute of Agriculture, Forestry and Home Economics welcomed the opportunity to obtain a large tract of land within 25 miles of the St. Paul campus on which to develop a new branch agricultural experiment station. It was clear that expansion of field and animal research near the St. Paul campus would be limited by future growth in the central metropolitan area.

Fourteen hundred and fifty acres of the Gopher Ordnance Works tract was assigned to the Institute to develop the new agricultural experiment station. The remaining 6,550 acres were assigned to the department of Physical Planning and given the name Rosemount Research Center.

At its inception, the new site became the sixth major branch in the Minnesota Agricultural Experiment Station system. Others were located at Waseca, Morris, Crookston, Grand Rapids and Duluth. A seventh station at Lamberton was added in 1959, but the Duluth Station was closed in 1966.

This network of branch Minnesota Agricultural Experiment Stations provides sites for conducting agricultural research under a wide range of soil and climatic conditions found in Minnesota. The University's branch station system is one of the best distributed and effective systems in the nation.

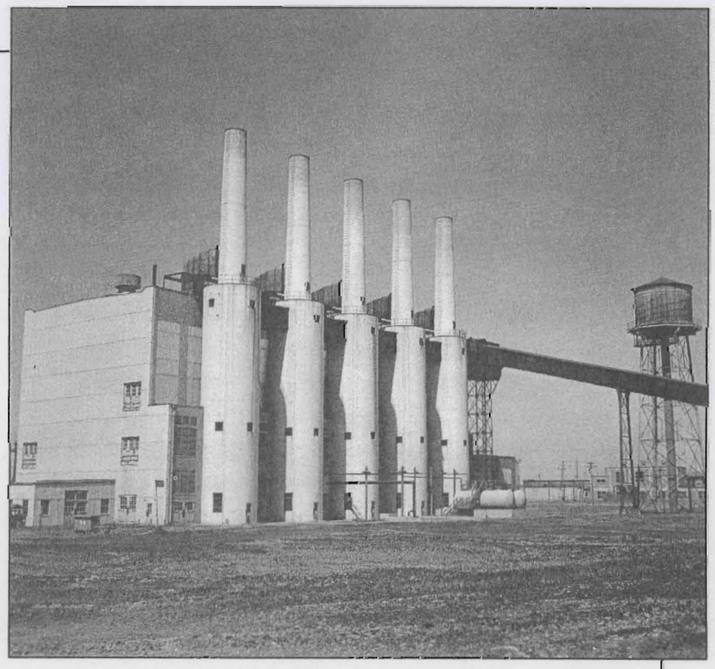
Conditions under which the new branch station began operation were far from ideal. The area was cluttered with debris from construction of the munitions plant. Almost invariably, roads constructed to serve the plant were

* Patricia Dooley in the summer edition 1985 of the Minnesota Historical Society, gives an excellent review of that period of history in her article, "Ordnance Works Condemnation, Construction, and Community Response."

either not in the right location or not of the best design to serve the new station's needs. Fields had to be realigned within the road network and building sites had to be adapted to existing conditions.

Neglect of some portions of the property was also a problem. Mr. Heine noted in his history that "some areas of the station which were idle during DuPont years were so badly infested with pocket gophers that one could usually walk across several acres of ground by stepping from mound to mound." Pocket gophers have continued to be a problem.

Access to material left on the site was important in the early stage of the station's development since funding was sparse. A number of buildings constructed for the Gopher Ordnance Works were moved within the grounds,



*Part of the Gopher Ordnance Works circa 1947. Materials left on the site included a large complex of buildings. Some were moved to new locations on the site to serve the Rosemount station's needs.*

either intact or in pieces, and reassembled or grouped to serve the new station. Other building materials were salvaged and used to construct new buildings and facilities.

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*Many problems, some of which may be quite unusual, are expected in starting a program so extensive and complex as an agricultural experiment station. One such incident came to light in a review of the early personnel files.*

*During the early years of the station, the office of civil service personnel developed an employee questionnaire which was sent to all University civil service staff. Employees were asked how they felt about their job, their working conditions, their supervisor, etc. They were encouraged to "please be as frank as you wish," and tell it like it is.*

*In response to "Have there been any problems which have made you uncomfortable or dissatisfied?" one employee at a department site under construction reported that there were no rest room facilities there. He noted that the corn field across the road was inconvenient and offered little cover in its early stage of growth and, further, that the superintendent discouraged his use of it for rest room purposes. He also foresaw a more difficult problem when the corn was harvested in the fall.*

*Had he looked beyond that, even more difficult problems could have been expected with the onset of winter. He noted, "I shall try and put up with this inconvenience until after July 1, but then I shall try to raise a stink from the regents on down until toilet*

*and washing facilities are installed." How this problem was resolved was not recorded. Perhaps the regents dealt with it, along with other major issues of the day, in one of their monthly meetings.*

## CURRENT STATION ORGANIZATION

The Rosemount station is unique in its basic organization compared to other agricultural experiment stations in the University of Minnesota system. The station serves as a satellite or extension of the St. Paul campus field and livestock research facilities. The station consists of a central office, a service and support center, and eight department sites distributed across the 3,100 acres operated by the station. A field map in Appendix I shows the general layout of the station.

Each department working at the station has its own operating budget. Research project leaders, operating out of their respective departments on the St. Paul campus, commute to the station as necessary to oversee their research.

Resident managers conduct the day-to-day operation of the station. The overall operation is coordinated through the superintendent's office. The superintendent and six resident managers live on the station. They are responsible for security and emergencies in off-hours, in addition to their other duties.*

## GENERAL CONDITIONS IN 1965

There were several major problems affecting the station's operation in 1965. One was that limited funding had been committed to development of the station. Some of the buildings moved from the Gopher Ordnance Works

* An organization chart, Appendix II, shows the lines of reporting and responsibility at Rosemount as they functioned in October 1990.

and others constructed from salvage material were beginning to deteriorate and become unusable.

There was also a general lack of coordination between the departments operating on station. As a result, there was unnecessary duplication of machinery and equipment resulting in reduced efficiency of the total operation.

Development of the station was held up, at least in part, because the federal government retained re-entry rights to the property in case of a national emergency. This was specified in the quit claim deeds drawn up in 1947 and 1948 which conveyed the property to the University.

On the positive side, however, 1,250 additional acres were acquired from the Research Center, giving the station a total of about 2,700 acres.*

Several important events occurred early in superintendent Wilcox's tenure. The federal government's right of re-entry expired in 1967. This cleared the way for extensive development of the physical plant without fear of disruption or loss of the entire site. Since then, Legislative appropriations and funds generated from earnings have provided $2,785,822 for construction of new buildings and facilities.

Superintendent Heine noted in his historical report, that "at the onset each department farm operated more or less independently of others. Much duplication of effort, machinery and equipment, was soon discovered." Clarence L. Cole, a professor and head of the department of Dairy Science, played an important role in developing a philosophy among department heads to be less provincial in control of their land and resources at Rosemount.

Dr. Cole had served earlier as superintendent of the North Central School and Experiment Station at Grand Rapids. He had a good understanding of the operation of branch stations, and of the interaction and cooperation required for efficient operation. He observed that "the dairy unit at Rosemount was doing a fair job of dairying and a poor job of farming." He proposed that the land not needed for building sites, holding areas and pasture be turned over to the general farm operation and that the dairy personnel concentrate on the research program.

In a later administrative reorganization, Dr. Cole became head of the combined Poultry, Dairy and Animal Science departments which had each

* Additional acreage has been acquired for agricultural research since 1965, increasing the total to 3,100 acres.

formerly been administered by their own heads. It placed him in a position to further deemphasize "general farm operations" on land controlled by the departments, and to emphasize commitment to research. This led to an overall improvement in research work and to greater freedom to reallocate land and resources to their best uses within the total station operation.

Further efficiency has been achieved by developing a program to encourage exchange and use of machinery between the service and support unit and the departments. This is based on establishing hourly rates for machinery which allow departments access to machinery not often used in their operation, without the inherent cost of ownership. In addition, hourly rates have been important in determining equipment costs for economic studies and reports.

Appendix III contains the list of machinery and rates, and includes on its last page the method of computing the rates. Some of the special equipment, peculiar to specific projects, are not shown on the list. This list, taking into consideration some of the unlisted research machinery, gives an idea of the large amount of machinery and equipment needed to operate an agricultural experiment station and conduct agricultural research.

### *WATER WELLS: IRRIGATION AND DOMESTIC*

Development of plot irrigation has been important to research in the plant area. The first system was established at Plant Pathology in 1953 and was developed further in 1975. Since 1965, plot irrigation has been developed for the Agronomy field crops area, wild rice and forage research at Agronomy Hill and for pasture research on field D-4 south of Dairy.

A large traveling gun is used to irrigate the pasture area. Irrigation in the other areas is through a network of six-inch buried plastic lines with four-inch lateral lines reaching out into plot areas. Irrigation is accomplished by aluminum pipe sets with sprinkler heads on risers and by small traveling guns. Access to irrigation provides the research worker with one more tool for the control of variables which affect plant research. These systems allow for individual plot irrigation within an area of about 1,000 acres.

There are 16 active wells on the station. Two of these wells are used strictly for irrigation of crops. Three wells are adapted to serve both for

irrigation and domestic needs, and eleven serve domestic needs only. "Domestic needs" means wells used for people, for livestock, or for both.*

## ELECTRICAL POWER

Electrical power is distributed throughout the station on a network which was originally part of the line system serving the Gopher Ordnance Works. It was in poor condition in 1965. Mr. Heine noted in his history that, "there were few night electrical storms during which the superintendent didn't ride out the storm in the station car checking for broken lines or blown fuses. On several occasions one or as many as a dozen power poles fell in high winds or in ice storms."

A great improvement in the electrical distribution system was made in 1967 when Northern States Power Company, the existing electrical supplier, purchased the station's network of lines. They rebuilt some sections and constructed a new line from 160th Street and Station Trail, which ran northeast along the old patrol road. The new line served both the Poultry and North Beef research sites. Power outages have been reduced considerably since these changes.

## LONG RANGE PLANNING AND USE

The University's Department of Physical Planning developed a long range plan for the entire parcel of University of Minnesota property in the Rosemount area in 1976. Within this plan are provisions for the station to continue to acquire additional land from the larger Research Center as need arises. About 400 of the station's current 3,100 acres have been added since 1976 under this agreement.

Not all of the land on the station has been suitable for plant research. The geology of the site left some areas with surface rocks, sand and gravel, and with uneven topography. Disturbing the soil by scraping and filling,

* See Appendix IV for a listing of wells currently active at the Rosemount station.

construction of roads, and disposal of debris in the construction of the Gopher Ordnance Works left other areas unsuitable for crop research. However, across this large area, adequate research plot land has been available to meet the needs of the plant science departments.

Land not used for plot research is operated under a general farm program. The general farm produces nearly all the feed grain and forage needed for animals on the station, and about 75 percent of that required by animals on the St. Paul campus.

# Rosemount Exists For Research!

***Meeting an Agricultural Research Mission***

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*Minnesota Agricultural Experiment Station*
*1965-1990*

More than 50 major research projects are conducted on the Rosemount station each year. Each of these may have one or more sub-projects. Many are long range and may be parts of projects also located at other branch stations. New research projects are added, and others closed to meet the changing needs of the University's agricultural research program.

Several hundred research studies have been conducted at the station over the past quarter century. Results of those studies have been published in many professional publications, such as the *Journal of Dairy Science* and *Agronomy Journal*. Results have also been published in Minnesota Agricultural Experiment Station sponsored monographs, Extension Service bulletins and pamphlets, conference and symposia proceedings, farm magazines and newspapers.

Beyond the scope of this account is any in-depth report on the many research projects conducted at Rosemount over the period 1965 through 1990. However, brief descriptions of each of the research sites on station are appropriate. Some of them touch very broadly on major research thrusts.

The site descriptions which follow broadly address improvements made in the physical plant, as well as changes in the program and nature of the work over the last 25 years.* Included are brief sections covering the roles of the

* Each site has an assigned code number. Buildings at the site have been numbered within the code system. Aerial photographs of each site have been provided in Appendix V.

## SHEEP

The primary objective of sheep research at Rosemount is to increase productivity in the sheep industry by improving reproductive performance. Six rams and one ewe of the Finnish Landrace breed were imported from Ireland in 1968. This was the first importation of animals of this breed to the United States. Mature Finnish Landrace ewes average more than three lambs per birth. Several ewes have produced litters of six. One ewe has produced a litter of seven.

Animals of several other breeds have been added to the project, including Mouflan wild sheep which are native to Sardinia. Mouflans have a

*Contributions to sheep production in the United States, including the design of this state-of-the-art sheep milking parlor, have come from Rosemount station research.*

hair coat, will reproduce out of season and will breed while lactating. They are valued as game animals in some countries. Animals of the Russian Romanov breed, noted for high fertility, were added in 1987. Canadian Arcott sheep, noted for high milk production, were added in 1988.

The imported breeds and crosses between them and domestic breeds are evaluated on reproductive performance, milk yield, wool quality and other characteristics of economic importance.

A modern sheep milking parlor was built in 1986, at a cost of about $75,000. Experience in sheep milking was gained earlier in a makeshift milking parlor constructed in 1984. This was the first sheep milking research project in the United States at a land grant university.*

Up to 120 ewes have been milked for three to four months during their lactation. The department of Food Science and Nutrition has worked with the project to produce varieties of French, Spanish and Italian cheeses from sheep milk. Sheep milking has been viewed as a possible alternative industry in sheep production.

**SWINE GENETICS**

Swine genetics research moved to the Beef/Sheep/Swine area at site 500 about 1970. Research at the old site was concerned with selection for crossbred performance to achieve increased rate of growth and a leaner carcass. The Minnesota Agricultural Experiment Station was an early leader in breeding for lower carcass fat and in breaking down barriers to cross breeding. This research was also conducted at four of the other stations.

Research at the new location is concerned with Porcine Stress Syndrome. The syndrome is characterized by a rapid elevation of body temperature, increased heartbeat and muscle rigidity. A relatively high mortality rate occurs in susceptible animals subjected to stress.

The Belgian Pietrain breed is particularly susceptible to the stress syndrome. The Yorkshire and Minnesota No. 1 breeds are resistant. These breeds and their crosses are studied to determine the cause and effect and the mode of inheritance of this disorder. Porcine Stress Syndrome is also used as a model for research on malignant hyperthermia which occurs in humans. Findings from this study have contributed to human medical research.

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* The specialized sheep milking parlor is building number 522, visible in the aerial site photo in Appendix V.

Earlier research contributed to developing a line of miniature swine in cooperation with the Hormel Institute at Austin, Minnesota. Animals of this line are only about one-fourth the size of domestic breeds at maturity. Their value lies in reduced cost of handling and transport to medical laboratories, and in smaller loss when animals must be sacrificed.

The swine genetics program is housed in four buildings constructed in 1970 and 1972, at a cost of $351,700. These are total confinement buildings with liquid manure pits.*

**SWINE NUTRITION**

Swine nutrition research at the Rosemount station is concerned with the nutritional requirements of sows, starting pigs, and growing-finishing pigs. Early studies at this site were important in describing the response of pigs to dietary amino acids.

Facilities used for sow reproduction research have been recently redesigned to allow for individual feeding of pregnant sows in order to focus on connections between diet, metabolism, body composition and reproduction. An oxygen limiting silo at the site provides for storage and feeding of high fiber forages.

Studies have also been conducted on the design and function of equipment in swine management. Elevated pens have been used in the nursery section to study feeding and management of baby pigs.

Swine nutrition research is conducted in four buildings constructed in 1973 and 1974, at a cost of $338,800. These are total confinement buildings with liquid manure pits.**

## *SERVICE AND SUPPORT -- SITE 600*

The service and support center has four units: farm crew, farm shop, field mechanics, and feed center. The priority function for each is service and support of the total station research program. Departments have access to

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* The locations of buildings 510 and 511 (built in 1970), and 513 and 514 (built in 1972) can be seen in the aerial photo of this site in Appendix V.

** The locations of buildings 515, 516, 517 and 518 can be seen in the aerial photo of the site in Appendix V.

their services through work or feed orders. Their activities are described more fully under *Administration, Service and Support.*

### *PLANT PATHOLOGY -- SITE 700*

The department of Plant Pathology has administrative responsibility for this site. The department of Entomology has assigned areas within the site where they have conducted research. The harmony and cooperation existing between the two departments is excellent. It has allowed both to increase their field research greatly over the years.

Plant pathology research programs conducted at this site have been

*Specialized machinery such as this small plot harvester at Plant Pathology, is found at many sites.*

concerned with cereal rust, late blight of potatoes, alfalfa diseases and canker of aspen trees, and other plant diseases. A great deal of success has been achieved through breeding for disease resistance, especially against cereal rust. Disease control with chemicals, crop rotation and date of planting have also been studied.

Entomology work has been concerned with management and control of insect populations including the green peach aphid, potato leafhopper, corn rootworm, Colorado potato beetle, corn borer and others. Project leaders have conducted field scale studies and observations on general farm production fields.

Acreage at this site has increased from about 200 acres in 1965 to 300 acres in 1990, through expansion into fields formerly operated by the general farm. This large area has been a valuable asset for plant disease and insect research. It has allowed crops to be rotated to new plots to break disease and insect cycles. It has also allowed project leaders to create plant disease and insect epidemics in isolated areas under controlled conditions, without causing problems for other projects. Researchers may then study how epidemics originate and how they may be controlled.

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*Research scientists in the department of Plant Pathology and in Agronomy and Plant Genetics have conducted a standard test nursery for bacterial wilt in alfalfa since 1951. This 39-year project has become the longest continuously operated alfalfa disease testing program in the world.*

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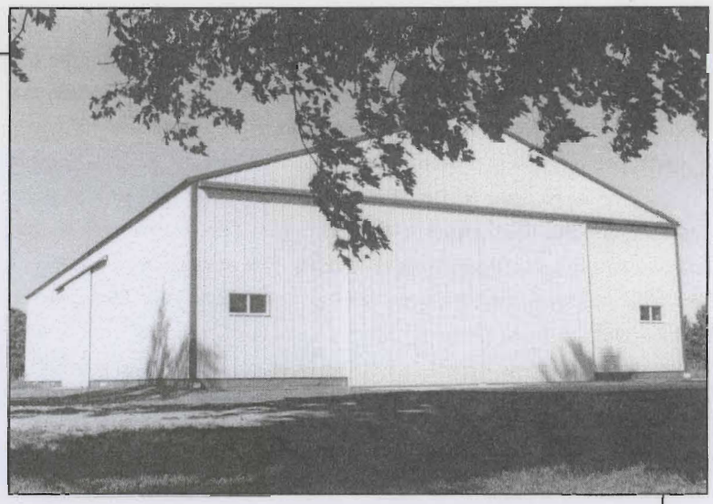
A fusarium test nursery has been operated for the last 14 years. Public and private researchers throughout the United States, and from many other nations, submit seed of experimental lines to test in these plots. Test results have been important in developing and marketing superior varieties of alfalfa.



*The newest station building, a machine shed at Plant Pathology, was built in 1990 at a cost of about $40,000.*

A new 48 x 96 foot machine shed, which will greatly enhance the work of the departments, was completed at the site in 1990. The cost of about $40,000 was shared by the department of Plant Pathology, the Rosemount station and the central office of the Minnesota Agricultural Experiment Station.*

### *SOUTH BEEF -- SITE 800*

Early research at this site was concerned with the management of beef cattle on rolling, hilly land. The departments of Animal Science, Agronomy and Plant Genetics, and Soils cooperated with industry leaders in this work. A beef grasslands field day was held each year. When this research was completed about 1967, the program was changed to feedlot nutrition studies.

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* The aerial photo of this site in Appendix V was taken before the machine shed was constructed. If it were on that photo, its location would have been directly below building number 709.

Twenty-one feedlots are now located at this site, each with a capacity for ten to twelve animals. They are used for studies on alternative types of proteins and fibers such as feeding cannery wastes, whole versus cracked corn, and feeding corn held in long term storage. Evaluations of feed additives, growth promotants and other nutritional supplements are also done here.

Two large open sheds located here were among the first pole barn structures built using pressure treated poles. The department of Forestry studied the effectiveness of wood preservatives applied to the siding. These buildings helped demonstrate the value of pole buildings in farm construction. After about 35 years of service they are in poor condition. Two of the small concrete stave silos at this site are also in poor condition. Requests for funding to construct a new beef cattle research facility have not been successful.*

### AGRONOMY HILL -- SITE 900

The main research at this site is in alfalfa breeding. Research has also been conducted on other legumes and grasses. Winter hardiness is one of the most important factors in developing varieties for northern climates. Other important factors are disease resistance and yield.

Forage research scientists conduct a variety test program at this site. Public and private breeders submit varieties to be tested under standard growing conditions to evaluate yield, winter hardiness and other traits.

Research project leaders believe this to be one of the most important alfalfa breeding sites in the nation among land grant institutions. The variety Agate, developed here, was the first alfalfa variety bred for resistance to phytophthora root rot. Nitro alfalfa was the first variety developed specifically for increased nitrogen fixation and accumulation.**

### AGRICULTURAL ENGINEERING -- SITE 1000

Research at this site has dealt with the construction, heating and ventilation, and improvement of farm buildings. Early work involved the

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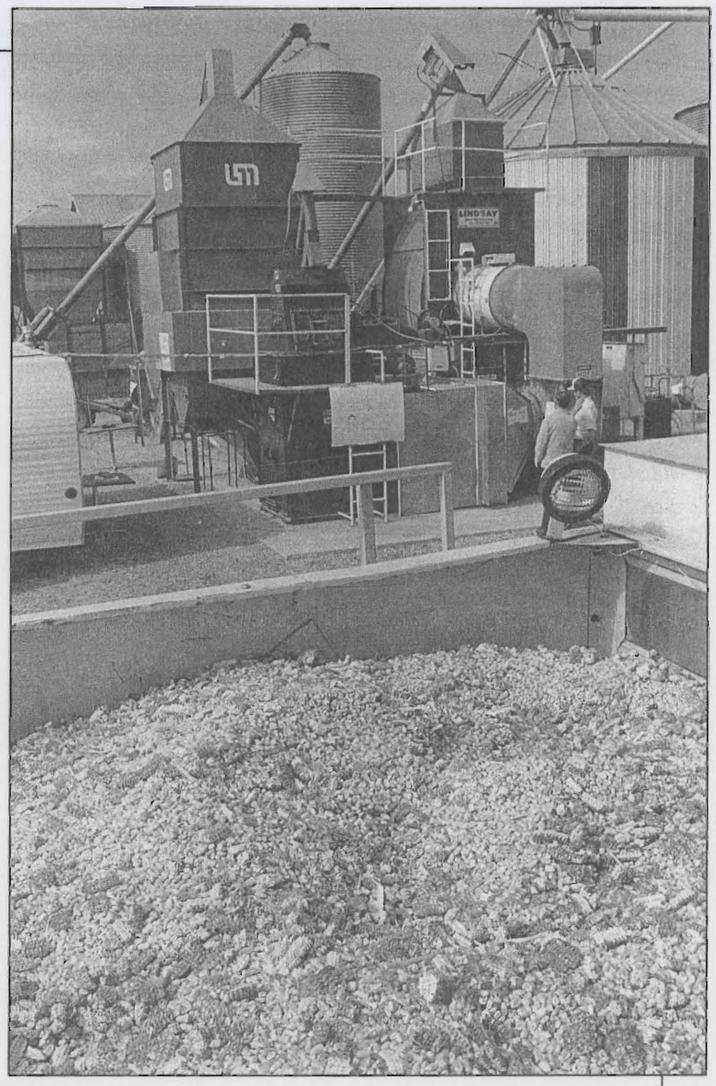
* The experimental pressure treated pole barns are buildings 805 and 806. Their locations are visible on the aerial photo of the site in Appendix V.
** An aerial photo of this site is in Appendix V.




*A crop drying system that derived some of its energy from corn cobs was developed at the Rosemount station. Though no longer in existence, it was part of research that established the feasibility of using a lower energy system to both save on fuel and improve end product quality.*

# Administration, Service and Support

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The administration and the service and support components of the Rosemount station operation are composed of the central station office located at site 100, and the general farm crew, station shop, feed center, and field mechanics unit located at site 600. This part of the station operation is managed directly through the superintendent's office.

## CENTRAL OFFICE

Much change has occurred in the central office in the last 25 years. In 1965 there were two office staff and the superintendent. Office technology and equipment at the time was the typewriter, adding machine, file cabinets, dictaphone and, of course, the telephone. Many records were kept by hand. Duplicate copies were made with the typewriter, using carbon and onion skin paper. Mistakes were difficult to correct. Copies beyond the fourth or fifth were almost illegible.

Present office machinery and equipment seem almost miraculous by comparison. Five computers are in service at this time. Nearly all the station's budget, personnel, field, commodity, and other records are kept by computer. Most reports and correspondence are done by word processing and letter quality printer. Some correspondence is transmitted by fax machine. A high

speed copier turns out copies almost equal to the original. A state-of-the-art telephone system installed in 1989 provides communication within the office, and between the office and the farm shop and crew service buildings, in addition to other features.

A two-way radio system installed in 1967, and updated in 1977, adds greatly to communication throughout the station area. The system consists of a base station with a 50 foot antennae located at the central office. Sub-stations are located at the farm shop and the farm crew service center. Mobile units are installed in four vehicles. Field mechanics and farm equipment operators carry portable units when needed.

The radio system provides quick response to service calls and emergencies. Field operations are managed more efficiently. In addition, contact with the

*A 3,000 gallon liquid manure tank and injection system handles about half the manure generated by station livestock. Returning manure to the soil in this manner helps preserve the nutrients for use by crops.*

security patrol may be made during off-hours. The security patrol network includes radio contact with the Sheriff's office.

These office and communication tools are of great value in management of the station.

### GENERAL FARM

About 2,000 acres of the station are operated as a general farm to produce feed for livestock on the station and on the St. Paul campus. Soybean and other crops are grown when they fit into the crop rotation. Crops to be grown are determined mostly by the needs of the livestock units. About 25 percent of the Rosemount station budget is derived from the general farm operation.

*Typical crops grown and average yields for the general farm operation:*

| CROP | ACRES | YIELD |
|---|---|---|
| Corn, shell | 850 | 110–125 bu/acre |
| Corn, silage | 150 | 12–15 ton/acre |
| Alfalfa | 400 | 4–4.5 ton/acre |
| Oats | 200 | 65–75 bu/acre |
| Soybeans | 100 | 40–45 bu/acre |

Over the years, a number of smaller general production fields have been combined into larger units to allow for more efficient operation by large

*Low tillage options such as chisel plowing are used on station general farm acreage. Feed needs and rotation requirements determine what is next planted in these areas.*

machinery. The general policy is to grow row crops in the larger fields and produce forage and small grain crops in the smaller or irregular shaped fields. The station field map has been redrawn twice since 1965 to show field realignment and expansion of the plot research areas.

The power and versatility of present day machinery is truly remarkable compared to the era when horsepower was provided by real horses, and even compared to what was available 25 years ago.

The machinery line in the present general farm operation is anchored by three large row crop tractors, each producing from 135 to 155 horsepower. Two of these have modified front wheel drive.

A 12-row planter used for corn and beans can plant about 15 acres per hour. A pair of 12-foot small grain drills, hooked in tandem, can plant from

ten to twelve acres per hour. Three people, using a large tractor, a two-row chopper and three forage wagons, can put up about 20 tons of corn silage per hour. A 55-foot sprayer, which injects chemicals into the water line at the time of application, can apply herbicides on about 30 acres per hour. A six-row combine can harvest 400 to 600 bushels of shell corn per hour. A new crop dryer can remove ten points of moisture from 250 to 300 bushels of shell corn per hour, and can run unattended through the night.

Significant changes have also occurred in tillage operations. Beginning in the late 1960s use of the chisel plow increased and moldboard plowing decreased. In the 1970s the ridge till system of corn and bean production was introduced.

Ridge till involves construction of ridged rows by cultivation. Planting is performed in the following season directly on the ridged rows. The only tillage is for weed control and ridge forming. Chisel plowing and ridge tilling protect the soil from erosion by leaving more of the crop residue on the surface of the field. They usually require less power, and often lesser amounts of herbicides, while maintaining comparable yields.

Presently about 10 percent of the station's production fields are moldboard plowed, 40 percent are chisel plowed and 50 percent are ridge tilled. Secondary tillage with the field cultivator, disk or drag harrow may be performed on moldboard or chisel plowed fields to prepare seed beds or incorporate pesticides.

The farm crew, composed of a foreman and six farm equipment operators, play an important role in support of the research program, and in the operation of the general farm.

## *STATION SHOP*

Two automotive mechanics operate the station shop. They have both the skills and the equipment to perform most of the required maintenance and repairs on general farm and department equipment and machinery. They are equipped to overhaul engines, repair hydraulic, fuel and electrical systems, and provide welding and other mechanical needs. Farm shop staff and facilities are also used to design and construct research equipment.

## FEED CENTER

A manager, delivery service driver, and farm animal attendant operate the feed center. The center produces diets for research and for general livestock production. Constructed at a cost of over $1.25 million, the feed center began operation in 1981.

The feed center produces between 3,600 and 3,800 tons of feed annually. About two-thirds of this is in mash form delivered in bulk lots. About one-third of the production is bagged, and about one-third of the bagged feed is in pellet form. About two-thirds of the total output is used on the station, and most of the rest is used on the St. Paul campus. Some supplemental diets are formulated for research projects at other branch stations.

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*An interesting development in the feed center operation has been the production of pelleted feed for moose at the Minnesota Zoo in Apple Valley. The zoo was having difficulty finding a diet that would satisfy the nutritional needs of moose in confinement. Research nutritionists in the department of Animal Science worked with zoo personnel and developed a diet for the moose.*

*This diet is now produced by the feed center, and the moose are doing quite well. Because moose are browsers in their natural habitat, an interesting aspect of the new diet is that it contains 25 percent sawdust.*

---

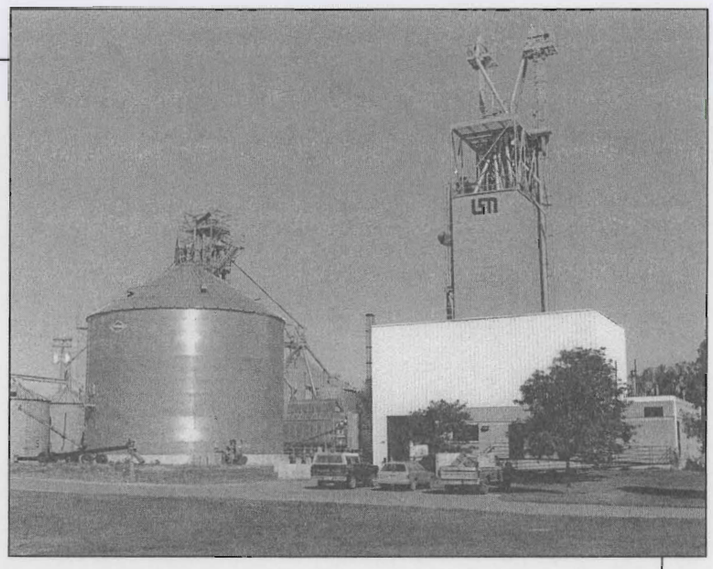
A new state-of-the-art crop dryer installed in 1987 is an important component of the feed production and processing program. The dryer operates by continuous flow of grain through the system, or by batch lots. A

conveyor system moves grain from a 90,000 bushel storage area directly to the feed mill. It replaced a system installed in 1968. That system served for 19 years, processing more than 1.25 million bushels of grain.

Research project leaders in the department of Agricultural Engineering advised on the design and on selection of equipment for both the old system and the new. Working with the general farm crop over a period of several years, they developed a drying program using both heat and natural air.

The first phase of the system uses a propane fired dryer to reduce moisture level in the grain to 22 percent or lower. Following that, the hot grain is dumped into storage bins equipped with false floors. Unheated air forced up through the grain cools it to the outside temperature.

Cool down in the fall and warm up in the spring is important in managing grain for longer storage. Fans run continuously for several weeks in the spring



*The feed center, comprising the crop dryer (left) and the mixing plant (right), is an important operation at the station. The large storage bin (front) has a 50,000 bushel capacity. Stored grain is moved directly to the mixing plant by a conveyor system, for processing into finished diets.*

to force a drying front through the grain profile and reduce moisture to safe storage levels. This system of grain drying has resulted in lower drying cost and in higher quality grain. Higher quality is achieved by reducing the amount of cracked grain resulting from longer exposure to high temperature.

This work was performed in the early and middle 1970s when the Arab oil embargo forced energy costs higher and made supplies scarce. This management system has been widely accepted throughout Minnesota and adjoining states.

## *FIELD MECHANICS*

A senior general mechanic and a maintenance and operations mechanic maintain the station's physical plant. They have responsibility for repair and upkeep of buildings, including heating and ventilation and plumbing and electrical systems. They also occasionally build small structures, or remodel existing structures.

# People Make It Work

*Meeting an Agricultural Research Mission*

*The Rosemount Branch of the*
*Minnesota Agricultural Experiment Station*
*1965-1990*

The Rosemount station is fortunate to have a skilled and dedicated support staff. The research program at the station has more than doubled and the general farm operation has increased by almost one-half since 1965. Staff performance has been an important factor in meeting the increased work load. Better farm equipment, machinery and tools and new livestock buildings and facilities have contributed to staff efficiency. These improvements have required that the staff develop new skills and improve management techniques. Some employees have attended schools and training programs. Others have received on-the-job training.

Conditions under which the station presently operates are far different than those in 1965. Thirteen new livestock confinement barns, eight of which have liquid manure pits, have been constructed since then. These require continuous operation of their ventilation systems year round, and of their heating systems throughout the winter. Good routine maintenance is required to keep these systems operating properly, but even so, failures occur. Failures often occur under the most adverse conditions, and sometimes because of those conditions; lightning storms, heavy snowfall and blizzards, extremes of heat or cold and at any time day or night, on any day of the week. Skilled and dedicated field mechanics, backed up by a well equipped shop, service vehicles and two-way radio communication, are important in keeping all physical plant facilities operating efficiently.

Preparation of livestock diets has been greatly enhanced with construction of the new feed plant in 1981, but at a much higher level of complexity. In

*The growing complexity of equipment used in Rosemount station farm production is clearly shown by views of a 1950s vintage combine (top) and the new $140,000 unit used for the 1990 harvest.*

1965 there were four small feed mixing plants in operation on the station. A couple of these were little more than scoop shovel and feed basket operations. Some prepared feeds were purchased from commercial plants.

Operating the plant requires a knowledge of livestock nutrition and all phases of diet preparation, from storage and movement of ingredients throughout the mixing process, to final form for delivery to the site of use on the station or on the St. Paul campus.

The plant is equipped to produce small lot diets for research studies and large commercial type diets for general livestock production. The center provides research nutritionists with a convenient source for diets prepared to their specifications, at a cost usually below that of commercial plants.

Operation of the new crop drying system requires a knowledge of all phases of crop drying, from harvest of wet corn in the field to its deposit in the storage bin.

Farm equipment operators and automotive mechanics must be familiar with high performance engines, and hydraulic and electronic systems which have changed greatly over the last quarter century. A new combine, on line for the 1990 fall harvest, retails for about $140,000. Proper maintenance and operation of this and all station machinery is highly important.

Computers, unknown in 1965, now play a vital role in all phases of the station's operation, from the entry of coded information on employee daily worksheets, to control of budgets, personnel records, inventories and other functions. The support staff has responded well in developing their talents to meet the changing needs of the station program in all areas.

## *EMPLOYEE RECOGNITION AND PERSONNEL MANAGEMENT*

The University's personnel department plays an important role in personnel management of station staff. They establish job classifications, pay scales, grievance procedures and other matters for civil service personnel. In 1973, Teamsters Local 320 won the right to represent some employees in service classes. About half of the station's employees are bargaining unit members. They work under contract terms negotiated biannually between University Personnel and the union local.

An annual dinner is held each January for current and retired employees and their spouses. This marks the end of the year and sets the stage for the

next year. An important part of the event is the presentation of outstanding employee and outstanding unit awards.

Up to three employees are recognized each year for outstanding performance at the station. Candidates for the award are nominated by fellow workers. A committee makes final selections for presentation at the annual station dinner. Their names are engraved on a plaque which hangs in the foyer of the central office. Outstanding employees become members of the selection committee for the next year. A citation is also presented to the unit which does the best job of keeping its site neat and orderly, working well together, being cooperative and friendly, and presenting a good public image. A plaque is presented to the unit at the annual station dinner, and the name of the unit is engraved on a plaque which hangs in the central office foyer.

Station lapel pins are presented to all employees with five years of service. Lapel pins with inset stones in different colors, denoting years of service, are presented for each additional five years of service.

Other social occasions help to tie the Rosemount station staff together. A "happy hour," the non-alcoholic kind, is held each July. It notes the completion of the busy spring planting season. Station employees and campus work crews on station gather at the central office picnic grounds at noon for lunch and are served ice cream, toppings for sundaes, cookies and home made root beer.

The annual station picnic for employees, retirees and families is held in August. The highlight of this event is a barbecue chicken dinner prepared by skilled chefs from the employee group. Sweet corn grown on station, home made root beer, and melons and garden produce in season fill out the menu. Activities include games, a nature trail hike and a hay ride.

A Very Important Person program is held biannually in August. Office staff from departments conducting research at the station, department heads, research project leaders, and staff from the business office, purchasing department, store house, personnel office and other units that assist the station in many ways are invited. This VIP program provides personnel from other areas who work closely with the station an opportunity to become better acquainted with the Rosemount operation.*

* Listings of current and past station personnel are in Appendix VI. The lists include the job classifications of each employee.

# Community Connections

*Meeting an Agricultural Research Mission*

*The Rosemount Branch of the*
*Minnesota Agricultural Experiment Station*
*1965-1990*

The Rosemount station shares many of its operations with other University entities and also has significant interactions with outside communities locally, statewide, nationally and internationally. The connections are both professional and public.

## RESEARCH CENTER AND STATION SHARE SERVICES

The University's Rosemount Research Center, which shares the former Gopher Ordnance Works property with the station, gives excellent support to the station. The station and the Research Center cooperate extensively to avoid expensive and unnecessary duplication of capabilities. The Research Center provides road grading and snow plowing service. Heavy equipment owned by the Research Center is available to the station. This has provided the station with convenient and cost effective access to specialized machinery and equipment used only occasionally in the agricultural experiment station operation.

The Research Center also operates a security patrol for all University property in the Rosemount area. The station pays a share of the cost. The patrol operates at night and on weekends in a marked vehicle, and can communicate with the Sheriff's office by two-way radio. The presence of the patrol throughout the area is an important deterrent to vandalism and related

problems that could occur in such a large open area near an urban population center.

The Research Center joined the radio communication system operated by the station when it was updated in 1977. Call letters are KJI-555. Unit numbers are 0 through 99 for the station, and 100 through 199 for the center. The system is highly important to the staffs of both station and center.

## *FIRE PROTECTION*

The Rosemount station and the Research Center also share the cost of fire protection, provided by the Rosemount Volunteer Fire Department. The station has a detailed Fire Protection Plan. Copies are on file with the fire department and at each station site. The Fire Protection Plan is updated and reviewed with the fire department and with station employees periodically. It contains road maps and aerial photos of each site, and photos of each building with information on construction, use, contents, potential hazards, etc.

The fire department has been called to two fires on the station in the last 25 years. The first was in the fall of 1967, before the development of the fire plan. Several sows and their litters, and a forage storage building were lost.

The second fire occurred on October 8, 1976 in building number 607. The Fire Protection Plan was in effect at that time. A Rosemount police car was on the scene within seven minutes, followed closely by a fire truck. The fire plan worked well and there was only minor damage done to the ceiling and inside of the building.

## *SAFETY*

A number of safety related programs have been conducted at the station, including first aid training, preparation of emergency first aid kits for station units, defensive driver training, and safety glasses, shoes and clothing.

The University's department of Environmental Health and Safety conducts biannual inspections to assist the station in meeting its requirements under the Occupational Safety and Health Act.

There have been no accidents at the Rosemount station in the last 25 years resulting in loss of life or disability. One employee, however, died on the

job. This occurred during a first aid training class at the central office. He had complained about not feeling well, and slumped over and fell to the floor shortly after the class began.

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*Cardio Pulmonary Resuscitation (CPR) had been covered in an earlier first aid class. Members of the class initially thought the scene had been staged to aid in instruction, but it soon became clear that a massive heart attack had occurred.*

*One of the most realistic and effective classes on CPR was conducted in the following 35 to 40 minutes. The instructor directed and led the class in applying CPR, as they observed all the signs and conditions that occur in these situations. A doctor arrived in about 20 minutes. He administered a shot of adrenalin, and then stood by as the class continued CPR. He was taken to the Farmington hospital by ambulance. Doctors there said there was nothing more that could have been done.*

*The experience instilled great confidence in first aid among members of the class. They had kept their fellow employee alive for about 40 minutes using the techniques they had learned in the class.*

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## PUBLIC TOURS

A tour program for visitors has operated on the station for many years. It is especially used by elementary school teachers. A member of the office staff guides bus tours for elementary classes to units across the station. The tours

include visits to several livestock units, and observation of field operations and other farm activities. Wildlife is also often seen.

Professional and business groups tour the station also. Their guide, however, is usually the superintendent or assistant to the superintendent. Such visitors include staff from other universities and research facilities, foreign agriculturalists and academicians, and agribusiness and producer groups.

For many children, especially those from the more urban parts of the Minneapolis-St. Paul metropolitan area, a visit to the station is a first on-site visit to a commercial type of working farm. They are usually delighted with the baby animals, the open space and the farm machinery.

*Visiting agriculturalists from Egypt illustrate the international interest research at Rosemount station attracts. Superintendent Clifford Wilcox (third from right) or assistant to the superintendent Ken Walter (far left) escort professional guests interested in seeing station projects or sites.*

*During an elementary class tour of the farrowing barn a cat, being about the size of a baby pig, had joined one of the litters and was stretched out comfortably among the baby pigs as if it were a member of the family. One little girl, fascinated by this scene, lingered behind the other children. After they had all passed by she inquired timidly, "Did the mother pig born the cat?"*

Many teachers return with their classes year after year. The tours provide at least four valuable returns. First, they are enjoyable outings for the children. Second, they help children understand just a little better where their food comes from before it reaches the supermarket. Third, it helps kindle the spark of scientific curiosity that might possibly lead a child into a career in science or agricultural research. Finally, it's also a positive public relations tool for both the Rosemount branch and the Minnesota Agricultural Experiment Station as a whole.

In addition to organized tours, a three-quarter mile, self-guided nature trail has been in use on the station for more than two decades. It was originally established by forestry department staff in 1968. It was improved in 1979. A trail guide provides information on plantings at twenty numbered sites, and on wild life found in the area. The nature trail is a popular station attraction for science classes and picnic groups.

## ROSEMOUNT ADVISORY COUNCIL

An advisory council for the Rosemount station and the Research Center was organized in 1987. It was established with the purpose of providing better

communication between the University and citizens and organizations in the community in order to deal more effectively with matters of concern to all.

The council includes 13 members from surrounding communities and an ex-officio member from the station and from the research center. Members of the council are selected from agricultural producers, agribusinesses, county and municipal government, education, the extension service and the financial community. The council's efforts are greatly appreciated.*

## *MINNESOTA CROP IMPROVEMENT ASSOCIATION*

The station produced foundation seed for the Minnesota Crop Improvement Association for many years as a contract grower. This program was discontinued in the late 1970s due to obsolete processing equipment and demands on the staff in other areas of work. The crop improvement association has, however, maintained a 40 acre site at the station, which they use to increase foundation seed lots.

* A listing of current and past members of the Advisory Council is in Appendix VII.

# Weather Travails

*Meeting an Agricultural Research Mission*

*The Rosemount Branch of the*
*Minnesota Agricultural Experiment Station*
*1965-1990*

The Rosemount station has been one of the 12,000 sites across the United States which voluntarily report daily weather recordings and observations to the National Weather Service. The data has contributed to the accumulation of climatological information important to agriculture, public agencies, commercial enterprises and others. The station became an official weather observer early in its history.*

## DROUGHT

The most serious drought in the upper midwest since the early 1930s occurred in 1988. Crop yields were reduced to between 35 and 40 percent of normal. It is interesting to note that there have been four years with less precipitation than 1988 in the past 25 years.

The critical factors in 1988 were timeliness of rainfall and high temperatures. Only about one-fifth of an inch of rain (.21 inches) fell between May 20 and July 8. There were 33 days with temperature of 95 degrees or above. Temperatures topped 100 degrees on nine of those days, peaking at

* Appendix VIII contains a summary of precipitation data for the Rosemount station since 1965.

105 degrees. Many area lawns went "dormant" early in the season and never recovered. A number of trees and shrubs were also lost.

Spider mites, which had never been a problem in the last 25 years, thrived under the hot, dry conditions. They caused significant damage to soybeans. Phosphorus deficiency occurred in some ridge till fields even though soil tests were in the medium to high range for phosphorus.

## *STORM*

The worst summer storm in the last 25 years occurred on July 15, 1980. Straight line winds near 100 miles per hour were recorded in the Rosemount area. Several streets were closed in communities around the area due to uprooted trees. Several homes in the area were simply blown down.

The station incurred $34,615 in damage from the storm. This was mostly from damage to building roofs.

## *FREEZE*

One of the worst winter storms of this century occurred the weekend of the Super Bowl, January 11-12, 1975. This storm was compared to the Armistice Day storm of November 11, 1940. Both began on days with relatively mild weather, with a light rain in the afternoon which quickly changed to blizzard conditions with rapidly falling temperatures.

Electrical power was off for more than 30 hours. Resident managers at dairy, south beef, poultry and north beef were hard put to take care of their areas. The superintendent and assistant to the superintendent traveled by station wagon from unit to unit checking on standby generators and helping where they could. One of the front wheels on the station wagon froze. It was abandoned in favor of a large tractor with a snow blade. Power of the tractor was more than adequate, but traction was a problem.

The most critical factors were feed, water and ventilation for animals in confinement. An employee at swine genetics was able to get in by snowmobile. He stayed through the night and the next day. He provided for the basic needs of the two swine units and for the sheep. Thanks to dedicated employees,

there was no loss of livestock from the storm. But on top of all that, the Vikings, Minnesota's professional football team, lost to the Kansas City Chiefs in the Super Bowl.

# A Summary: Past, Present And Future

*Meeting an Agricultural Research Mission*

*The Rosemount Branch of the*
*Minnesota Agricultural Experiment Station*
*1965-1990*

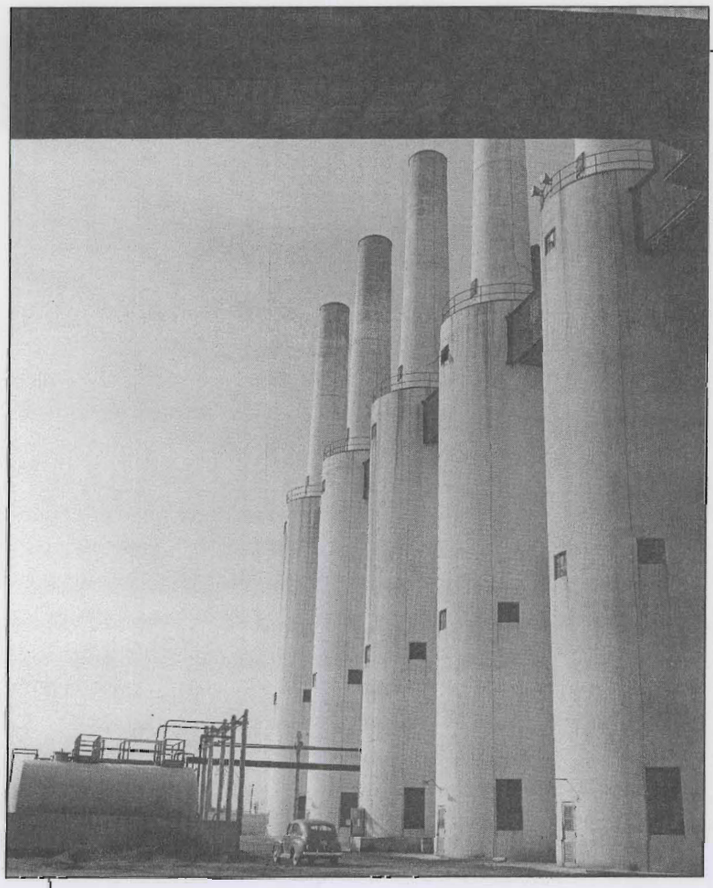
Construction of the Gopher Ordnance Works during World War II had a devastating effect on the Rosemount community. Nearly 100 farm families were removed from their land, some with less than three months notice. More than 19,000 workers were employed on the site at the height of construction. One can easily imagine the problems of housing, sewage and sanitation, crowded schools, traffic control, law enforcement, etc.*

The plant was under construction throughout the course of the war, except for a brief time when construction was scaled down temporarily at the end of 1943 and early 1944. One section of the plant produced explosive powder for several months. The rest of the Gopher Ordnance Works was never completed. The more than $115 million spent constructing the facility made it the third most expensive defense plant in the nation. In the end, the plant made little contribution to the war effort.

Hindsight might suggest that the nation's commitment of a tremendous amount of resources--labor, land, materials and professional expertise--to construct the Gopher Ordnance Works was a gross error. However, few people today realize the precarious position of the nation at the beginning of World War II.

* The summary of the Gopher Ordnance Works period is derived from Patricia Dooley's article, "Ordnance Works Condemnation, Construction, and Community Response," published in the summer edition 1985 of the Minnesota Historical Society.

Henry L. Stimson, Secretary of War in 1940, noted that "we didn't have enough powder in the whole United States to last the men we now have overseas for anything like a day's fighting and, what is worse, we didn't have powder plants or facilities to make it." Had the war taken a different course, failure to have prepared for such a possibility could have been a far greater error.



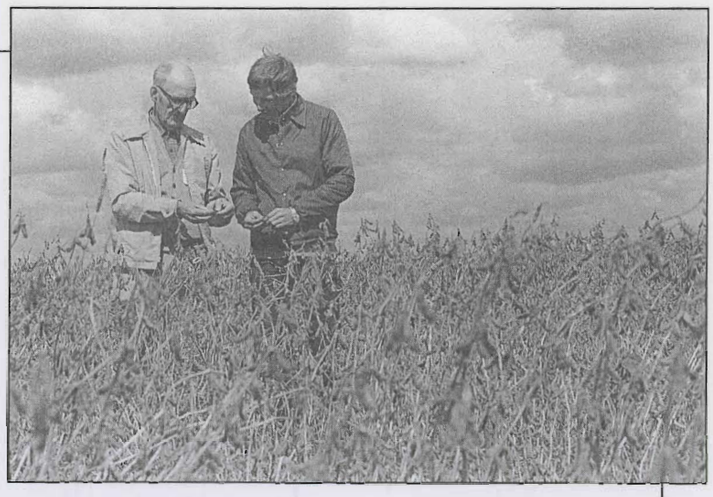
*Many structures were left on the former Gopher Ordnance Works in 1947. Buildings are mostly gone, but two sets of these large smokestacks remain as landmarks visible through much of the Rosemount community.*

Remnants of the ordnance plant still stand--concrete foundations, some T-walls, a few buildings, and two sets of smokestacks visible for miles throughout the community.

Today, about 3,100 acres of the former Gopher Ordnance Works is operated as the Rosemount branch of the Minnesota Agricultural Experiment Station, with the mission of finding ways and means to produce food and fiber more efficiently. The conversion of the site from war time destruction purposes to peace time goals of improving the quality of life may be likened to the biblical account of beating the sword into the plow share.

In summary, attention is called to several research projects in which the Rosemount station has made significant contributions.

Jean W. Lambert, a member of the Agronomy and Plant Genetics faculty, developed 18 varieties of soybeans during his 36 year career at the University of Minnesota. In 1982 alone, the year of his retirement, his soybean varieties were credited with increasing Minnesota farm income by $33 million. That figure has increased to well over $200 million in the years since, and will continue to grow for some years into the future. A great part of selecting and



*Jean Lambert (left) developed 18 varieties of soybeans during his 36 years at the University of Minnesota. Jim Orf (right), his successor, continues the soybean breeding program.*

developing these varieties was done at the Rosemount station.*

A sewage sludge research project, conducted at the station by scientists in the department of Soil Science, is recognized as one of the longest running studies of its kind in the nation. Results from this study show that sewage sludge, generally considered a pollutant, provides plant nutrients to agricultural crops without harm to plants or animals when applied at recommended rates.

Incineration, one of the most common alternatives for sewage sludge disposal, uses fossil fuel, a finite, expensive source of energy, to destroy a product which has known fertility value in agricultural production. The incineration process also concentrates heavy metals in ash, which must then be disposed of as a hazardous waste.

Concern for air pollution generated by incineration may some day force an end to the practice. Should that happen, this research will be invaluable in dealing with the sewage sludge generated in large metropolitan areas. Guidelines for applying sludge to agricultural fields are already widely used in small communities where incineration is not possible.

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*A team made up of scientists from other universities, and industry and business leaders, reviewed the University of Minnesota Soil Science department in the spring of 1990. In a discussion on the sewage sludge project, the chairperson of the review team stated that the sewage sludge research project should be considered a national treasure.*

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It is almost impossible to compute the dollar value of research projects such as the alfalfa research program recognized nationally and internationally,

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* Figures are internal estimates prepared by faculty of the department of Agricultural and Applied Economics.

crop drying research which has saved countless dollars in fuel costs while improving grain quality, and many others conducted at the station over the years.

# A Personal Summary

*Meeting an Agricultural Research Mission*

*The Rosemount Branch of the Minnesota Agricultural Experiment Station 1965-1990*

The total research program at the Rosemount station has more than doubled over the last 25 years, with the plant science programs being especially strong. More than $2.7 million of new construction has been completed, resulting in the physical plant being in the best condition ever, even though there are some areas below desired levels. The machinery and equipment line is also in the best condition ever.

This is not to imply that all is well. There are many improvements that could be made to the overall operation. There are other serious issues that must be resolved, including proposed retrenchments. Thus, challenging times lie ahead for the station.

At this time, however, the station is well positioned and equipped to continue its role as a satellite or extension of the St. Paul campus field research facilities, and as a component of the branch station system of the Minnesota Agricultural Experiment Station.

*My tenure as Superintendent of the University of Minnesota Agricultural Experiment Station, Rosemount, ended November 30, 1990. This came at the*

close of the best crop production year in the history of the station, with corn yielding nearly 130 bushels, corn silage over 16 tons, and soybeans over 48 bushels per acre. This has been wonderful to see in my last year.

The station budget is above average for this stage of the fiscal year. The new superintendent will not be faced with any immediate budget problems.

I look back over the past 25 years with a great deal of satisfaction, and with much gratitude for the opportunity to have played a role in the development and operation of the Rosemount station.

Clifford L. Wilcox

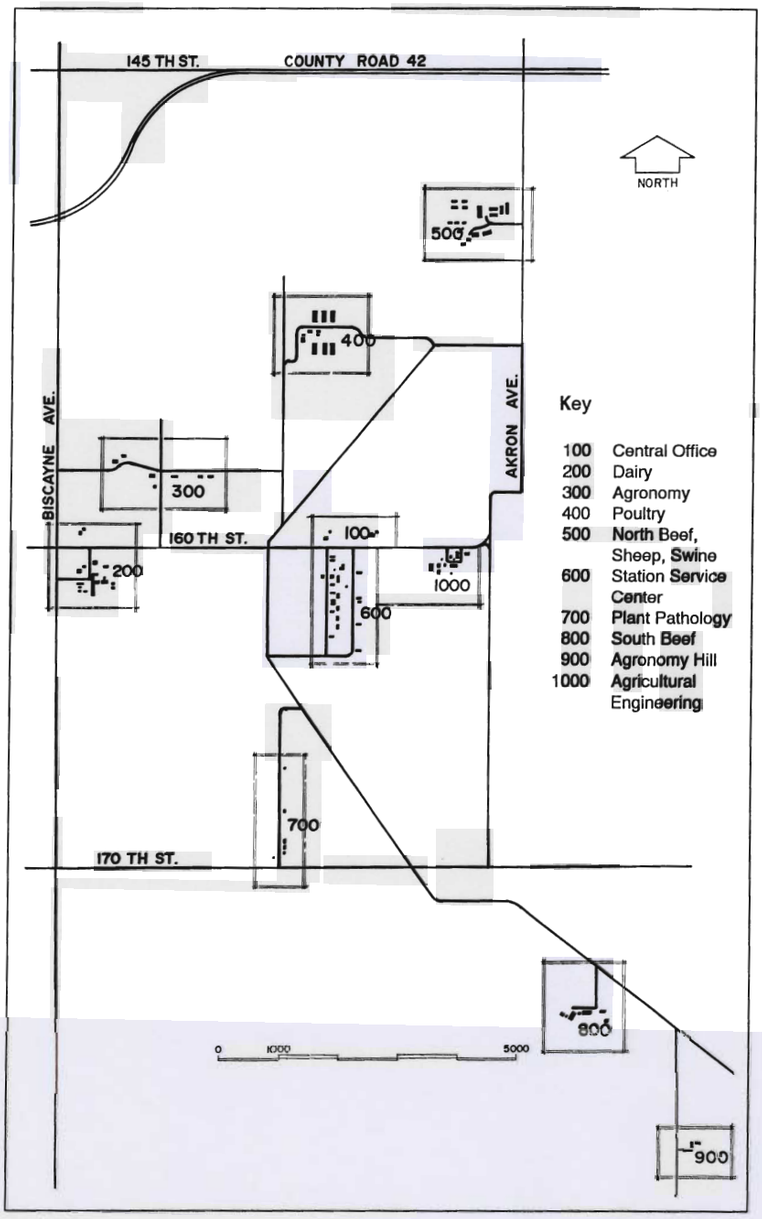
# Rosemount Station Maps

*Meeting an Agricultural Research Mission*

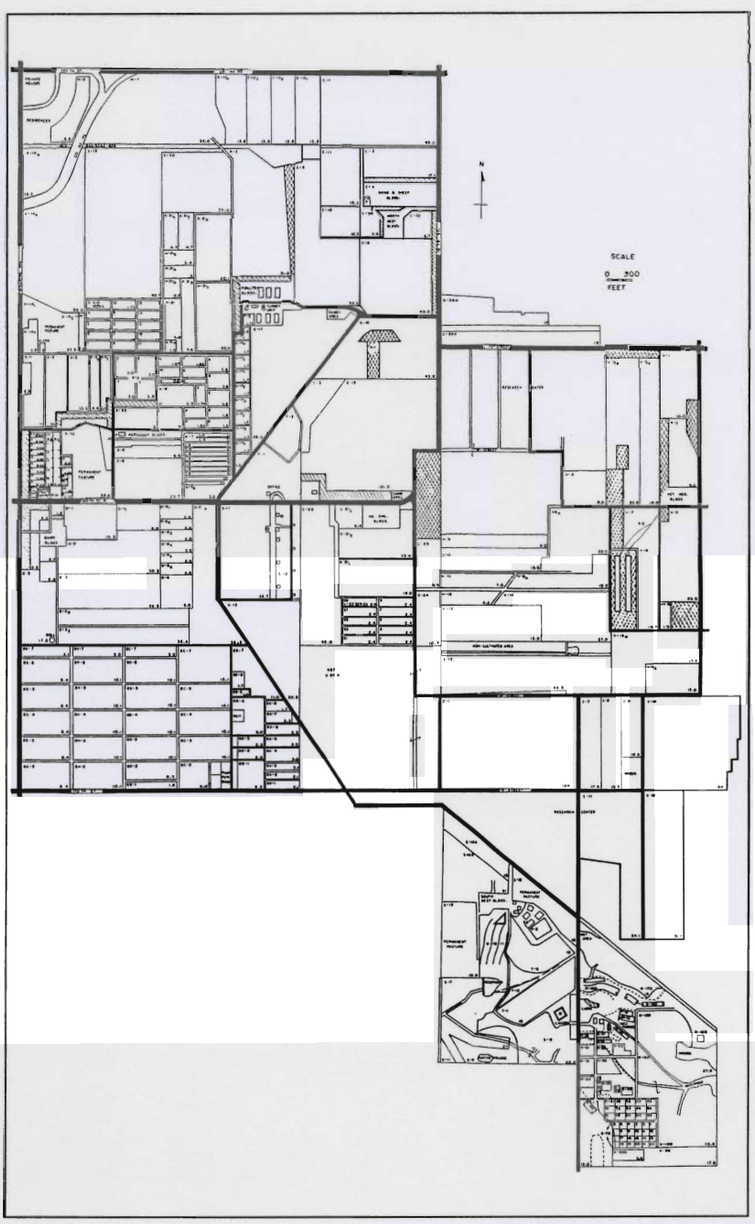
*The Rosemount Branch of the Minnesota Agricultural Experiment Station 1965-1990*

## Appendix I

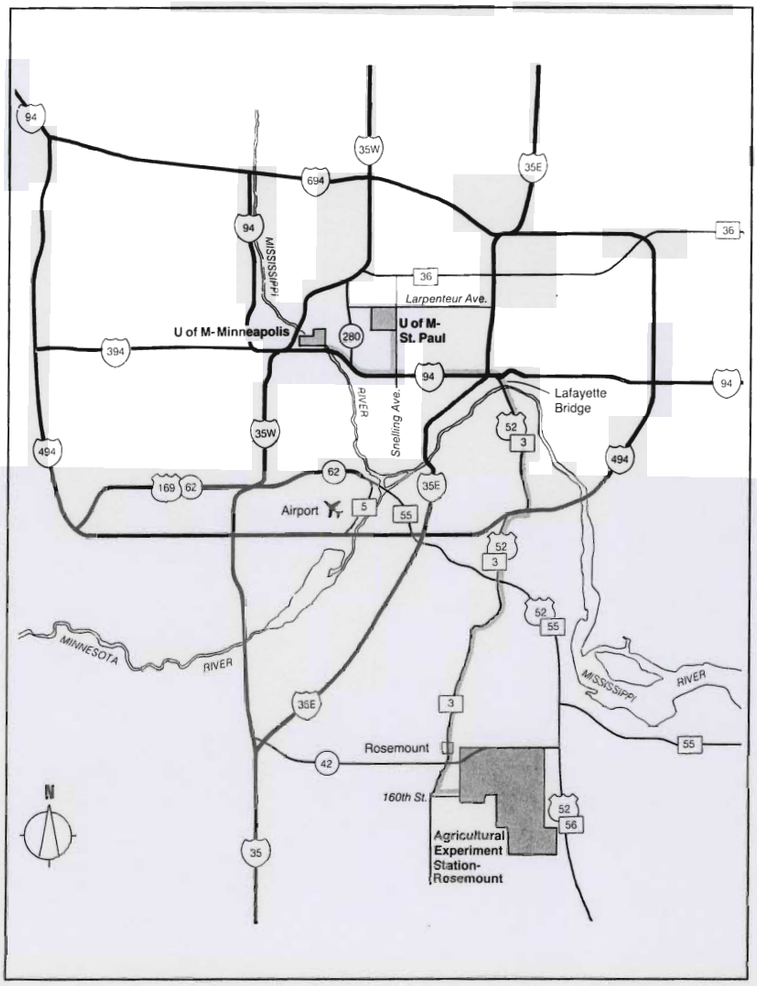
**Department, Central Office and Station Service Center**
**Site Locations at Rosemount Station**



## Current Field Layout at Rosemount Station



**Rosemount Station Location Within The Minneapolis-St. Paul Metropolitan Area**



# Organizational Structure at Rosemount Station

*Meeting an Agricultural Research Mission*

*The Rosemount Branch of the*
*Minnesota Agricultural Experiment Station*
*1965-1990*

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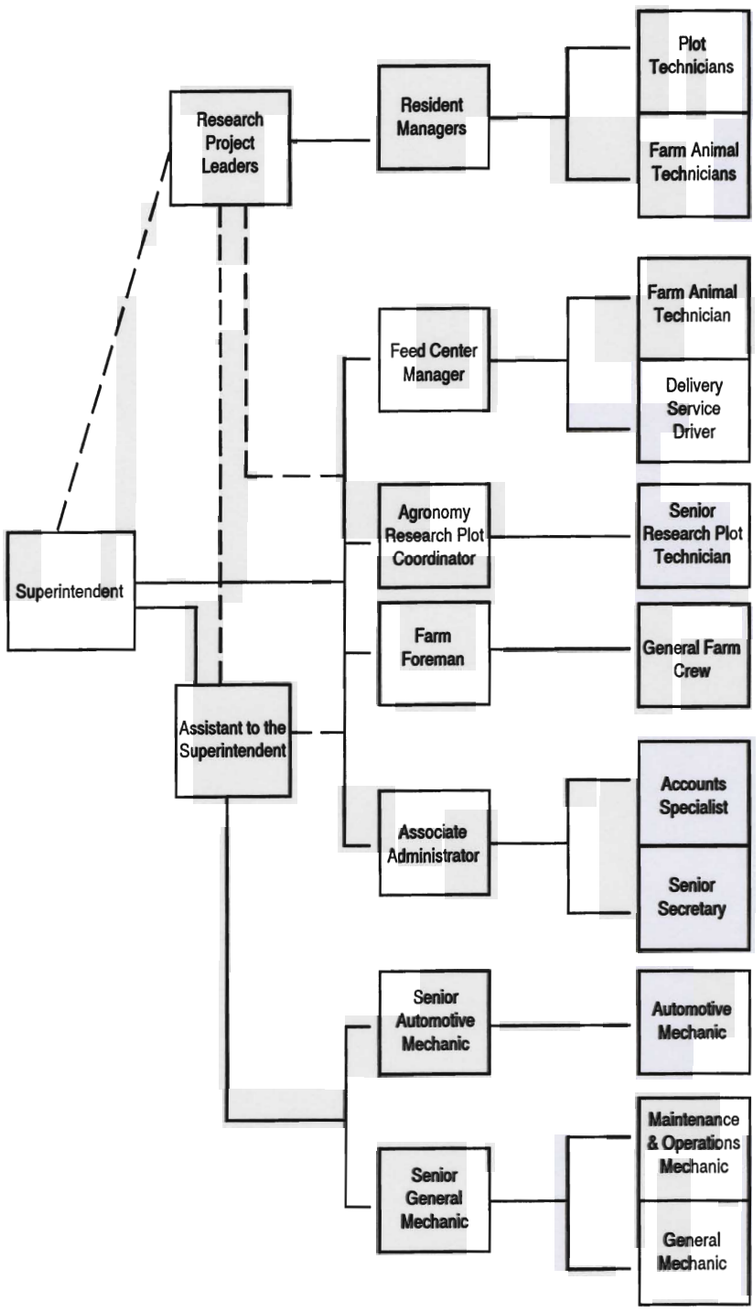
## Appendix II


Superintendent
Research Project Leaders
Assistant to the Superintendent
Resident Managers
Plot Technicians
Farm Animal Technicians
Feed Center Manager
Farm Animal Technician
Delivery Service Driver
Agronomy Research Plot Coordinator
Senior Research Plot Technician
Farm Foreman
General Farm Crew
Associate Administrator
Accounts Specialist
Senior Secretary
Senior Automotive Mechanic
Automotive Mechanic
Senior General Mechanic
Maintenance & Operations Mechanic
General Mechanic

# Hourly Machinery Rates

*Meeting an* ***Agricultural Research Mission***

*The* ***Rosemount Branch of the***
*Minnesota* ***Agricultural Experiment Station***
***1965-1990***

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## Appendix III

## *Hourly Machinery Rates--1990*
## *University of Minnesota Agricultural Experiment Station*
## *Rosemount*

| Computer Code and Description | | HP | Size | Rate/HR |
|---|---|---|---|---|
| **Small Specialized Tractors:** | | | | |
| E26 | IHC - 140 w/cult | 23 | 0 | 5.50 |
| E33 | JD 1010 | 6 | 0 | 5.00 |
| E34 | AC 917H w/mower/tiller | 17 | 0 | 9.50 |
| E39 | JD 140 sprayer | 14 | 0 | 9.50 |
| E43 | MF 35 Turf | 33 | 0 | 5.00 |
| **Medium & Utility Tractors (30-75 HP):** | | | | |
| E20 | David Brown 1210 | 66 | 0 | 9.00 |
| E21 | Oliver 660 Gas | 40 | 0 | 2.50 |
| E25 | IHC 574 Gas | 52 | 0 | 7.00 |
| E30 | JD 1020 Gas | 38 | 0 | 2.50 |
| E32 | Ford 4000 Gas | 52 | 0 | 7.00 |
| **Large Row Crop Tractors (75-100 HP):** | | | | |
| E24 | JD 4040 | 90 | 0 | 7.00 |
| E29 | JD 4040 | 90 | 0 | 7.00 |
| E37 | Case 870 | 81 | 0 | 7.00 |
| E38 | JD 4030 | 80 | 0 | 7.00 |
| E41 | JD 4030 | 80 | 0 | 7.00 |
| E44 | JD 3020 | 71 | 0 | 9.00 |
| **Very Large Tractors (100-160 HP):** | | | | |
| E22 | White 2-135 MFWD | 137 | 0 | 17.00 |
| E23 | IHC 986 | 104 | 0 | 13.00 |
| E28 | MF 2675 | 103 | 0 | 13.00 |
| E42 | JD 4450 MFWD | 140 | 0 | 17.00 |
| E45 | JD 4640 | 155 | 0 | 15.50 |
| **Special Tractors--Power Unit:** | | | | |
| E40 | Owatonna 780 Loader MFWD | 81 | 0 | 25.00 |
| E49 | Ford Power Unit, P.T.O. | 25 | 0 | 15.00 |
| **Trucks and Vehicles:** | | | | |
| E64 | IHC 1950 Bulk Feed 30,000 GVW | 0 | 0 | 8.50 |
| E65B | Dodge 4X4 Red | 0 | 0 | 10.50 |
| E66 | Ford Ranger | 0 | 0 | 5.50 |
| E86 | Dodge 3/4 ton 4X4 pickup | 0 | 0 | 10.50 |
| E87 | Ford E150 Van | 0 | 0 | 10.50 |
| E88 | Chevrolet Citation | 0 | 0 | 7.00 |
| E89 | 89 Chev 1500/5600 GVR | 0 | 0 | 10.50 |
| E90 | Ford LN700 24,000 GVW | 0 | 0 | 17.00 |
| E91 | Dodge 1 ton | 0 | 0 | 15.00 |
| E92 | Ford F250 3/4 ton 4X4 pickup | 0 | 0 | 10.50 |
| E93 | Ford F150/6300 GVR | 0 | 0 | 10.50 |
| E94 | Ford F600 22,000 GVW | 0 | 0 | 16.00 |

| Computer Code and Description | | HP | Size | Rate/HR |
|---|---|---|---|---|
| **Plows:** | | | | |
| E101 | JD 1610 - 10' Chisel Plow | 0 | 10 | 7.00 |
| E102 | Glencoe 11' Chisel/Soil Saver | 0 | 11 | 11.50 |
| E104 | JD2450 6-18" moldboard | 0 | 108 | 5.50 |
| E106 | White 4-18" 2 way | 0 | 72 | 12.00 |
| E107 | JD F845A 2-16" 2 way | 0 | 32 | 5.50 |
| E108 | Howard S-80" Rotovator | 0 | 80 | 7.00 |
| E109 | Kuhn EL60 Rototiller | 0 | 70 | 6.00 |
| **Row Crop Cultivators:** | | | | |
| E201 | IHC 53 6 row | 0 | 6 | 3.50 |
| E202 | JD RG20 2 row | 0 | 2 | 2.50 |
| E203 | JD 420 Rotary Hoe | 0 | 8 | 10.00 |
| E204 | Hiniker 6 row Ridger | 0 | 6 | 22.50 |
| E205 | Glencoe 12 row Ridger | 0 | 12 | 45.00 |
| **Field Cultivators w/Mulchers:** | | | | |
| E301 | IHC 45 - 14' | 0 | 14 | 7.00 |
| E302 | JD C7 - 8' | 0 | 8 | 4.00 |
| E303 | Wilrich 27 1/2' | 0 | 28 | 14.00 |
| **Tandem Disks w/Mulchers:** | | | | |
| E401 | Krause 1922 - 18'7" | 0 | 19 | 11.50 |
| E402 | IHC 470 - 14.5' | 0 | 15 | 9.00 |
| E403 | JD 100 - 11' | 0 | 11 | 6.50 |
| E404 | JD 2018 - 6' | 0 | 6 | 4.00 |
| E405 | JD - 9' | 0 | 9 | 5.50 |
| **Harrows:** | | | | |
| E501 | Lindsay Spring Tine - 35' | 0 | 35 | 5.50 |
| E502 | JD Spring Tine - 15' | 0 | 15 | 5.50 |
| E503 | JD Spike Tooth - 20' | 0 | 20 | 2.50 |
| E504 | JD Spike Tooth - 10' | 0 | 10 | 1.00 |
| E505 | Melroe Harrow Weeder--13' | 0 | 13 | 6.50 |
| E506 | Rau Kombi Field Finisher - 10' | 0 | 10 | 12.50 |
| E507 | Packer Mulcher - Westland Roller | 0 | 0 | 2.50 |
| E508 | Pulverizer - Coby - 10' | 0 | 10 | 1.50 |
| E510 | Kovar PTM21 Disk Mulcher "Poni-tail" | 0 | 21 | 3.00 |
| **Drills and Planters:** | | | | |
| E601 | JD 8300 (2) | 0 | 12 | 19.00 |
| E603 | Brillion SS-8' | 0 | 8 | 7.50 |
| E604 | JD FB157B - 8' | 0 | 8 | 6.00 |
| E605 | JD Hiniker 12 row | 0 | 12 | 65.00 |
| E606 | Brillion 12' Seeder | 0 | 144 | 11.00 |
| E608 | Brillion 3' Seeder | 0 | 36 | 3.00 |
| E610 | JD Hiniker 6 row | 0 | 6 | 20.00 |
| E611 | JD Power Till Seeder | 0 | 0 | 8.00 |
| **Fertilizer Spreaders:** | | | | |
| E702 | New Idea 110 | 0 | 0 | 6.00 |
| E703 | Gandy 1010 | 0 | 0 | 6.00 |
| E704 | Gandy 1010 | 0 | 0 | 6.00 |

| Computer Code and Description | | HP | Size | Rate/HR |
|---|---|---|---|---|
| E705 | Herd Broadcaster | 0 | 0 | 1.50 |
| E706 | Field Flagger | 0 | 0 | 3.00 |
| **Sprayers:** | | | | |
| E801 | Top Air Trailer 750 gallon - 55' boom | 0 | 0 | 30.00 |
| E803 | Kelly Ryan 3 point hitch - gun | 0 | 0 | 5.00 |
| E804 | Century 3 Point 20' | 0 | 0 | 3.50 |
| E805 | Sprayers - Bicycle/Lawn Plot (2) | 0 | 0 | 2.50 |
| E806 | Saddle Tank System | 0 | 0 | 0.00 |
| E807 | 1000 gal. tank,trailer | 0 | 0 | 25.00 |
| E810 | Tanks 1600 gal fert stor (4) | 0 | 0 | 0.00 |
| **Forage Equipment:** | | | | |
| E901 | JD 3970 Forage Harvester (lease) | 0 | 0 | 24.00 |
| E903 | NH 38 Flail Harvester (lease) | 0 | 0 | 19.00 |
| E904 | NH 30 Forage Blower | 0 | 0 | 12.50 |
| E905 | NH 40 Forage Blower | 0 | 0 | 12.50 |
| E907 | Badger Forage Wagons (2) | 0 | 0 | 8.75 |
| E908 | Meyer Forage Wagons (3) | 0 | 0 | 8.75 |
| E909 | NH Forage Wagon | 0 | 0 | 12.00 |
| E910 | Decker Forage Wagon | 0 | 0 | 10.00 |
| E911 | NH 489 Mower-Conditioner 9' | 0 | 9 | 15.00 |
| E912 | JD 1525 Mower-Conditioner 12'(lease) | 0 | 12 | 30.00 |
| E913 | New Holland 1100 /swather 12' | 0 | 12 | 33.00 |
| E914 | JD 672 & 673 Side Rakes (2) | 0 | 0 | 8.50 |
| E916 | 1989 JD 338 Baler (lease) | 0 | 0 | 12.50 |
| E918 | Bale Racks (all 10) | 0 | 0 | 5.00 |
| E919 | NH 1038 Auto Bale Wagon | 0 | 0 | 15.00 |
| E920 | JD337 baler | 0 | 0 | 12.50 |
| E923 | Kelly Ryan Wagons (2) | 0 | 0 | 5.50 |
| E924 | NH 144 Windrow Turner | 0 | 0 | 9.00 |
| **Elevators - Augers - Conveyors:** | | | | |
| E1001 | Auger - Feter1 7" x 51' | 0 | 51 | 9.75 |
| E1002 | Auger - Snowco 8" x 42' | 0 | 42 | 9.75 |
| E1003 | NH Bale Conveyer | 0 | 0 | 7.00 |
| E1004 | Snowco Bale Conveyer - 16' | 0 | 16 | 1.00 |
| E1005 | Snowco Bale Conveyor 31' | 0 | 31 | 8.00 |
| E1006 | Auger - Snowco - 6" x 31' | 0 | 31 | 1.75 |
| E1007 | Elevator, Kewanee 54' | 0 | 54 | 30.00 |
| E1008 | Auger--Port 4x16/5x16 | 0 | 0 | 1.00 |
| E1801 | Auger--9"--Shop made | | | 1.00 |
| **Combine Harvesters:** | | | | |
| E1102 | Claas 96 | 0 | 15 | 61.00 |
| E1103 | AC Gleaner K-2 | 0 | 5 | 30.00 |
| E1105 | Gravity Box - Minn 250 | 0 | 0 | 2.00 |
| E1106 | Gravity Boxes - Demco (4) | 0 | 0 | 4.00 |
| E1107 | JD 27 Stalk Shredder | 0 | 0 | 12.50 |
| **Manure Spreaders:** | | | | |
| E1201 | NH 791 Manure Spreaders (2 leased) | 0 | 0 | 10.50 |
| E1202 | NH 679 Manure Spreader | 0 | 0 | 7.50 |

| Computer Code and Description | | HP | Size | Rate/HR |
|---|---|---|---|---|
| E1204 | Badger 3000 gallon Vac. Tank | 0 | 0 | 8.50 |
| E1205 | Badger Pit Pump 8' | 0 | 0 | 45.00 |
| **Mowers - Grounds:** | | | | |
| E1301 | JD 25 Flail Mower | 0 | 0 | 2.50 |
| E1302 | IHC Sickle Mower, 3 pt, 5' | 0 | 0 | 4.50 |
| E1303 | Rotary Mowers - Woods 210 (2) | 0 | 0 | 6.50 |
| E1304 | Rotary Mower - Woods MB106 | 0 | 6 | 6.00 |
| E1305 | Flail Mower - Mott 88" | 0 | 7.3 | 2.50 |
| E1306 | Kinco Sickle Mower | | | 3.00 |
| E1309 | Push Mowers--(4) | 0 | 1.7 | 4.00 |
| E1310 | Rotary Mower - John Deere F935 Rider | 0 | 6 | 18.00 |
| E1311 | Reel Mower - National 84" Triplex | 0 | 7 | 15.00 |
| E1314 | Weedeater | 0 | 0 | 2.00 |
| **Road Maintenance Equipment:** | | | | |
| E1401 | Terracer - Stockland | 0 | 0 | 3.50 |
| E1402 | Snow Blower - Lorenz | 0 | 0 | 10.00 |
| E1403 | Woods 3-pt Blade | 0 | 0 | 8.50 |
| E1404 | Dozer - Werts 910 | 0 | 0 | 17.00 |
| E1405 | Sweeper - M.B. of Wisconsin | 0 | 0 | 15.00 |
| E1406 | Snow Plow - Western (#92) | 0 | 0 | 4.50 |
| E1407 | Snow Blower - JD 826 | 0 | 0 | 20.00 |
| **Miscellaneous Equipment** | | | | |
| E1501 | Gopher Getter | 0 | 0 | 2.00 |
| E1502 | Post Auger, Danuser F7 | 0 | 0 | 11.50 |
| E1503 | Post Driver, Shaver HD8 | 0 | 0 | 2.50 |
| E1505 | Chain Saws | 0 | 0 | 5.50 |
| E1506 | Generator 3W091 | 0 | 0 | 6.00 |
| E1507 | Centrifugal Transfer Pump | 0 | 0 | 5.50 |
| E1508 | Diaphragm Sewage Pump | 0 | 0 | 5.00 |
| **Miscellaneous Wagons:** | | | | |
| E1602 | Fayette - 6-wheel 9-ton Trailer | 0 | 0 | 19.00 |
| E1603 | Trailer - Homemade Lawn | 0 | 0 | 3.00 |
| E1604 | Trailer - Homemade Lawn, Flat & Dump/2 | 0 | 0 | 7.00 |
| E1607 | Water Wagon--(Army) | 0 | 0 | 0.00 |
| **Grain Dryer:** | | | | |
| E1801 | Farm Fans Dryer & System .13/bushel+.06/pt. moist. removed -- Drying and Storage Charges involve special computations. | | | |
| **Irrigation Equipment:** | | | | |
| E1905 | Hobbs Gun Irrigator, Pump & Pipe | | | 13.50 |
| E1906 | Solid Set Risers, Pipe & Fittings | | | 15.00 |

## Hourly Machinery Rate Calculations

The hourly machinery rate is computed from the formula:

$$\frac{\text{Depreciation + Repairs + Service + Operating Cost}}{\text{Annual Hours of Use}} = \text{Hourly Rate}$$

where:

$$\text{Depreciation} = \text{Annual Lease Cost}$$

or

$$= \frac{\text{Purchase cost – Salvage Value}}{\text{Estimated Life in Years}}$$

where:

$$\text{Repairs} = \frac{\text{Labor Cost + Parts Cost (from all years in record)}}{\text{Number of Years of Records}}$$

where:

$$\text{Service} = \text{Hours of Operator's Service Time} \times \text{Pay Rate}$$

where:

$$\text{Operating Cost} = \text{Cost of Fuel and Oil Used per Computer Records}$$

# Rosemount Station Well Log

*Meeting an Agricultural Research Mission*

*The Rosemount Branch of the*
*Minnesota Agricultural Experiment Station*
*1965-1990*

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## Appendix IV

## *Well Log--1990*
## *University of Minnesota Agricultural Experiment Station*
## *Rosemount*

| location | bldg no. | use * | year drilled | depth feet | casing size inches | pump HP | gals. per minute | pressure tank gallons |
|---|---|---|---|---|---|---|---|---|
| Office | B101 | domestic | 1957 | 161 | 4.0 | 1.00 | 13 | 42 |
| Superintendent Residence | B102 | domestic | 1953 | 235 | 4.0 | 0.75 | 12 | 42 |
| Dairy | B210 | domestic | 1947 | 429 | 8.0 | 10.00 | 100 | 1000 |
| USDA-D4 | B224 | Irrigation | 1982 | 310 | 10.0 | 25.00 | 300 | 1000 |
| Farm House | B302 | domestic | **1947 | - | 2.5 | 1.50 | 10 | 82 |
| Agronomy | B315 | dom. & irri | 1947 | 434 | 8.0 | 15.00 | 170 | 1000 |
| Poultry | B402 | domestic | 1948 | 220 | 4.0 | 0.75 | 15 | 80 |
| Poultry | B407 | dom. & irri | 1960 | 432 | 6.0 | 15.00 | 170 | 1000 |
| North Beef | B504A | domestic | 1987 | 420 | 4.0 | 2.00 | 30 | 500 |
| Sheep & Swine | B504B | domestic | 1987 | 380 | 4.0 | 3.00 | 35 | 500 |
| Farm Shop | B625 | domestic | 1966 | 215 | 4.0 | 1.50 | 20 | 145 |
| Plant Pathology (2 pumps) | B707 | irrigation<br>domestic | 1961 | 415 | 6.0 | 10.00<br>0.50 | 90<br>6 | NONE<br>30 |
| South Beef | B802 | domestic | 1951 | 432 | 6.0 | 5.00 | 45 | 500 |
| Agronomic Forage | B901 | domestic | 1947 | 220 | 4.0 | 0.75 | 10 | 80 |
| Agronomic Forage | B903 | irrigation | 1980 | 310 | 8.0 | 15.00 | 150 | NONE |
| Agricultural Engineering | B1003 | domestic | 1960 | 206 | 4.0 | 3.00 | 40 | 1000 |

* Domestic (Dom.) is for human and livestock use. Irrigation (Irri.) is use for crop production.

** Older well on property reactivated in 1947.

# Aerial Photographs of Department Sites

*Meeting an Agricultural Research Mission*

*The Rosemount Branch of the*
*Minnesota Agricultural Experiment Station*
*1965-1990*

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## *Appendix V*

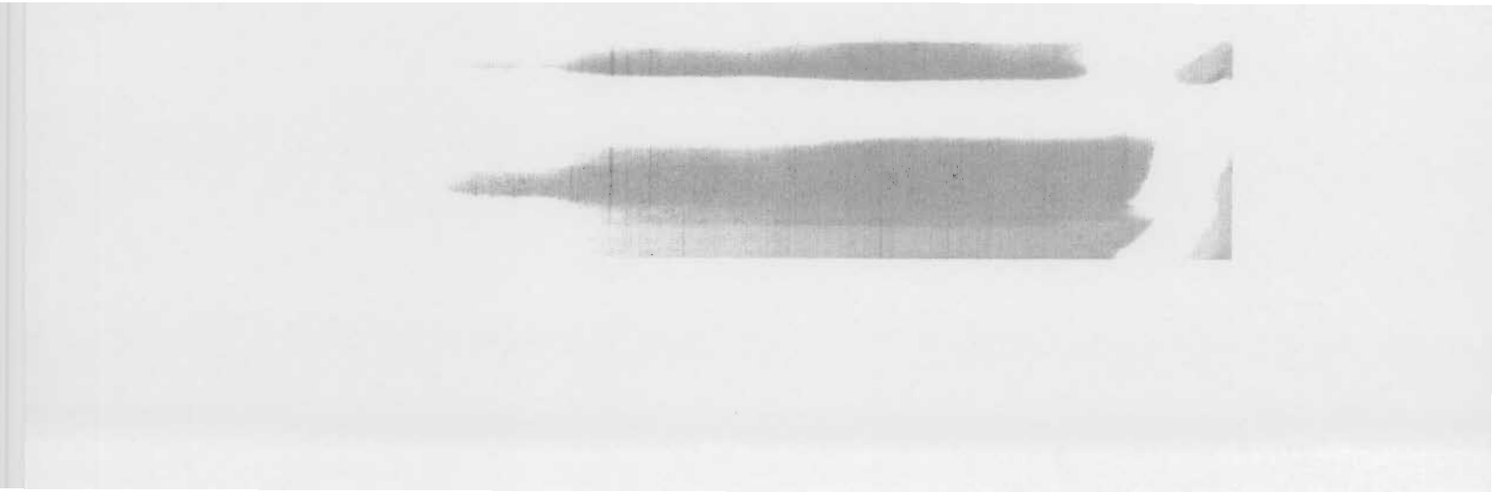
# *Site 100*
# *Central Station Office*

# Site 200
# Dairy

# Site 300
# Agronomy

# Site 400
# Poultry

# Site 600
# Station Service Center



# *Site 700*
# *Plant Pathology*

# Site 800
# South Beef

# Site 900
# Agronomy Hill

# Site 1000
# Agricultural Engineering

# Rosemount Advisory Council Membership

*Meeting an Agricultural Research Mission*

*The Rosemount Branch of the*
*Minnesota Agricultural Experiment Station*
*1965-1990*

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## Appendix VI

## Rosemount Advisory Council

**Present Members (August 1990):**

| | |
|---|---|
| Joseph Auge | Owner and Manager, Farmers' Mill and Elevator, Castle Rock |
| Richard Brand | Dairy Farmer |
| Janine Butler | Land Owner Adjacent to the Rosemount Station |
| Ronald Carlson | President, Carlson Tractor and Equipment |
| Marie Jensen | Real Estate Broker for Jensen Associates; Long Time Rosemount Resident and Civic Leader |
| Stephan Jilk | Rosemount City Administrator |
| Steve Loeding | Dakota County Commissioner |
| Karen Mogen | Mayor, City of Coates |
| Roger Norsted | Superintendent, Dakota County Technical College |
| LaVonne Nicolai | President, Farmington Chamber of Commerce; Vice-President, Castle Rock First State Bank |
| Warren Sifferath | Dakota County Extension Director |
| G. E. Stelzel | Advisory Council Chairperson; Owner and Operator of Fairhill Farm; Chairman, Empire Township Board |
| Ed Terry | Dairy Farmer and Vocational Agricultural Instructor |

**Former Members:**

| | |
|---|---|
| Donald McGuire | Superintendent, Dakota County Technical College |
| John Poepl | President, Vermillion State Bank |

# Personnel Lists

*Meeting an Agricultural Research Mission*

*The Rosemount Branch of the*
*Minnesota Agricultural Experiment Station*
*1965-1990*

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## Appendix VII

## *Current Personnel Listings—August, 1990*
## *University of Minnesota Agricultural Experiment Station*
## *Rosemount*

| Name | Classification | Start at Rosemount |
|---|---|---|
| **Station Office** | | |
| Fran Edelman* | Community Program Assistant | 5-89 |
| Carol Estrem | Senior Secretary | 4-78 |
| Karen Schuller | Associate Administrator | 4-86 |
| Patti Schwarz | Accounts Specialist | 4-87 |
| Kenneth Walter | Assistant to the Superintendent | 6-68 |
| Clifford Wilcox | Superintendent | 1-65 |
| **Farm Shop** | | |
| Jerry Holz | Auto Mechanic | 8-84 |
| Ed Stapf | Senior Auto Mechanic | 6-69 |
| **General Farm** | | |
| Don Backes | Farm Equipment Operator | 5-70 |
| Cliff Fischer | Farm Equipment Operator | 12-70 |
| Ken Krause | Farm Equipment Operator | 4-83 |
| Phil Lindquist | Farm Foreman | 6-70 |
| Tom Mike | Farm Equipment Operator | 9-75 |
| Tom Murray | Farm Equipment Operator | 5-64 |
| Randy Pfeffer | Farm Equipment Operator | 6-80 |
| **Custodial** | | |
| Margaret Backes* | Custodial Worker | 7-77 |
| **Grounds** | | |
| Shirley Emery* | Grounds Worker | 5-90 |
| **Mechanics** | | |
| Paul Hoffman | Maintenance & Operations Mechanic | 8-78 |
| John Smith | Senior General Mechanic | 9-73 |
| **Feed Center** | | |
| Gary Backes | Farm Animal Attendant | 2-84 |
| Bob Crosbie | Delivery Service Driver | 3-81 |
| Ken Mainz | Feed Center Manager | 7-80 |
| Dennis Mounts | Farm Animal Attendant | 7-85 |
| **Agronomy** | | |
| Jerry Ochocki | Senior Research Plot Tech | 4-85 |
| Dave Sandstrom | Research Plot Coordinator | 10-64 |
| **Agricultural Engineering** | | |
| Wayne Groth (Vet Med) | Farm Animal Attendant | 4-76 |
| Verlyn Johnson | Electro-Mechanical Systems Specialist | 2-68 |

| Name | Classification | Start at Rosemount |
|---|---|---|
| **Dairy** | | |
| Bob Korthauer | Farm Animal Attendant | 8-53 |
| Ron Leibfried | Farm Animal Attendant | 12-74 |
| Mike Strasser | Senior Farm Animal Technician | 11-51 |
| **North Beef** | | |
| Terry Bue | Farm Animal Attendant | 3-81 |
| Terrance Yourchuck | Farm Animal Attendant | 4-79 |
| **Plant Pathology** | | |
| Jim Karelis* | Research Plot Technician | 4-89 |
| Kimon Karelis* | Research Plot Technician | 4-85 |
| Jim Rowe | Research Plot Coordinator | 3-83 |
| **Poultry** | | |
| Jerry Holland | Assistant Farm Animal Attendant | 8-90 |
| Diane Pfeffer | Assistant Farm Animal Attendant | 5-89 |
| Jennifer Sandstrom | Junior Scientist | 4-79 |
| Mark Sandstrom | Farm Animal Attendant | 4-85 |
| Greg Zillgitt | Assistant Scientist | 10-79 |
| **Sheep** | | |
| Marty Berg | Farm Animal Attendant | 10-86 |
| **South Beef** | | |
| John Hanson | Assistant Farm Animal Attendant | 5-79 |
| **Swine Genetics** | | |
| Lloyd Randall | Senior Farm Animal Technician | 5-54 |
| Linda Schindeldecker | Farm Animal Attendant | 12-74 |
| Jack Tutewohl | Farm Animal Attendant | 12-56 |
| **Swine Nutrition** | | |
| Ken Betzold | Assistant Farm Animal Attendant | 7-80 |
| Arnold Hoeppner | Farm Animal Attendant | 3-66 |
| Lori (Reisinger)O'Mara | Farm Animal Attendant | 7-80 |
| **Veterinary Medicine** | | |
| Wes Smith | Senior Farm Animal Technician | 11-77 |

* Temporary and/or seasonal employees

# Precipitation Record 1965–89

*Meeting an Agricultural Research Mission*

*The Rosemount Branch of the*
*Minnesota Agricultural Experiment Station*
*1965-1990*

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## Appendix VIII

## *Inches of Precipitation--1965-1989*
## *University of Minnesota Agricultural Experiment Station*
## *Rosemount*

| Year | Total | Snow | April–August |
|---|---|---|---|
| 1965 | 41.05 | 43.80 | 25.54 |
| 1966 | 23.79 | 47.20 | 11.11 |
| 1967 | 30.24 | 45.00 | 21.20 |
| 1968 | 41.68 | 39.00 | 23.64 |
| 1969 | 23.64 | 63.50 | 11.22 |
| 1970 | 39.63 | 32.20 | 18.99 |
| 1971 | 35.53 | 73.50 | 18.02 |
| 1972 | 33.11 | 47.00 | 20.03 |
| 1973 | 34.30 | 38.00 | 20.31 |
| 1974 | 23.06 | 28.60 | 16.32 |
| 1975 | 43.29 | 66.80 | 27.29 |
| 1976 | 18.60 | 31.80 | 9.52 |
| 1977 | 39.67 | 37.50 | 19.25 |
| 1978 | 41.48 | 42.50 | 29.92 |
| 1979 | 34.68 | 44.00 | 21.90 |
| 1980 | 28.15 | 34.00 | 17.64 |
| 1981 | 33.26 | 32.60 | 23.17 |
| 1982 | 34.23 | 89.60 | 18.51 |
| 1983 | 37.92 | 76.50 | 18.13 |
| 1984 | 39.19 | 61.00 | 23.17 |
| 1985 | 34.64 | 72.20 | 16.21 |
| 1986 | 42.20 | 22.86 | 25.88 |
| 1987 | 28.43 | 22.20 | 20.62 |
| 1988 | 25.72 | 53.90 | 12.50 |
| 1989 | 26.26 | 52.00 | 17.70 |
| Average | 33.35 | 47.89 | 19.51 |

| | | |
|---|---|---|
| Greatest Precipitation: | 1975 | 43.29 inches |
| Least Precipitation: | 1976 | 18.60 inches |
| Greatest Snowfall: | 1982 | 89.60 inches |
| Least Snowfall: | 1967 | 22.20 inches |
| Greatest Precipitation (April-August): | 1978 | 29.92 inches |
| Least Precipitation (April-August): | 1976 | 9.52 inches |

# Building Inventory 1990

*Meeting an Agricultural Research Mission*

*The Rosemount Branch of the*
*Minnesota Agricultural Experiment Station*
*1965-1990*

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## Appendix IX

## Building Inventory--1990
## University of Minnesota Agricultural Experiment Station
## Rosemount

*Buildings may be seen in aerial photographs for each site, in Appendix V.*

| | | | Funding | | |
|---|---|---|---|---|---|
| Number | Name/Description | Constructed | State | Dept | Station |
| **Administration** | | | | | |
| 101 | Central office | pre-1965 | | | |
| 102 | Superintendent's Residence | pre-1965 | | | |
| 104 | Picnic stand | 1965 | | | $351 |
| **Dairy** | | | | | |
| 201/02 | Residence #1 with garage | pre-1965 | | | |
| 203 | Complex of office, milk parlor, milkroom, holding areas, etc. | pre-1965 | | | |
| 204 | Heifer barn | pre-1965 | | | |
| 205 | Heifer pens | pre-1965 | | | |
| 206 | Hay storage/feeding | pre-1965 | | | |
| 207 | Hay storage/feeding | pre-1965 | | | |
| 209 | Machinery storage | pre-1965 | | | |
| 210 | Well/pump house | pre-1965 | | | |
| 211 | Silo, Heifer lot | pre-1965 | | | |
| 213 | Heifer lots | pre-1965 | | | |
| 214/15 | Residence #2 with garage | pre-1965 | | | |
| 216 | Tractor/truck storage | pre-1965 | | | |
| 218 | Silo complex | 1974 | | $8,755 | |
| 222 | Straw shed | 1967 | | 2,002 | |
| 223 | Straw shed | 1969 | | 3,600 | |
| **Agronomy Field Crops** | | | | | |
| 301/03 | Residence with garage | pre-1965 | | | |
| 302 | Well/pump house | pre-1965 | | | |
| 305 | Storage | pre-1965 | | | |
| 306 | Equipment storage | pre-1965 | | | |
| 308 | Grain/equipment storage | pre-1965 | | | |
| 313 | Office, shop, storage | pre-1965 | | | |
| 315 | Well/pump house | pre-1965 | | | |
| 316 | Equipment storage | pre-1965 | | | |
| 320 | Steel grain bins (4) | pre-1965 | | | |
| 321 | USDA equipment storage | 1969 | | | |
| **Poultry** | | | | | |
| 401 | Office/storage | pre-1965 | | | |
| 402 | Well/pump house | pre-1965 | | | |
| 403 | Equipment storage | pre-1965 | | | |
| 405 | Pole barn | pre-1965 | | | |

| Number | Name/Description | Constructed | Funding State | Dept | Station |
|---|---|---|---|---|---|
| 406A/B | Residence w/garage | pre-1965 | | | |
| 407 | Well/pump house | pre-1965 | | | |
| 408 | Tractor/equipment storage | 1965 | | $1,701 | |
| 409 | Brooder/nutrition | 1970 | $78,082 | | |
| 410 | Nutrition/grower | 1970 | 78,082 | | |
| 411 | Rearing | 1973 | 81,932 | | |
| 412 | Breeder | 1973 | 117,859 | | |
| 413 | Pre-breeder environmental | 1973 | 131,899 | | |
| **North Beef, Sheep, and Swine** | | | | | |
| 502 | Beef cattle barn | pre-1965 | | | |
| 503 | Office/clinic | pre-1965 | | | |
| 504A/B | Wells (replacement of two wells with high nitrate levels) | 1987 | | | $33,125 |
| 505/06 | Residence with garage | pre-1965 | | | |
| 507 | Storage | 1965 | | 1,352 | |
| 508 | Sheep barn silo | 1968 | 125,007 | | |
| 509 | Beef cow barn | 1967 | 28,199 | | |
| 510 | Swine growing | 1970 | 67,530 | | |
| 511 | Swine growing | 1970 | 67,530 | | |
| 512 | Beef silo complex | 1968 | 6,940 | | |
| | | 1974 | | 19,694 | |
| 513 | Office farrowing | 1972 | 100,168 | | |
| 514 | Sow-boar | 1972 | 116,482 | | |
| 515 | Office/farrowing | 1973 | 71,278 | | |
| 516 | Growing/nursery | 1973 | 77,897 | | |
| 517 | Sow-boar | 1973 | 137,099 | | |
| 518 | Growing/holding & silo | 1973 | 54,649 | | |
| 519 | Equipment storage | pre-1965 | | | |
| 520 | Hay/straw storage | pre-1965 | | | |
| 521 | Hay/straw storage | pre-1965 | | | |
| 522 | Sheep milking facility | 1986 | 38,000 | | |
| General Farm | | | | | |
| 601A/B | Storage/feed, seed and equipment | pre-1965 | | | |
| 602 | Storage/equipment and parts | pre-1965 | | | |
| 603 | Bunker silo | pre-1965 | | | |
| 604 | Bunker silo | pre-1965 | | | |
| 605 | Storage/grain and crop supplies | pre-1965 | | | |
| 606 | Equipment storage | pre-1965 | | | |
| 607 | Field mechanics' shop | pre-1965 | | | |
| 608 | Storage/grain and equip. | pre-1965 | | | |
| 609 | Crop drying and storage | 1978 | | | 18,427 |
| | | 1987 | | | 280,000 |
| 610 | Station shop | pre-1965 | | | |
| 611 | Storage/oil, parts | pre-1965 | | | |

| Number | Name/Description | Constructed | Funding State | Dept | Station |
|---|---|---|---|---|---|
| 612 | Machinery and storage | pre-1965 | | | |
| 615 | Hay storage | pre-1965 | | | |
| 616 | Agricultural Engineering crop dryer | pre-1965 | | | |
| 617 | Machinery storage | pre-1965 | | | |
| 618 | Hay storage | pre-1965 | | | |
| 619 | Machinery storage | 1967 | | | $7,537 |
| 620 | Truck scale | 1972 | | | 3,273 |
| 621 | Pesticide storage | 1973 | | | 3,481 |
| 622 | Station service center | 1974 | | | 36,267 |
| 623 | Farm machinery storage | 1978 | | | 35,276 |
| 624 | Feed Center | 1980 | $409,000 | $43,135 | 130,600 (Rosemount) 236,400 (Central) |
| **Plant Pathology** | | | | | |
| 701 | Machinery storage | pre-1965 | | | |
| 703 | Office | pre-1965 | | | |
| 706 | Pesticide storage | pre-1965 | | | |
| 707 | Well/pump house | pre-1965 | | | |
| 708 | Storage | 1966 | | 1,750 | |
| 709 | Pesticide storage | 1979 | | 2,144 | |
| 710 | Machinery storage | 1990 | | 4,000 | 31,000 |
| **South Beef** | | | | | |
| 801 | Storage | pre-1965 | | | |
| 803 | Barn | pre-1965 | | | |
| 804 | Office/storage | pre-1965 | | | |
| 805 | Lower cattle barn | pre-1965 | | | |
| 806 | Upper cattle barn | pre-1965 | | | |
| 807A/B | Residence with garage | pre-1965 | | | |
| 809 | Silo | pre-1965 | | | |
| 811 | Harvestore Silo | pre-1965 | | | |
| **Agronomy Hill** | | | | | |
| 901 | Office and dryer | pre-1965 | | | |
| 902 | Machinery storage | pre-1965 | | | |
| 903 | Well | 1980 | | 13,000 | 2,500 |
| **Agricultural Engineering** | | | | | |
| 1001 | Environmental Research #1 | pre-1965 | | | |
| 1002 | Office and boiler | pre-1965 | | | |
| 1003 | Well/pump house | pre-1965 | | | |
| 1004 | Electrical transformer | pre-1965 | | | |
| 1006 | Environmental Research #2 | pre-1965 | | | |
| 1007 | Storage | pre-1965 | | | |
| 1008 | Storage | 1967 | 12,338 | | |
| 1009 | USDA Electrical Research Shop | | | | |
| 1010 | Turkey salmonella barn | 1969 | 35,960 | | |
| 1011 | Beef shelter | | | 437 | |
| 1012 | Machinery research lab | 1978 | | 30,084 | |