BARNES Farm & Shop Magazine
Volume 5, Number 1

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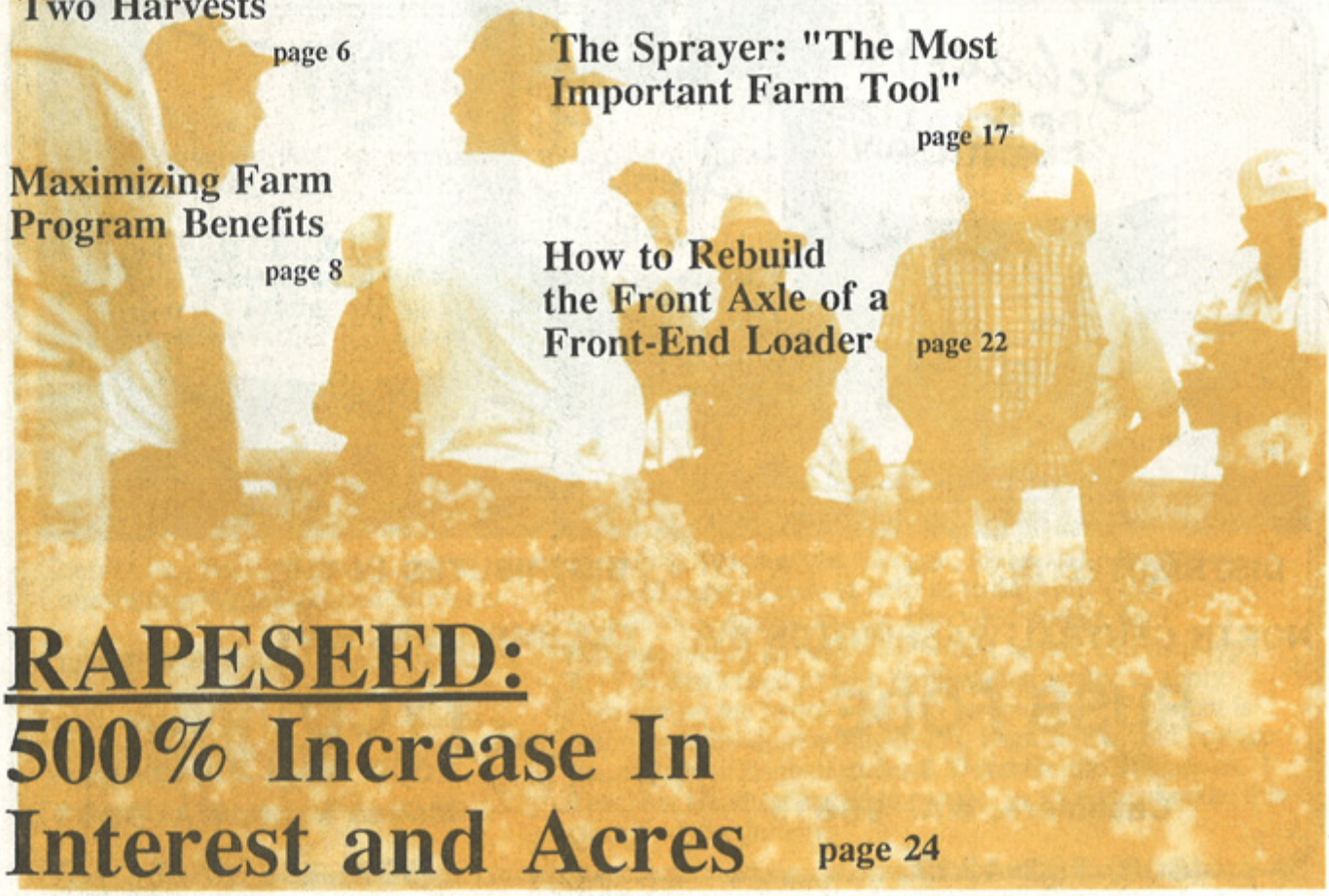

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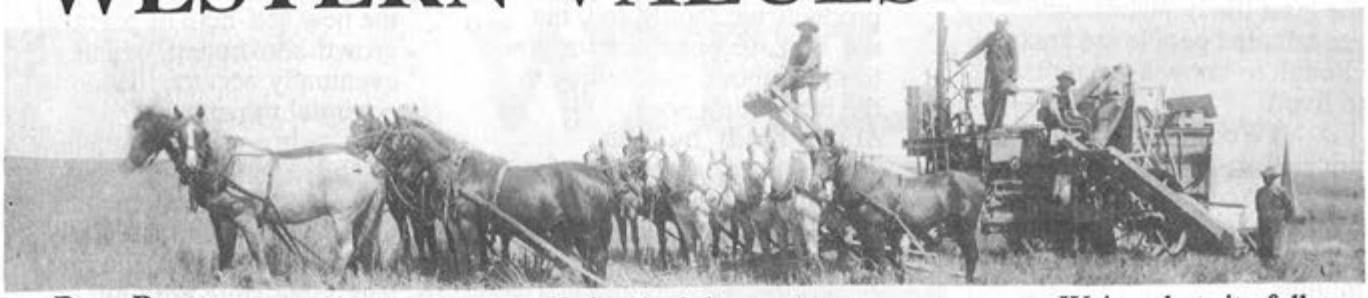
OUR TOUGH AND HONEST WESTERN VALUES



by Dave Barnes
With Charlie Herring

As we fly from the Columbia River to Spokane it gives us a warm feeling to be a member of this vast and beautiful community. And it's times like these that remind us of the stories our grandparents told about the hardships of settling the land and how faith and hardwork were their principle assets. And through it all, people on this side of the mountains seem to love life more. Our faces seem to smile more easily. Our handshake means more. Our desire for independence and self-reliance have never been stronger. Our ability to work long and hard isn't matched by any group in society.

We're what city folks think of when they think of the WEST.

There's very little oxygen in my 4-seater Cessna at 30,000 feet, perhaps we should drop down to 10,000 feet so we can get a closer view of what we see.

We see talented people who are capable of creating fine products.

We see skilled people

BARNES Farm & Shop Magazine

(509) 745-8588 PO Box 614 Waterville, WA 98858

PUBLISHER'S DEDICATION: There wouldn't be any shop stories in this publication if it weren't for my father--he's the one who teaches me about welding. He's the most patient teacher, the best example and the greatest father a son could have.

Published by David Barnes

Executive Editor Charles Herring

Editorial Advisors Jim and Lennie Davis

Contributing Editor Dave Huggins
Contributing Writer Sharon Storment

Circulation Director Marge Chambers

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Writers/Interviewers Wanted

As we expand our coverage of grain growing activity in Washington, Oregon, Idaho and Montana we need more people to help us to develop a list of interview questions. We also need people who can tape record an interview with a farmer and then type it. You don't need to be a professional writer to apply. (We supply the list of topics to be covered.) Payment is made by individual arrangement. High school and college journalism or English students are invited to contact us. Teachers are encouraged to contact us so we can make this part of an assignment.

who could produce a catalog to sell these products. (I learned this when I started publishing this magazine, there's all kinds of talent in the least likely places...you see talented people are smart enough to know a great place to live.)

We see lower printing prices than in the city.

We see many people who need something to do during the non-farming months.

We see lots of barns and sheds, great storage places.

We see a catalog with something special in it. Old photos of the farm era, stories of families struggling to live honest and productive lives. The catalog would project a spirit of Western values and people would want to buy from us because it feels good to buy from Western people with Western values.

We don't know what products we should sell, but we do have one thing for you to think about. According to the bestselling book, ***MegaTrends***, by John Nesbit, every time a new form of high technology comes into being, society responds by wanting a "high touch" item or service. He supplies a number of examples: the 1950s were the "most intensely industrialized period in our history...we mass-marketed the products of the industrial era--products whose regimented uniformities mirrored their industrial base...But something else was growing alongside the technological invasion...a highly personal value system to compensate for the impersonal nature of technology. The result was the new self-help or personal growth movement, which eventually became the human potential movement."

In another example, Nesbit says that the high technology of medicine has led to hospices, more home care, neighborhood clinics and home-style birthing practices. The high tech manufacture of cars has led to cars that look more alike; in response to this, people now invest in auto modifications to individualize cars and even individualize license plates.

We see a world ready to buy handmade,

(continued on page 6)

A NEW SIGN TO GROW WITH.

After all the mergers, one name stands apart from the rest. Deutz-Allis. A strong, resourceful farm equipment company uniquely qualified to serve widely varying needs of North American farmers today. We invite you to check us out. Discover what more than 1400 Deutz-Allis dealers now have going for them!

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Strong commitment. Our dealers enjoy the solid backing of Deutz-Allis and the parent company, KHD, a global enterprise with over $2.5 billion in sales. The entire organization has the strength to survive and prosper even in difficult market conditions.

Innovative financing. Deutz-Allis Credit Corporation offers a wide selection of financing and leasing programs. And these plans can be tailored to the needs and budgets of individual farmers.

Comprehensive training. Deutz-Allis offers a variety of factory-sponsored training sessions to improve performance of managers, sales, service and parts personnel.

Find out more. For more information write: Deutz-Allis Corporation, P.O. Box 933, Milwaukee, WI 53201.

DEUTZ-ALLIS

See what sets us apart.

(continued from page 4)

OUR TOUGH AND HONEST WESTERN VALUES

individualized products just like the ones grandma used to make. In the field of Western wear, we wonder if there would be a way of personalizing clothing items--like creating a personalized patch on jeans or a name on a shirt. We'd like to hear your ideas on this!

We see a need to tell city folks about the great values and virtures of people who live in the country. Now that farmers represent less than two percent of the population, we need to do something to counter the one dimensional view of farmers that is portrayed in the media today. We can do this and sell our handmade, Western products at the same time by sending our catalog to print and electronic media program producers and directors. These people decide what the country will see, hear and read. We can send our catalog to all influential people--state and national lawmakers and corporate CEOs.

We can show our children that there's going to be a good life in the country tomorrow by asking our schools to start teaching entrepreneurial skills. Every year many talented people start businesses and produce excellent products and services. Unfortunately, many of these people go out of business. There are two principle reasons for this: 1) poor business management skills and 2) a poor marketing plan. If we work together, find existing businesses interested in reaching a similar audience, and get help from our educational institutions, we can develop excellent business management skills and an effective marketing plan.

Well, we're about to Spokane now and we have to land. This has been another beautiful and safe journey across the best place in the world to live. We invite you to write down your ideas for Western products, services or experiences we can offer. If you have business skills, artistic skills or any other skills that might be useful, please write us so we'll know where to look when we need you.

CONSUMER ALERT:

HOW A HALF POUND OF HARDFACE POWDER MESSED UP TWO HARVESTS

A customer had a John Deere 7720 combine to harvest irrigated wheat. When the combine was new it could thrash about 900 bushels an hour. Then after its first year's use the customer went to his John Deere dealer and had all his internal and external augers hardfaced. The next season he could only harvest 300 to 400 bushels an hour. The factory men were brought out: different settings were tried, different sieves were installed, different concaves were installed, everything that could possibly be done was tried. And he still only harvested 300 to 400 bushels an hour.

He was considering selling the combine. In desperation he decided to check with us. He thought that we may have seen this problem before. We hadn't, but while discussing all the things he'd done, he mentioned in passing, that he'd had the machine hardfaced after the first harvest. After some questioning we learned that an incorrect hardfacing powder had been applied to the internal augers. Tungsten hardfacing powder had been used on both the internal and external augers. Tungsten only works on the external (platform) auger. A nickel-chrome or borium powder must be used on internal augers. You can't use tungsten on internal augers, because the abrasive nature of the tungsten will not let the wheat roll across the auger flighting when it is used.

In this case it was cheaper to replace the internal flighting than to hardface over the existing hardfacing. The reason for this is because you should remove as much of the tungsten as possible before rehardfacing. Since removal of the tungsten is time consuming it was more economical to replace the internal augers. After the new flighting was installed on the existing shafts, the completed augers all had to be straightened. Shafts always bend when you weld-on flighting because of the heating and cooling of metal in the welding process. For this reason, we always straighten augers after installing the flighting.

After reflighting the internal augers the combine returned to its former efficiency of 900 bushels per hour.

MAXIMIZING FARM PROGRAM BENEFITS

The following report was prepared by Attorney Norm Brock (right) and Accountant Mike Leffel (left) both of Davenport, Washington. These men have been guest speakers at several farmer meetings and are recognized experts in the field of managing farm program decisions. We asked them to outline the most common farming situations and to answer the most frequently asked questions associated with these situations. They agreed to do this, but they also indicated that it is impossible to cover all the possible alternatives in the small amount of space provided them. Futhermore, they wanted us to emphasize that no one should make a farm operation decision based only on the written answers that follow. Since each situation is unique, each person should consult a qualified expert.

With that disclaimer in mind, please consider Brock and Leffel's comments.

Editor's Note: We had several farmers read these comments and we've included their questions after the comment they relate to.

Introduction

The Agriculture Stabilization and Conservation Service (ASCS) $50,000 payment limitation is an important consideration in today's farming operations since 30% to 50% of the total farm income in Eastern Washington is in the form of agricultural program payments. Many of the farms in Eastern Washington exceed the $50,000 payment limitation and must explore all avenues available to maximize benefits. The ASCS rules related to payment limitations have been in existence since 1971, however, the payment limitation hasn't been a problem to most farmers until recently. Each individual farming operation seems to have its unique problems which must be discusssed thoroughly before determining what is the best approach. We have based our answers on an ASCS Handbook called "Common Payment Limitation Provisions" (which is available upon request at your local county ASCS office).

Listed below are some common problems and possible solutions that may fit your situation.

Situation 1

Parents have incorporated their farming operation and they own 95% of the stock of the corporation. They own two sections of land they lease to the corporation on a crop share basis. Their adult son works for the corporation as an employee. The farm qualifies for $85,000 of payments subject to the limitation. They are presently only getting $50,000.

Question

Can they do anything to restructure the corporation and pick up the addtional $35,000?

Possible Solution

1. Transfer by gift or sale for cash 50% of the stock to the son. The corporation will then be a separate person for payment limitation purposes since no person owns more than 50% of the stock. The parents' crop share payment will not be combined with the corporation's payments for payment limitation purposes.

2. Liquidate the corporation and form a partnership of the parents and the son. A corporate liquidation is a substantive change for ASCS purposes. The partnership must be bona fide and the partners' shares must be commensurate with their contributions.

Farmer Question 1: What does "substantive change" mean?

Answer: The word

"substantive" comes from the ASCS handbook mentioned above. You could substitute the word "substantial" for the word "substantive." The basic idea here is that the change must be a real one and not one done on paper just to get a greater payment.

Farmer Question 2: In the sentence "The partnership must be bona fide and the partners' shares must be "commensurate with their contributions." what does "commensurate with their contributions" mean?
Answer: It basically means that the partners shares must be in proportion to their capital investment and labor. For example, if the partners both work an equal amount, but one contributes 75% of the capital, then, according to ASCS, that partner should probably get 75% of the income.

3. Form a partnership between the corporation and the son. Such a change must meet the ASCS substantive change rules.

4. Have the son become a self-employed farmer. If he leases any ground from his parents, he would need to purchase a substantial line of farm machinery for cash in order to avoid the financing rules and the substantive change rules.

Farmer question: What does "substantial line of farm machinery" mean?
Answer: If the son is a self-employed farmer he must have enough equipment to farm his land: tractor, combine, drills, etc. This doesn't mean he has to buy brand new equipment. For example, if he has a $2,000 combine and a $900 tractor and a complete line of old pieces of equipment, this would qualify as "substantial." However, he can't just have a bunch of junk sitting around for looks. The ASCS office audits contracts and real trouble would be in the works if they found the son using the parents' equipment on land he leased from them. The General Accounting Office (GAO), the auditing division of Federal programs, also audits contracts. When they audited payment limitation contracts in Nebraska they found about 250 out of 960 were in violation--this meant a payback of $13,000,000. Now the GAO is in Washington State.

Situation 2

Parents and son have formed a farm operating

partnership that presently qualifies for $100,000 of payments subject to the limitation. The entire operation, however, qualifies for $150,000 of payments subject to the limitation.

Question

Can the parents and son reorganize to pick up the additional $50,000?

Possible Solution

The parents and the son may form a corporation that they own 50%/50%. The corporation would then lease a portion of the farm presently farmed by the partnership. The partnership must sell to the corporation (for cash) enough equipment to handle all the required farm operations (to meet the substantive change rules as described in the ASCS handbook on payment limitations). The corporation will operate separate from the partnership and each entity will operate as a bona fide farm operation.

Farmer Question 1: Where does the corporation get the money to buy the equipment? Can the parents give the son the money to buy the equipment?

Answer: The corporation could borrow the money or the individual stock holders could contribute the money. Since the corporation is owned 50%/50% each owner would have to contribute an equal amount. Let's say the necessary equipment cost $50,000; each party would have to contribute $25,000 toward it. If the son didn't have $25,000 he could borrow it from a bank, but his parents couldn't loan him the money or co-sign the loan. (The parents could gift him the $25,000.)

Situation 3

Parents and son have formed a farm operating partnership that presently qualifies for a $100,000 of payments subject to the limitation. However, the partnership has an opportunity to lease an additional 1,000 acres but will lose the additional payment limitation unless they are able to reorganize.

Question

Can the partnership reorganize to pick up the additional payments on the new ground?

Possible Solution

The partners may form a corportion that they own 50%/50%. If this new land is at least a 20% increase in the total crop land, this qualifies as a substantive change. The new corporation may lease the equipment from the partnership at a fair rental value.

Situation 4

The parents have split their son off as a self-employed farmer for payment limitation purposes. Assume the parents either loaned money or co-signed an operating line at the bank for the son. Assume the parents are leasing some land to the son.

Question

Any problem with this?

Explanation

A producer may not directly or indirectly finance another producer if the producer doing the financing has an interest in the land or the crop farmed by the tenant. This rule is especially complex. If any financing exists for a tenant where the landlord either loans or guarantees a loan for the tenant where he has an interest in the land or the crop, the two will be combined for payment limitation purposes. If the tenant and landlord are receiving more than $50,000 in payments subject to the limitation, advice should be sought to avoid a financing problem.

Farmer Question: During the whole history of farming in this country, the older generation financed the younger generation. These rules seem to change this. How is the son supposed to get started?

Answer: The problem is that they are writing rules so that huge corporate farms can't get millions and millions in farm payments. They haven't yet worked out a way to prevent huge payments to huge farms and provide more generous rules for the family farm.

Final Comment

The form 561 is used by the ASCS to review your farm operating plan and determine whether there are any problems with the $50,000 payment limitations. Care must be taken in filling out this form properly to avoid problems. Without a complete understanding you may cause problems for your farming operation.

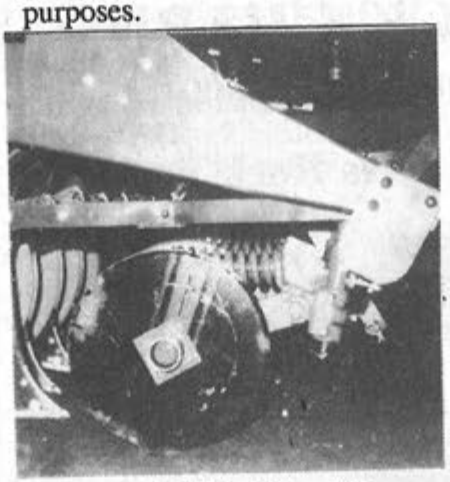
A Conservation District Asked:

How to Convert an HZ Drill to No-till

The Upper Grant Conservation District (UGCD) asked us if we could modify a John Deere HZ drill so that it could go through considerably more residue than it currently can.

In order to make the HZ drill go through more trash we had to slice the soil before each boot to allow for the soil (and residue) to go **around** the boot instead of plug it.

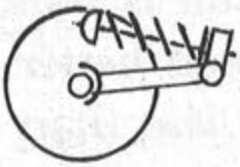
The easiest way to slice the soil is to use a coulter. The challenge was to mount the coulter in such a way that the operator could have complete control of depth and yet allow the coulter to swivel when it made a turn. Since the unit would be used in rocky conditions there had to be a provision that would allow the coulter to retract when it hit a rock (i.e., it had to be spring loaded). The coulter also had to retract out of the ground for moving purposes.



Converted HZ drill with spring loaded coulters on tool bar

The UGCD preferred the function of a Haybuster coulter, but with the selection of this coulter came design problems that had to be solved. The Haybuster coulter had swiveling capabilities, was spring loaded for rocky conditions and the diameter of the coulter was the correct size for this HZ conversion. The design problem was that this package didn't fit under the HZ drill.

Before



After

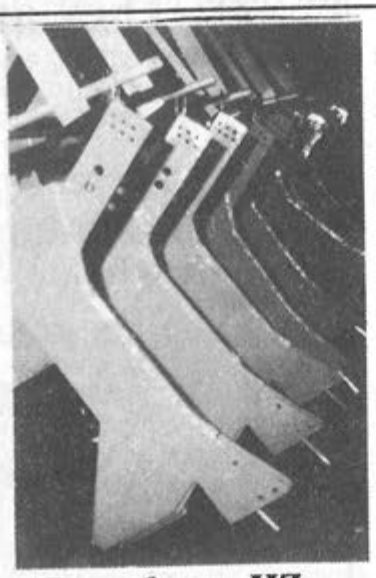
The Haybuster spring was approximately 6" above the top of the coulter. We had to modify the assembly so that the maximum height of the spring at any time would never exceed the height of the coulter. The reason for this is that the original coulter wouldn't fit under the drill. We had to modify the spring so it would fit under the drill and still have at least 4" coulter drive (i.e., in response to rock blockage).

After we modified the coulter assemblies we had to install them on the tool bar. We had the choice of square tube or solid bar for the tool bar. UGCD was concerned about having enough weight so the coulter would penetrate heavy trash. For this reason they selected the solid bar for a tool bar. (See **Conversion Update** at the end of this report.)

Because of the weight of the solid rod bar we had to select a bearing that would withstand the constant pounding of the coulter in the ground, plus the overall weight of the tool bar and coulter; in addition it had to be a standard bearing so we wouldn't have delays when we ordered or re-ordered it.

To find the best bearing we computed the total weight

(continued on page 13)



Boots for an HZ drill that places fertilizer below the seed.

of the load, the amount of rotation that the tool bar had to turn, the amount of side load (like the side forces during a turn) and, of course, the inside and outside diameter of the bearing. After collecting all this technical data we referred to several manufacturers' reference manuals and selected the best bearing for the job.

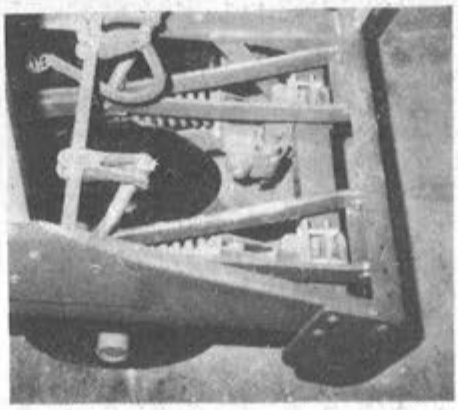
Before installing the tool bar on the drill we had to reinforce the sides of the drill to handle the additional weight of the tool bar and the load of forward travel.

The final step in the process was to install a hydraulic cylinder so the operator could control the rotation of the tool bar and hence the depth of the coulters.

Conversion Update

Recently UGCD called us and said they wanted to modify their design.

After a year's work they found that their tool bar doesn't need to be solid steel. They've asked us to replace it with a tube. The extra weight wasn't needed.



ENTREPRENEURS: ALIVE AND WELL IN THE COUNTRY

Forty years ago when grandma took her chickens' extra eggs to town to sell they didn't say she was an entrepreneur. But that's what she was.

Now, all the city folks are talking about being entrepreneurs, like they invented it.

Research shows that entrepreneurs want independence more than anything else. They'll work harder for less money just because they want to be self-reliant. This sounds like country folk to me and here's a few examples of our people who are finding new ways to shake the money tree.

In Douglas County

(continued on page 23)

ESTABLISHING GRASS ON EROSIVE LAND

by Dave Huggins

The Conservation Reserve Program (CRP) has generated much interest in grass seeding. Grass establishment can be a difficult task particularly on marginal ground. Surveys have indicated that roughly one third of the grass acreages planted in the U.S. each year result in total failure. In the Pacific Northwest, the most common causes of failure are:

1. Poor seedbed preparation including looseness, dryness near the surface and excessive weed competition.
2. Seeding too deep, usually as a result of a poorly prepared seedbed or no depth control.
3. The grass seeding was not timely and the stand did not establish or failed soon after due to drought, cold stress or other "poor luck" factors including damping off, grasshoppers, wireworms, etc..

The ground taken out of production for CRP is marginal and highly erosive. If grass establishment is to be successful, a healthy dose of help from Mother Nature would go a long way. But there are also ways to make the best out of what Mother Nature hands out.

THE SEEDBED

The seedbed should be firm so that good depth control and soil seed contact can be achieved. Both are extremely important for germination and early seedling development. An average sized person should not leave a footprint more than one half inch deep. Moisture should be near the surface so that shallow planted seeds can germinate and continue to grow. The seedbed should also be free from competing weeds.

Moisture is critical on marginal ground. Drought is the most common reason given for stand failures and an effort should be made to save every drop. Wind and soil erosion are also extremely hazardous. Excessive erosion can wipe out the stand and damage surrounding crops. Surface residues can conserve moisture and control erosion. But how do you prepare a good seedbed and maintain surface residues at the same time? One answer to this dilemma deserving serious consideration is no-till seeding. No-till seedbeds are firm, moisture is conserved and erosion control is at an optimum. In addition, surface residues can reduce crusting, winter injury (especially heaving), and reduce summer temperatures at the soil surface. In view of these attributes, no-till may very well be the best method to establish grass on marginal ground. Furthermore, because seed placement is shallow, no-till grass seedings can often be successfuly done with conventional drills.

One drawback to no-till grass seeding is that weed control will have to be accomplished initially through the use of chemicals which may increase out-of-pocket costs. But if no-till means the difference between the success and failure of stand establishment, this expense may be well justified.

FERTILITY

Marginal, eroded soils are often deficient in nutrients such as nitrogen, phosphorus, potassium and sulfur. While costs on CRP ground are going to be kept at a minimum, sufficient inputs should be made so that the grass can become established. Phosphorus is most critical for establishment and seedings on low fertility soils are favored by P additions. Forty pounds of P_2O_5 is a

ballpark figure, more exact amounts can be calculated through soil testing. Potassium demand by young seedlings is low. Potassium fertilization on particularly deficient sites can be done following stand establishment if it proves necessary to keep the stand healthy. Small additions of nitrogen at seeding are usually desirable on soils low in nitrogen. Additional amounts can be added after establishment if required. Sulfur may also be applied if needed after stand establishment.

SEEDING DATE

Grass can be established in the fall or spring. If annual rainfall is less than 14 inches, a late fall seeding, late enough so seeds do not germinate until spring, is desirable. Grass can also be established following summer fallow in early fall if moisture is sufficient to get a good stand. However, these seedings on marginal ground will be very susceptible to erosion and winterkill and are more risky. Spring seedings in low rainfall areas are also second best. Often the grass will not be able to establish sufficiently to withstand drought stress particularly on marginal ground. A good strategy might be to follow a spring grain such as barley. Here, an effort should be made to have a good weed control program in the barley. Follow this with a fall, preplant application of a non-specific herbicide if you are lucky enough to get fall moisture and weed growth. The grass could then be dormant seeded with a late fall no-till planting using conventional or no-till drills.

In higher rainfall areas, there are more options. No-till grass seeding in the spring has been very successful in annual crop areas. Spring barley residue is the preferred stubble to drill into. Conventional double disk drills and no-till drills have worked well when the straw is dry and moisture is just below the surface. The barley ground provides a perfect seedbed; firm, smooth and with residues that protect the grass from drying out. Heavy seeding rates should be used because of the marginal nature of the ground and to compensate for seed that gets lost in stubble.

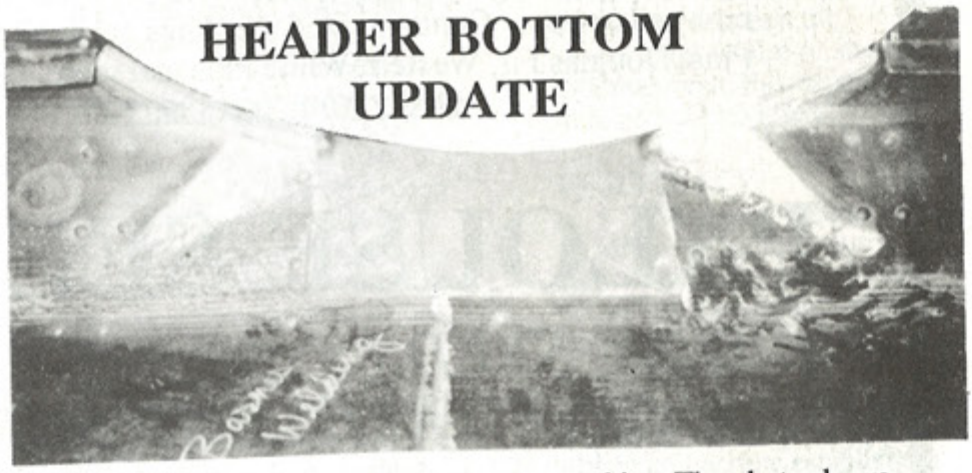
CONCLUSIONS

No-till seeding grass on marginal ground may well make the difference betweeen successful stand establishment and a complete loss if planted conventionally. A firm seedbed, residue that controls erosion, conserves moisture and provides seedling protection all add up toward making your first CRP seeding on a tough piece of ground your last.

52 FOOT PONTOON

Pictured above is a pontoon for the Chelan County PUD that was used at the mouth of a dam (so you don't drive your boat over the edge). There were five pontoons, each 52' long and 3' in diameter. They were deeply rusted and we had to sandblast to bare metal and apply a water resistant (marine) paint. Each pontoon weighted approximately 14,000 pounds.

HEADER BOTTOM UPDATE



This header is for a John Deere hillside combine. The photo shows a prototype with one factory bottom (tin). Since this photo was taken we now have eliminated all factory tin, which gives the grower approximately $400 in cost savings over conventional repairs

The Sprayer: "The Most Important Farm Tool"

Editor's Note: We asked a dozen survey questions of many farmers in preparation for this issue. When Sharon Storment of Endicott interviewed Read Smith, she found that many of his comments came back to the use of his sprayer. For that reason we have developed this interview into a separate article on the use of sprayers and spraying methods in conservation farming. Read dryland farms near St. John, Washington. His land receives from 13 to 16 inches of rainfall. He was the Conservation Farmer of the Year in 1985.

Can you explain why you developed the conservation farming methods you use?

Read: Basically, if you can save the moisture that falls on your ranch and convert that into bushels you have a positive result on your farm. Everything I do on the farm is aimed at stopping erosion, which wastes moisture. For that reason, all of my tillable acres are farmed under no-till or minimum tillage practices. We've modified a lot of our equipment to combine and eliminate operations in order to get the crop with the fewest number of trips through the field.

Can you give me an example of how you combine operations?
Read: We've added tool

Read Smith

bars to our culti-weeders so that we can place nitrogen, sulphur and phosphate (on 12 inch spacings) and at the same time apply Fargo. This means that we place those three chemicals, put down Fargo, rod weed and cultivate all at the same time. This obviously saves diesel and a lot of trips through the field.

You mentioned that you fertilize a spring crop in the fall. Could you explain that?

Read: We've modified our chisel plow so it can apply nitrogen, sulphur and phosphate at the same time. Using this equipment we fertilize all our spring crops the fall before. We monitor ground temperature and as soon as it drops below 45° we jump in and fertilize the ground that's going into spring crop--whether it's barley, peas or lentils. (45° seems to be when the nitrogen-fixation process slows and stops to the point where nitrogen will not convert to a water soluble form; this is usually between October 15th and 20th in our area.) This eliminates pulling the fertilizer applicator over the ground in the spring.

We have always had positive yield results doing this and for a number of reasons. First of all, the fertilizer is placed at a little deeper depth, below the trash level. Usually we are going into winter wheat stubble

NEW

From the builders of the PALOUSE "ZERO-TILL"

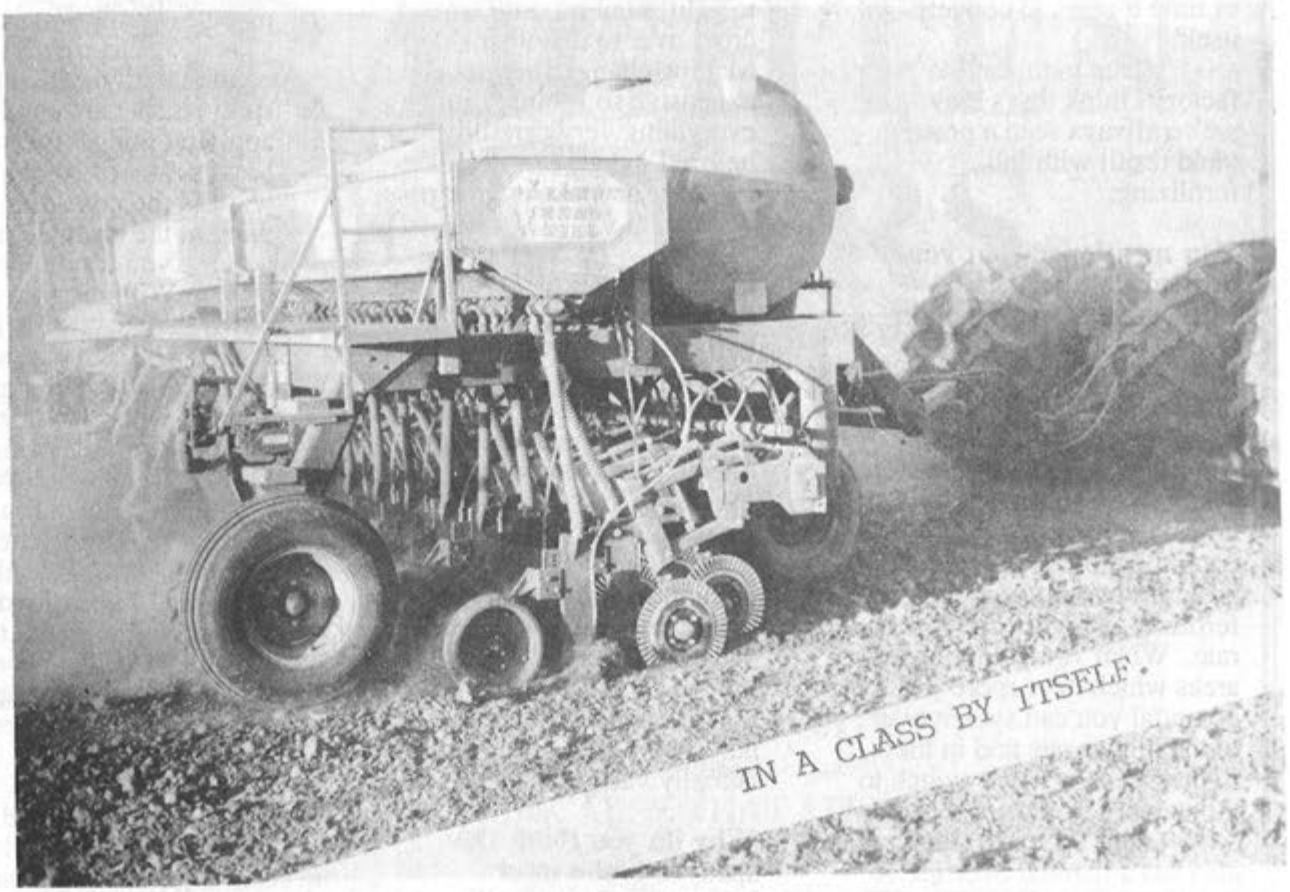
PALOUSE **MV120s**

PALOUSE **MV120b**

CONSERVATION GRAIN DRILLS

... with FULL fertilizer capability.

The PALOUSE "MV" series is a MEDIUM WEIGHT drill designed to fill the gap between the expensive heavyweights and the delicate lightweights. The drill is VERSATILE enough to meet the requirements for most zero-till, minimum-till and conventional farming applications. Choose from two affordable styles in widths up to 40'. Save trips over the field while taking advantage of the proven results of precise fertilizer and seed placement.



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which has more residue; we try to keep the residue on the surface so we can place the fertilizer beneath it. This fertilizer placement minimizes the tie up that traditionally forces you to fertilize at heavier rates.

Secondly, fall fertilizing will make the fertilizer available a little bit quicker in the spring. Also, there've been some estimates that with a spring fertilized crop sometimes only 60% of that fertilizer is available to that crop just due to the length of time it takes to convert itself.

Due to those two factors I think that's why we've **always** seen a positive yield result with fall fertilizing.

You mentioned that you use variable fertilizer rates. Could you explain this?

Read: Probably the biggest thing we've done to take advantage of different field conditions is the Raven system that we've used on our no-till equipment. This equipment enables us to pre-program two different rates of fertilizer--a higher and lower rate. When you get to those areas which have more yield potential you can switch over to the higher rate and in the lighter areas you can switch to the other.

Our Raven system also has a manual override so that if you want to go above or below the set rates in any part of the field, you are allowed to do so within the tolerances of pressure and the orifice size that you use.

I do all my own spraying with my own equipment. I've learned through the years that different parts of the field seem to grow better weeds than others. Therefore, they need more attention. They may need a little heavier dose--in the draws, some of the north sides. Also, I get colonies of weeds that just grow on certain parts of the field--just due to conditions--whether it's a north or south exposure. So it just seems that I'm constantly changing the mixture, depending on which part of the field I'm in.

I may layout a field so that I may spray a homogeneous type hillside with one mixture and switch to a different mixture when I cross over to the other side. Making changes in rates is expensive so I think through everything very carefully before I increase or decrease fertilizer or make it stronger or weaker.

How do you keep track or measure your results within a given field?

Read: When I'm trying to investigate the difference between doing an operation one way or another, we put out test plots. We try to isolate one variable. At harvest we cut a pass with a combine through plot A and then dump it through a scale. We do the same thing with plot B. Then we convert those weights to bushels per acre. This type of information is really valuable.

Why do you think the sprayer is the most important farm tool?

Read: Twenty-five years ago the most important tool was the plow. Today, there is no doubt in my mind that the sprayer is the most important farm tool. It's the tool I pull most on our farm. I don't pull a rod weeder much any more or a chisel. It seems that we end up handling so many things by spraying.

Through the years we've run a lot of test plots with companies like DuPont and Monsanto. We've had trials for new products and experimental products and we've evaluated their effectiveness on various conditions. We've had an opportunity to get a first hand look at how the researchers do their selection for compounds. This involvement has increased our awareness of how to experiment and has shown us that it pays to attend to method of application and precise (minimum) dosages.

There are very few commercially available sprayers that are capable of applying things like Landmaster or Roundup the way it's the most effective--that's at the absolute minimum volume you can put it on.

With my sprayer I go down to two and a half gallons per acre--for a ground sprayer that's a very minimal amount without plugging. I avoid plugging by using a series of screens; right now I'm going through four sets of screens before the chemical gets to the tip. This eliminates plugging. I use Lloyd's loops, foam marker...these are all things that have been on the market for years, you just don't see many sprayers with them all put on. If you do much work with Landmaster or Roundup, your spraying will be much more cost effective if you make these changes.

Actually, the sprayer is one of the most overlooked things. I visit with a lot of fertilizer people and I am surprised that they don't attend spray technology workshops. These workshops show you how a worn tip or a tip turned at the wrong angle or wrong height can cost you money or

effectiveness or both. It's amazing how important these factors are.

Chances are that if you order a new sprayer from town it will have something wrong with it: wrong target height, improperly calibrated speedometer, inaccurate tip pressure reading or wrong pressure setting.

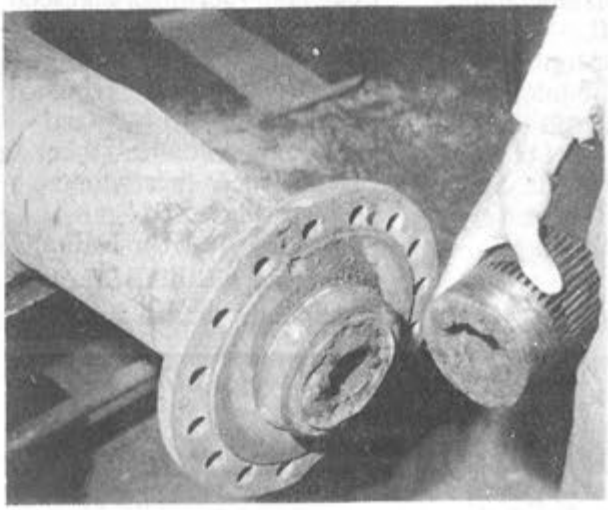
You hear about people turning their rigs way back and get an excellent kill. I suspect that those people have their rigs set up correctly--running at the right pressure, the right target height, the right tip and they're turned at 15° so that the patterns don't hit each other. All these little tricks allow you to reduce the herbicide a little bit and still get an effective kill.

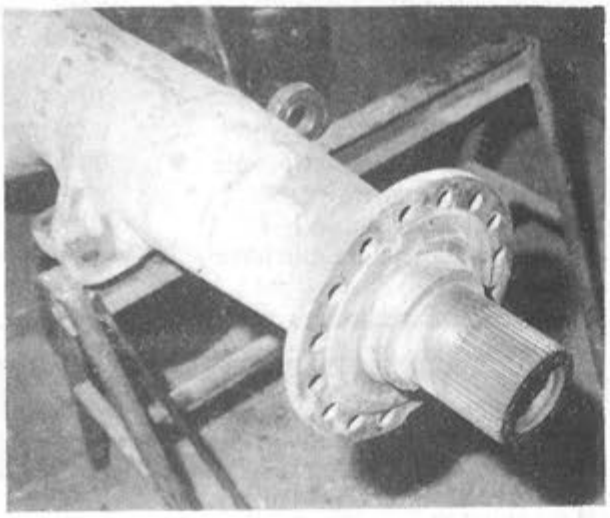
I've heard people say, "If a pint will do the job, give it twenty-four ounces," because they think that that will cover their backside, but a lot of times it isn't necessary if you set your sprayer up correctly.

"I got into no-tilling because I used to lose so much water on the hillsides. With the Concord Air-till drill (which strip plants in 6 or 7 inch bands) I like the fact that you can apply fertilizer and seed and do a tillage operation at the same time. I saved about $8 an acre by not having to spray it. My wheat stand looks good now and there are fewer weeds than with the other drills I tried."
Mike Kortze The Dalles,OR
18" - 20" moisture per year

How to Rebuild the

Front Axle of a Front-End Loader





Before (Photo A)

After

In photo A you see the main axle housing and the broken off stub that holds the gear reduction housing (planetary). This stub had been welded before but it failed to hold because of a lack of weld penetration (weldment). The reason there wasn't adequate weld penetration was because there wasn't a deep enough V-shaped groove ground around the circumference. There's a good reason for an in-adequately deep groove: the deeper the groove the harder it is to keep a true circumference because you loose your point of reference. Also, it becomes more difficult to keep the stub surface parallel to the centerline of the axle.

In order to achieve 100% weld, we cut out all the metal in the weld area, which was about 5 times more metal than was removed before the first weld. In order to reinstall the stub onto the housing in exactly the right place to maintain trueness, we machined the inside of the axle housing and the stub so they had exactly the same diameter. Then we machined a steel tube (sleeve) so that it would fit snuggly inside the holes we bored in the stub and axle. The trick to making this repair a permanent one is to make sure the steel tube fits very snuggly in the axle and stub. To create this snug fit we heated the housing and the stub and simultaneously froze the tube (heat expanded the exterior metal and the cold shrank the tube). Then we used a press to assemble the steel tube into the housing and the stub onto the steel tube. This all had to be done as quickly as possible--in less than a minute.

This took care of the critical alignments, but then we had to maintain the alignments during the final welding process. To do this we first pre-heated the whole area to 250-300ºF. Then we used a low hydrogen welding rod to skip weld the circumference. This process took 4 to 5 hours because every weld had to be vertical and each weld had to be opposite of each other. Each weld had to be opposite each other because if you welded continously on one side that side would get too hot and when it cooled it would warp the metal. Each weld was an eighth of an inch thick, so it took hundreds of welds to fill-in the quarter-inch gap that had been left between the stub and the housing.

After it was all welded we had to bring the entire assembly back up to a uniform temperature and then cool very, very slowly. To slow the cooling process we wrapped the assembly in insulation and let stand over night. When it cooled we machined the weld surface back to factory specifications.

The complete job cost around $2,000 and a replacement part (if one would have been available) would have been $4,000 to $5,000.

(continued from page 13)

ENTREPRENEURS: ALIVE AND WELL IN THE COUNTRY

three women have started a company called Ambrosia, Inc..Amy Willms, Sandi Stoddard and Diane Petersen make and sell hand crafted items. They started with solid cinnamon ornaments and apple wreathes but include painted game boards, Amish dolls and other items now. They attend arts and crafts shows and are planning a catalog. If you'd like to share your ideas, write Ambrosia, Inc., PO Box 59,Waterville, Washington 98858. Or call, (509) 745-8226.

Now let's travel across the state to Palouse, Washington. Doug Willcox is another example of a rural entrepreneur. Doug was raised on his parents farm but went away to college and graduated in civil engineering. After working a number of years for Standard Oil of California in chemical manufacturing plants he got bit by the independence bug and came back to the family farm.

Doug had to teach himself to farm because he had spent so many years away. As a result he relied on his analytical background when he set about to teach himself the farming business. This approach allowed him to be much more open to new ideas and soon he was trying things that would astound his neighbors.

As he learned about farming he became fascinated by plant fertilizer utilization, especially nitrogen stability. Since Doug is from an area of relatively high rainfall, the problem of nitrogen leaching out and the resultant expense of spring top dressing interested him. He also developed an interest in the placement of phosphates and micronutrients.

These interests led to a number of experiments with fertilizers and equipment. About two and a half years ago he heard about acid base fertilizer. ("I'm sure this sounds like snake oil to some people, I know it's hard to get used to a new idea," says Doug.) According to Doug, "it's still a fundamental fertilizer in a little different form. It's a liquid solution, it's less expensive, it's lower in salt, it's safer, less volatile, it's easier to handle and store and it doesn't leach like other fertilizers when placed below the wheat seed in the fall." This fertilizer helped him produce record crops and he decided to sell it to other people in his area. Now he's

(continued on page 31)

RAPESEED: 500% Increase in Acres and Interest

Karl Kupers, who farms near Harrington, Washington, attended an ag conference a few years ago where he heard Andrew Thostenson, an agronomist for the Extension Service, give an enthusiastic talk about a new variety of rapeseed that could be grown profitably in the Pacific Northwest. His talk was believeable because Thostenson had studied under Dick Auld, a University of Idaho researcher who is a nationally recognized authority on rapeseed. Thostenson talked Kupers and a couple of others into growing rapeseed, and the crop seemed to have potential except for one thing: there had to be a way to prevent industrial rapeseed from contaminating edible rapeseed. Believing that rapeseed was worth the trouble, they put together a legislative proposal for "grower-run quality control districts" and took it to Olympia. On the way home they discussed what should be done next and that's when the idea for Spectrum Crop Management started. (Editor's Note: When we said "they" in the previous sentence we were referring to the Board of Directors of Sprecturm: Andrew Thostenson, Orlin Reinbold, Curtis Hennings, Rodney Reinbold and Kupers.)

Kupers believes that the solution to today's wheat surplus problem is diversification. He doesn't believe our current situation is going to go away. But Kupers also knows that alternative crops are hard to establish and make profitable for the growers, and that marketing an alternative crop is one of the biggest problems. For that reason Spectrum Crop Management was started eight months ago. At the time they had only two or three growers. Now there are 120 growers and acreage has increased by fivefold (there are several other companies selling rapeseed). Kupers believes that acreage in the next year or two could grow to 75,000 to 100,000 acres.

Editor's Note: In preparation for this issue we called dozens of farmers and surveyed them for important issues. One of these farmers was a rapeseed grower who had just planted his second crop. He suggested we do a story on rapeseed. For that reason we asked each additional farmer that we called what they thought about growing rapeseed. We then called Karl Kupers, who grows 300 acres of rapeseed himself, and asked him to answer questions or to respond to opinions.

FARMER COMMENT: "I've heard there's no market for rapeseed because the Canadians and Austrialians already grow enough."

Kupers: The Japanese import 1.5 million metric tons each year and the market is growing 10% annually. Shortly after we started Spectrum I went to Japan with Governor Gardner's Team Washington. While I was there I had the opportunity to talk directly with the people who would buy rapeseed. They *worked* to convince **me** that there was a market for rapeseed if it were of high quality , priced competitively and if the supply were reliable.

Of course the most important thing is quality and there are several reasons why we can grow the highest quality rapeseed in the world.

First of all, Canada grows spring rapeseed and due to their early winters they sometimes have only 85 frost free days to grow their crop. This year only 50% of their crop will be #1 grade because they have too many green seeds in their harvest. (Green seeds must be bleached out of rapeseed and this is an expensive process for the

processor.)

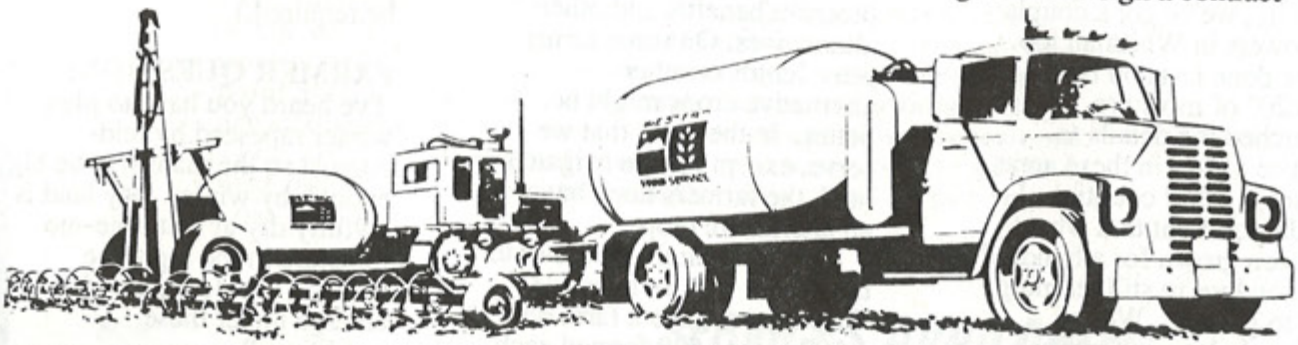
In our area we grow a variety of winter rapeseed which has less erucic acid in the oil and less glucosinolates in the meal than any rapeseed grown any place in the world. This means that, if we pay the price to grow the best, we can establish ourselves as growing the best edible rapeseed in the world.

In addition to this, we are growing a new variety, a better variety of rapeseed and we're doing it in an uncontaminated area. You see, rapeseed volunteers very badly. In areas where it is already established, they'll have trouble growing as clean a crop as we can. We won't have the volunteer problem because it's a new crop in our area.

Washington is the only state with quality control districts and we've got the strictest grading rules and seed certification standards in the world. As growers, we still have to make sure that we use only the best seed varieties, but we have the structural elements in place to have the highest quality rapeseed if we stay committed to this as a group. Believe me, the Japanese appreciate the start we've made.

FARMER QUESTION: How can I be guaranteed that I'll be able to sell the rapeseed I grow?

Kuper: We have a contract with a Japanese firm to produce quality rapeseed. When we sell rapeseed to a grower we sign a contract



with him that guarantees we'll buy the rapeseed he grows. This year growers were guaranteed seven and a half cents a pound.

FARMER QUESTION: No one grows rapeseed around here, so how do I know about planting rates, seed bed preparation, fertilizing and all the other details for my area?

Kuper: Our 120 growers are in Spokane, Adams, Lincoln and Douglas counties. Actually, we've got a couple of growers in Whitman too. We've done tests on land with 8" to 20" of moisture. We've researched the details to produce a crop in these areas, but not in other counties. I should point out that wheat has been grown for a hundred years and we're still learning how to grow it. We're constantly learning more about rapeseed production. We require our growers to budget a certain amount up front for consulting during the first year, because we're not trying to just sell rapeseed--we're trying to produce the highest quality crop. If someone wants to grow rapeseed from outside our area we'd want to set up some test plots the first year and have the grower pay the agronomist a consulting fee--we're not just going to jump in and sell seed without being responsible for quality. That wouldn't be good for the industry.

This might sound funny to you, but there's one thing you have to understand: we're not a rapeseed company; we're an alternative crop company. When rapeseed gets well established others will sell it and we'll step aside. Then we'll develop a new crop. Our goal is to develop five quality alternative crops for the Pacific Northwest. We think this diversification will be the key to re-establishing a strong economic base for our region.

FARMER COMMENT: I grow peas and lentils as alternative crops and I don't think rapeseed would be as profitable to grow.

Kupers: Rapeseed is not for everyone. A decision to grow rapeseed includes such things as soil, moisture, farm program benefits and other alternatives. On some farms peas, lentils or other alternative crops might be better. In the areas that we serve, except for the irrigated land, the farmers don't have an alternative crop.

This might be easier to talk about with an example. Let's say we have a farm with 1,000 acres, 500 farmed each year and 500 in summer fallow. In 1987 they will have to set aside 30% or 150 acres. Due to the summer fallow provision, which is part of the farm bill, they could designate these 150 acres on their summer fallow side and plant rapeseed....this gets really complicated and every farm is different. We don't want any farmer risking their farm program benefits, so we tell everyone to check with their ASCS office and just ask them one question: "Can I grow rapeseed on my set aside acres and still receive all my farm program benefits?

FARMER QUESTION: How much would I make if I grew rapeseed?

Kupers: A rule of thumb is that you'd produce about 60% of what wheat would yield. So if you grew 50 bushels of wheat per acre, you'd grow 30 bushels of rapeseed. You sell rapeseed by the pound and there are 50 pounds of rapeseed in every bushel. 30 bushels times 50 pounds is 1,500 pounds/acre. At seven and a half cents a pound this would come out to $112.50/acre. There are no herbicide costs. On the average fertilizer would be about the same, but each farm is different. (In the future, in time, a pest may come in and at that time we'd have a small pesticide expense that would be required.)

FARMER QUESTION: I've heard you have to plant winter rapeseed by mid-August so the plant will be big enough by winter. My land is awfully dry at that time--no moisture in the top three inches. Would rapeseed emerge under these conditions?

Kupers: We have to study each individual field and situation. I can't anwer this question without more information. I do know this: that in the last year things have been very dry. Wheat has averaged 75% emergence and rapeseed has averaged 70%. We want to do better and we will when we've had more experience. You have to remember that rapeseed is a broadleaf plant. I've seen many places on my 300 acres where there has been three or four feet of bare ground around the plant, but by harvest it has all filled in because the extra space has encouraged more leafing on the plant that made it. At harvest we haven't found any empty spots in the field. (Editor's Note: Jim Davis of Douglas county has 400 acres in rapeseed and he has also

seen the rapeseed plants tend to fill-in the empty spaces.)

In January and February we're going to have grower meetings and at those meetings we'll highlight the summer fallow techniques that we feel are extremely important to develop a good seed bed for next August's planting. We want the grower to pick his field and to plan exactly what he's going to do: start a shallower tillage program, seed early enough to have a shallower mulch and still have a good moisture stand, get a nice firm seed bed...we'll discuss the types of drills, planting rates...we'll go over everything we know.

FARMER QUESTION: Where would I take the crop once I harvest it?

Kupers: This year the whole crop is delivered to Ritzville. This means that most farmers will have an additional charge for hiring a semi to haul the grain--about two tenths to half a cent a pound.

In the future, we'll have handlers much closer to the grower. Some of the rapeseed will be co-mingled in family owned grain bins or we'll find other ways to save the grower this hauling expense. We've contacted grain handlers and we're exploring ways to solve this problem. By the time the 1988 crop is harvested our goal is to be able to pickup the harvest back in the local communities. This shouldn't set any one back because we will solve this problem.

FARMER QUESTION: How does rapeseed work with a no-till system?

Kupers: We haven't had much experience with this yet. This is one area where we have a lot to learn.

FARMER QUESTION: It would be exciting if French fry makers would use Canola Oil in this country. Is there any chance that they'll start doing this?

Kupers: Let me back track a minute. The vegetable oil produced from rapeseed already has no cholesterol and the lowest amount of saturated fat. It also has the characteristic that it can be genetically altered and then have a seed produced for commercial purposes faster than any other vegetable oil producing crop. So it can be made healthier and better as research is done.

The thing that excites me about rapeseed more than anything is that every medical report that comes out provides support for the idea that Canola Oil is healthier than any other. Right now most French fry makers use palm oil because it is cheaper, but it isn't in the same league with Canola Oil when it comes to health. We believe that one day American consumers will demand a healthier French fry and they'll be willing to pay a little more for it. The French fry industry alone could use 200,000 acres a year of rapeseed and if that ever happens someone will build an oil processing plant in the U.S..

Canola Oil couldn't be consumed in the U.S. until the FDA cleared it in 1985 so a lot of research on its commercial application is just beginning. In order to use Canola Oil as a deep frying oil it must have a defoaming agent. The defoaming agent has been developed and now it is waiting to be licensed.

Canola Oil can be used in salad dressing, margarine and general cooking oils. Each one of these applications will require research to make it suitable. This work is going on and in time we'll see some exciting changes.

Currently Procter and Gamble sells Canola Oil under the trade name "Puritan" in the U.S.. Also, Canbra Foods Ltd. of Alberta, Canada markets Canola oil here under the name "West Canola." Acceptance of Canadian Canola products in the U.S. should help our Pacific Northwest industry by reducing Canadian exports to Japan and stimulating more research on commercial applications.

Extension Economist Says

No Profit In Rapeseed

An Explanation from the Editor

Dick Schermerhorn, a University of Idaho extension economist, discussed rapeseed in the 1987 Pacific Northwest Agriculural Situation and Outlook, which was published in the Farmer-Stockman magazine.

Schermerhorn said, "Markets for Pacific Northwest rapeseed aren't clearly defined, although there appears to be a significant market in Japan for edible varieties that meet or exceed Canadian quality standard.

"The kicker is that

Pacific Northwest farmers must be able to produce the crop cheaper than Canadian farmers. The price at harvest time in 1986 was well below cost of production."

The editors of Barnes Farm and Shop Magazine read this just after interviewing a number of farmers who had made a profit on rapeseed in 1986. They were confused so they called Schermerhorn for a clarification.

Schermerhorn used the figure of five and a half cents per pound in his computation of earnings because that was the world price for rapeseed at that time. He was glad to hear that Spectrum growers received seven and a half cents a pound.

Schermerhorn had developed a cost of production model for his computer to determine production costs . The computer said that it would cost ten and a half cents a pound to produce. Once again the Barnes editors were confused.

Later in the day they called Schermerhorn back and asked him how he computed production costs--they knew there had to be answer to this conflict. Schermerhorn said that they based production costs on what it would cost a farmer if he were to just **start farming.** In other words, his production costs included the cost of buying **new equipment** and paying a land rental based on $1,500 per acre land costs. His budget also included the cost for spraying pesticides (a cost that has not been necessary for Spectrum growers).

After a brief discussion with Schermerhorn it was clear that his budget would only apply to a new farmer in one type of situation, with one level of land value. He recommended that each farmer make a budget based on his individual circumstances. He agreed that a budget based on fully depreciated equipment and land values of 50% to 70% lower than the figures he used would alter the computation of profitability considerably. Further, the price of seven and a half cents a pound would increase the margin of profit.

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ENTREPRENEURS: ALIVE AND WELL IN THE COUNTRY

licensed to manufacture and sell acid base fertilizer. In order to demonstrate the effectiveness of the product he needed a drill that would give fertilizer placement under the seed and handle the liquid. This led to his purchase of a specially modified new MV-120 drill (developed by Palouse Welding & Machine).

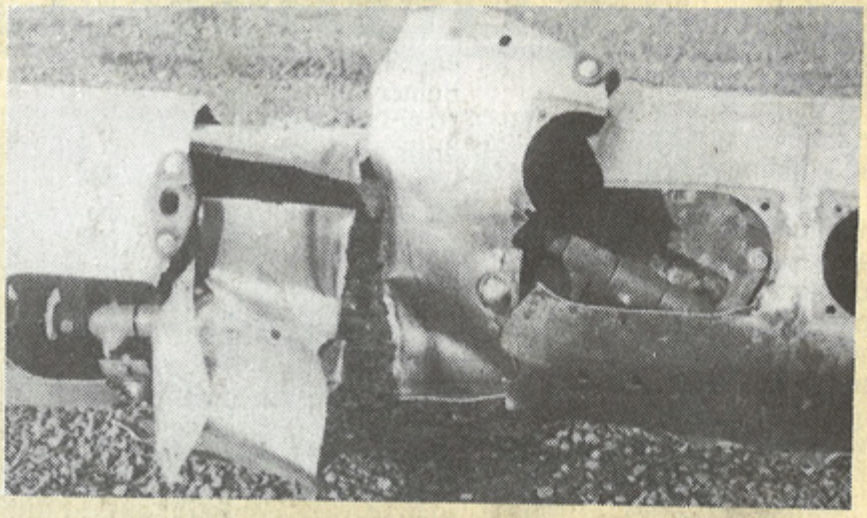
This story is typical of the entrepreneur because it's a new business that evolved out of a need to solve a problem--get the most out of one's fertilizer budget. Doug is not only creative in his problem solving, however, he's also creative at forming associations.

Doug's neighbor, Lindsey Kent, is just going into farming. This is a tough time to buy new equipment, so Lindsey is paying for a new MV-120 drill by renting it out to others (another entrepreneur). Lindsey feels that this drill is great for no-till farming and there is a great demand for it in his area. It's also better engineered than some of the lighter no-till drills. ("With some of those light weight drills you have to haul a welder around with you to put the thing back together all the time.") He rents his MV-120 out locally, and in California. Right now it's in California planting 3,600 acres. "The MV-120 is great because it has different tank configurations for dispensing dry, liquid and gas fertilizers. Different growers want to use different types of fertilizer. Also, I farm some steep hills and I needed something that would hang on the hills but wouldn't be so heavy that I couldn't pull it across them." It should be paid for in a couple of years. Meanwhile, Lindsey uses Doug's MV-120 drill and acid base fertilizer on his own ground and Doug uses Lindsey's tractor when he does his ground. Since it takes some nerve to try something this new, Doug has found a willing experimenter in Lindsey.

And what does Lindsey think about acid base fertilizer? He planted wheat two weeks later than his neighbor, who used conventional fertilizer and Lindsey's roots are an inch and a half longer. He's looking forward to bushels of further proof next summer.

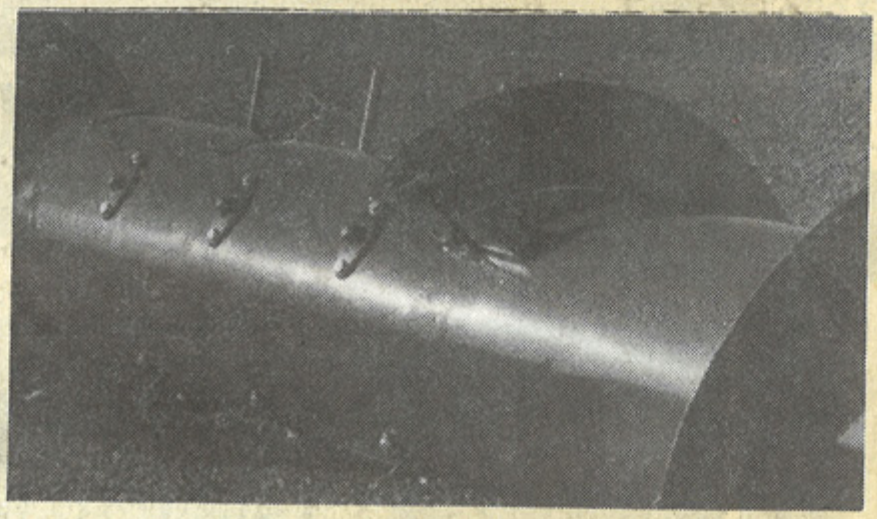
Don't Let A Damaged Finger Section Cost An Arm & A Leg

Damaged
Finger Section >



New Auger Cost: $1500 - $2000

Rebuilt
Finger Section >



Rebuilt Auger Cost: $475 - $900

"We can straighten any auger to within 1/8th inch."

BARNES
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