

DIRECT SEEDING AND CROP SEQUENCING TRENDS IN
WEST CENTRAL SASKATCHEWAN

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Over the past five years interest has grown in direct seeding and diversifying crop rotations. Over the past 3 years PFRA has surveyed about 450 fields in West Central Saskatchewan to determine the extent to which farmers are changing their management practices in these areas. This paper summarizes the main results for 1995 and major changes since 1993, when we first started collecting information on these fields.

METHODOLOGY

The survey sites were initially set up in the mid 1980's to help PFRA determine crop residue on annual cropland. Sites were chosen to achieve a representative number for each wind erosion risk class. In 1993 more sites were added so that the entire Rosetown District was better represented. Each site is located at the intersection of 2 roads. At each site, the 4 fields that meet at this intersection are surveyed.

In the fall of 1993 observations were made on crop type, most recent type of tillage operation, and various factors related to crop residue management. These included amount of residue, orientation, stubble height, straw and chaff spreading, and potential to direct seed.

These sites were surveyed again in 1994 and 1995, just as the crop was emerging (early - mid June). Observations at this time included crop type, amount and orientation of residue, row spacing, seed spread, and most recent field operation. From this data we were also able to estimate which fields were zero or minimum till seeded.

CROP TYPES AND ROTATIONS

From 1993 to 1994 cereal acreage decreased from 50 to 45%, while oilseeds and pulses increased from 15 - 20%. From 1994 to 1995 fallow acreage decreased from 35 to 27%, while all other crop types increased slightly.

Based on 3 year crop sequences on each field, we were able to estimate the types of crop rotations used during this time. About 35% of fields are in a cereal/fallow rotation.

About 40% of fields are being fallowed once every 3 years. Almost 1/2 of these fields have an oilseed/cereal/fallow rotation. Most of the remainder differ by using cereals or pulses after the fallow year.

Continuous rotations make up about 15% of fields. The remaining 10% comprising various "odd ball" crop sequences that are often not recommended (eg. pulses or oilseeds 2 years in a row).

The surveyed area consists of mostly brown or dark brown soils. In all 3 years, the dark brown soil zone had less fallow, and more oilseeds and pulses than the brown soil zone. The distribution of crops also varied between specific local areas. For example, the Glamis area southeast of Rosetown had a high lentil acreage.

DIRECT SEEDING

In 1995 about 7% of stubble seeded fields were zero till seeded. Another 15% were minimum till seeded, and the remaining 78% were conventionally seeded. From 1994 to 1995 there was only a slight increase in direct seeding, from 20% to 22% of stubble seeded fields. Direct seeding includes fields that were zero or minimum till seeded.

In 1994 the rate of direct seeding was higher in pulse stubble, than oilseed or cereal stubble. However, in 1995 the rate of direct seeding didn't vary with previous stubble type.

In 1994 pulse crops were direct seeded more often than cereal or oilseeds. In 1995 a greater percentage of oilseeds and pulses were direct seeded, and fewer cereals were direct seeded than in 1994.

On fields that were direct seeded at least once between 1993 and 1995, there was a much lower incidence of fallow and a much higher incidence of oilseeds and pulses. This suggests that farmers moving toward direct seeding are also extending their rotation and using a greater variety of crops. Many conventionally seeded fields involve a wheat/fallow rotation.

The rate of direct seeding into stubble fields was the same for both brown and dark brown soil zones.

When looking at specific fields it is evident that many fields were not direct seeded in both 1994 and 1995. Over half of fields direct seeded in 1994 were not direct seeded in 1995. Many of these were fallowed. Over two-thirds of direct seeded fields in 1995 had not been direct seeded in 1994. Obviously, many farmers are taking a cautious and flexible approach.

PACKING SYSTEMS

As expected most direct seeded fields used on row packing. About 1/3 of conventionally seeded fields used on row packing.

OPENER TYPES OR SEED SPREAD

Most direct seeded fields had seed spread of 1 inch or less. Conventionally seeded fields generally had wider seed spreading.

ROW SPACING

About 1/2 of all direct seeded fields had a row spacing between 8 and 10 inches. Most conventionally seeded fields were either seeded at narrow (< 8 inch) row spacing or broadcast seeded.

SEEDING EQUIPMENT

As expected most direct seeding (80%) was done with airseeders or drills with on row packing. Only about 20% of conventionally seeded fields were seeded this way. The remaining conventionally seeded fields used discers (40%), and airseeders or drills with random packing (25%). Also as expected, a higher percentage of direct seeded fields were seeded with wider row spacing and narrower openers than conventionally seeded fields.

While there was little change in seeding equipment trends throughout the whole surveyed area from 1994 to 1995, there were substantial changes on specific fields. For example, 35% of fields that were stubble cropped in 1994 and 1995 did not use the same packing system in both years. About 60% of fields did not use the same row spacing, and 75% did not use the same opener type. Perhaps farmers are not satisfied with their seeding system and are experimenting with different opener types. Different seeding equipment is often being used for different types of crops. A considerable number of oilseed and pulse crops are possibly being custom seeded.

RESIDUE CONSERVATION

In 1995 there was considerably less crop residue left after seeding than in 1994, regardless of seeding system. This is probably due to the large amount of straw produced by the 1993 crop. Also in 1995 there was a greater difference in residue conserved between direct seeded and conventionally seeded fields.

CONCLUSION8

A number of important conclusions are worth noting.

1. Direct seeding is increasing at a slow rate.
2. More varied and longer rotations are increasing at a moderate rate.
3. Farmers who direct seed are also reducing fallow and growing a greater variety of crops.
4. Farmers who direct seed don't seed all their land this way.
5. Farmers are changing and possibly experimenting with different types of equipment.
6. Direct seeding helps to 'conserve crop residue. However, annual fluctuations due to straw production may be a bigger factor in determining how much residue is left after seeding.

SEEDING TRENDS '95



Prairie Farm Rehabilitation Administration

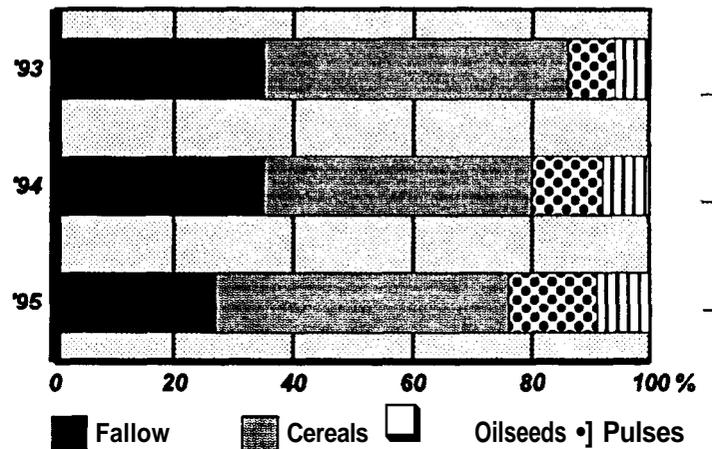
WEST CENTRAL SASKATCHEWAN

For the second consecutive year, PFRA has surveyed about 450 fields in West Central Saskatchewan to obtain information on seeding systems and crop rotations on annual crop land. This brochure summarizes the main results for 1995 and major changes since 1993, when we first started collecting information on these fields. More detail can be obtained by contacting D. Haak or S. McNally in Rosetown @ (306) 882-4272.

CROP TYPES AND ROTATIONS

From 1993 to 1994 cereal acreage decreased while oilseeds and pulses increased. From 1994 to 1995 fallow acreage decreased, while all other crop types increased slightly.

ANNUAL CROP TYPES (% of Fields)
 Rosetown District Seeding Survey



PROBABLE ROTATIONS BASED ON 1993 - 1995 CROP SEQUENCES (% of Fields)

a) 1/2 fallow - 1/2 crop	
Cereal / Fallow	35
b) 1/3 fallow - 2/3 crop	
i) Cereal / Cereal / Fallow	11
ii) Oilseed / Cereal / Fallow *	19
iii) Pulse / Cereal / Fallow *	9
c) Longer Rotations, Continuous for at least three years	
i) Cereal / Cereal / Cereal	5
ii) Mostly Cereals + Oilseeds	6
iii) Mostly Cereals + Pulses	5
d) Other	11

Based on 3 year crop sequences on each field, we were able to estimate the types of crop rotations used. As this survey continues in future years, information on rotation will become more accurate. However, as many farmers change their crop choices, rotations are by no means fixed.

- Please note that a small percentage of fields in these categories had a sequence of cereal / oilseed / fallow or cereal / pulse / fallow.

The surveyed area consists of mostly brown or dark brown soil zones. In all three years, the dark brown soil zone had less fallow, and more oilseed and pulses than the brown soil zone. The distribution of crops also varied between specific local areas, as shown in maps 1a and 1 b. For example, the Glamis area southeast of Rosetown had a high lentil acreage.

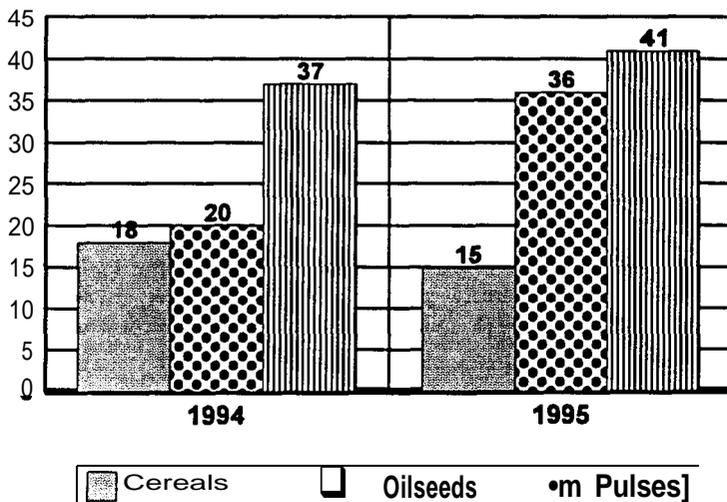
DIRECT SEEDING

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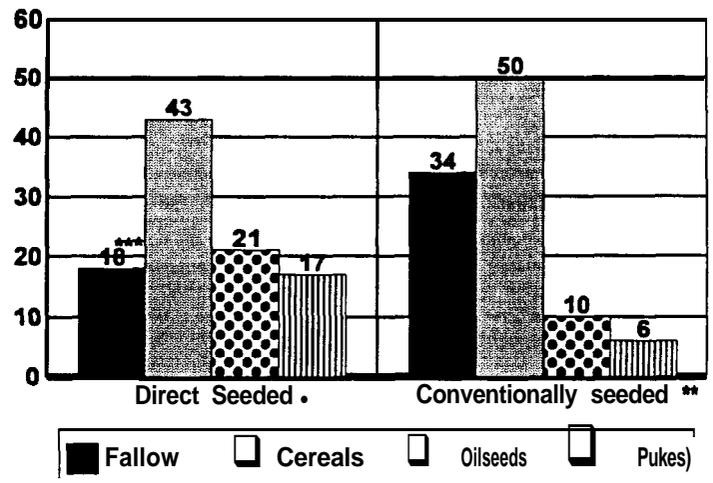
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RATE OF DIRECT SEEDING INTO STUBBLE BY SEEDW CROP TYPE AND YEAR



On fields that were direct seeded at least once between 1993 and 1995, there was a much lower incidence of fallow and a much higher incidence of oilseeds and pulse crops. This suggests that farmers moving toward direct seeding are also extending their rotation and using a greater variety of crops.

INCIDENCE OF CROP TYPE ON CONVENTIONALLY SEEDED FIELDS VERSUS FIELDS THAT WERE DIRECT SEWED AT LEAST ONCE BETWEEN 1993 and 1995

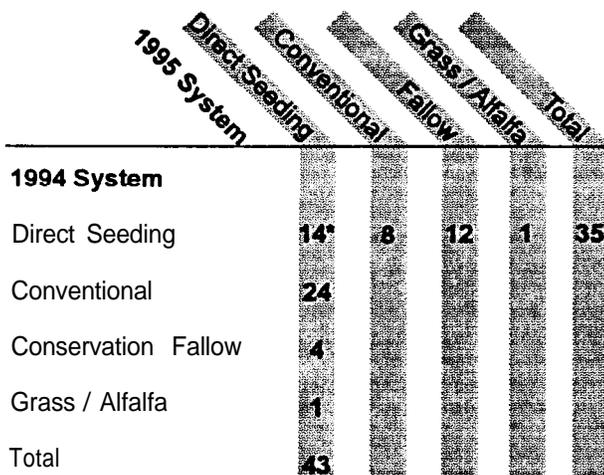


- - These fields were direct seeded at least once.
- * - These fields were not direct seeded at all.
- ** - Fields that were direct seeded at least once were in fallow 18% of the time between 1993 and 1995.

The rate of direct seeding into stubble fields was the same for both the brown and dark brown soil zones. There was less total direct seeding in the brown soil zone, because more fields were seeded into fallow, as shown in Map 2.

When looking at specific fields it is evident that many fields were not direct seeded in both 1994 and 1995. Over half of the fields direct seeded in 1994 were not direct seeded in 1995. Many of these were fallowed. Over two thirds of direct seeded fields in 1995 had not been direct seeded in 1994. Obviously, many farmers are taking a cautious and flexible approach.

TRENDS IN DIRECTSEEDING ON SPECIFIC FIELDS



* - 14 fields were direct seeded in 1994 and then direct seeded in 1995.

SEEDING EQUIPMENT

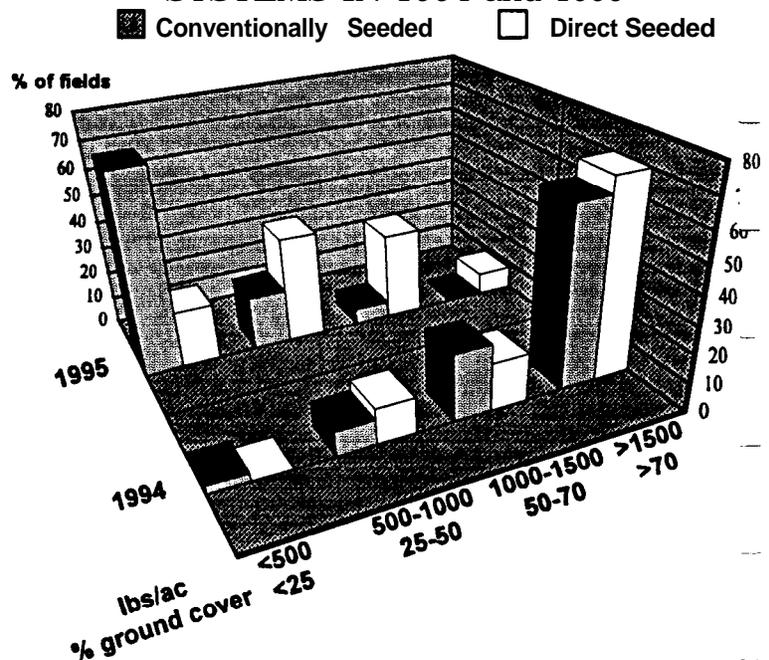
As expected 80% of direct seeding was done with airseeders or drills with on-row packing. Only about 20% of conventionally seeded fields were seeded this way. The remaining were seeded with discers (40%), and airseeders or drills with random packing (25%). Also as expected, a higher percentage of direct seeded fields were seeded with wider row spacings and narrower openers than conventionally seeded fields.

While there was little change in seeding equipment trends throughout the whole surveyed area from '94 to '95, there were substantial changes on specific fields. For example, 35% of fields that were stubble cropped in 1994 and 1995 did not use the same packing system in both years. About 60% of fields did not use the same row spacing, and 75% did not use the same opener type. Perhaps farmers are not satisfied with their seeding system and are experimenting with different opener types. Different seeding equipment is often being used for different types of crops. A considerable number of oilseed and pulse crops are possibly being custom seeded.

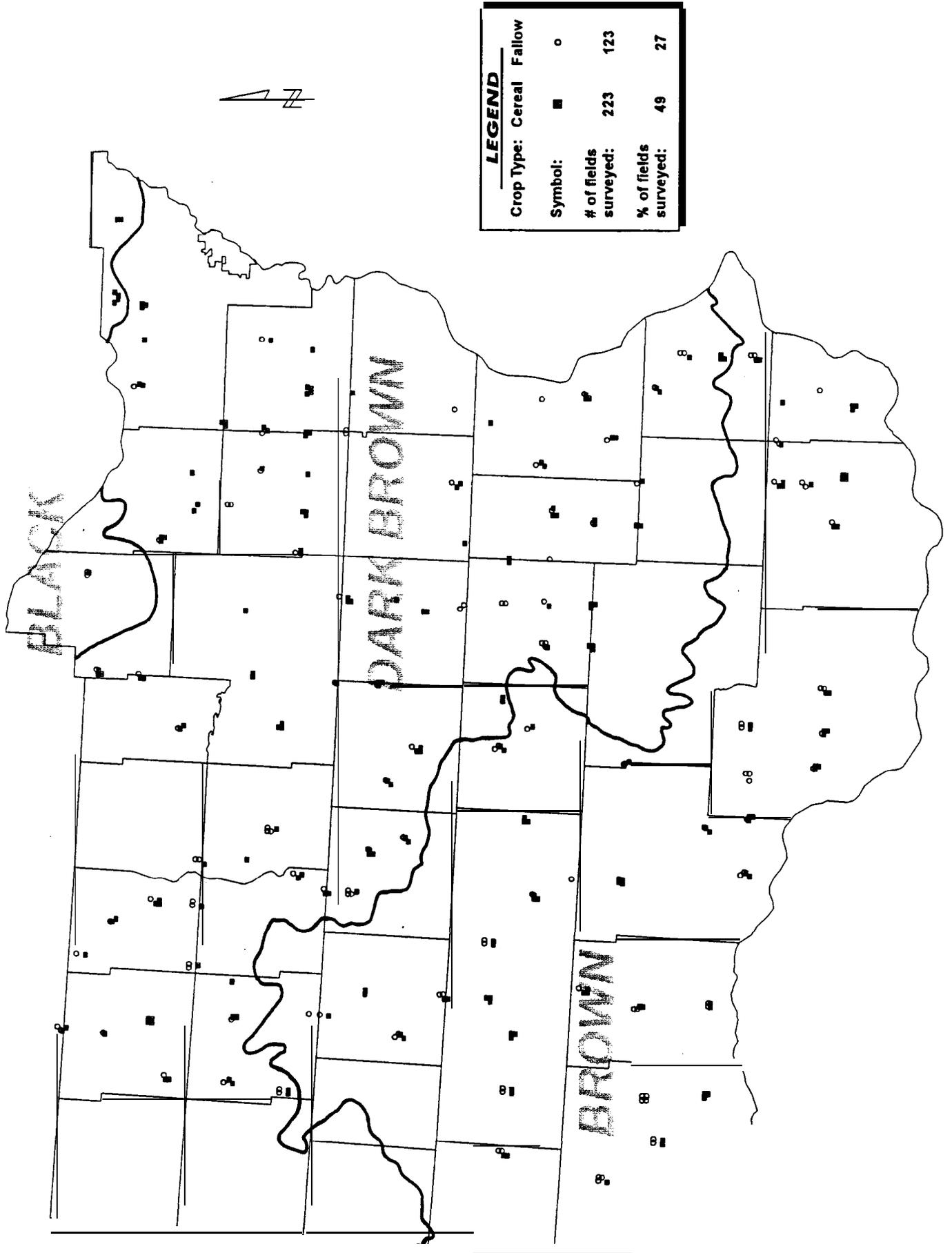
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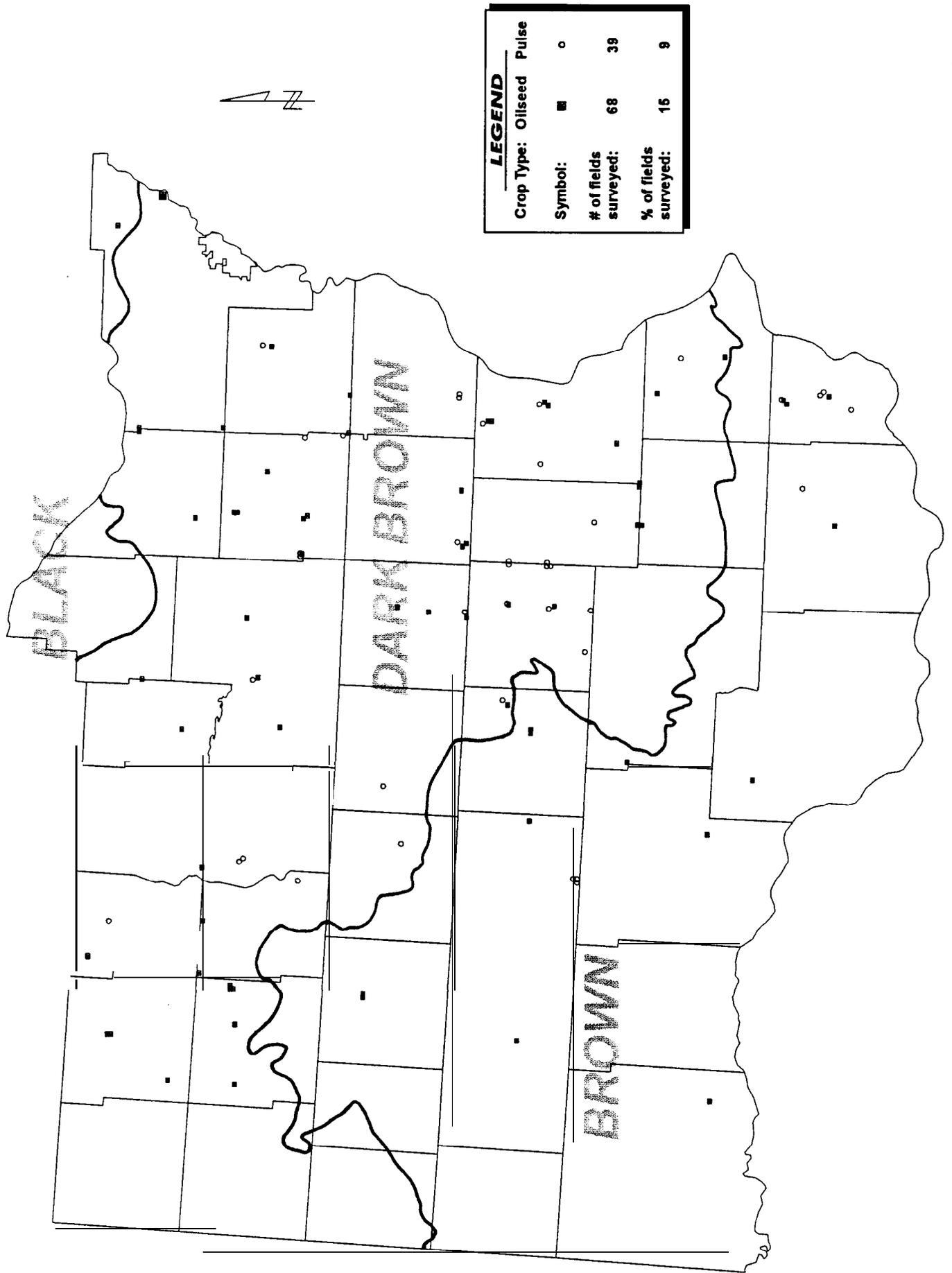
RESIDUE COVER LEFT AFTER SEEDING INTO STUBBLE, FOR DIFFERENT SEEDING SYSTEMS IN 1994 and 1995



Map 1a: Cereal and Fallow Fields Surveyed in 1995



Map 1b: Oilseed and Pulse Fields Surveyed in 1995



Map 2: Type of Seeding System Surveyed in 7995

1995

