

# ***Staff Paper***

**CROP YIELD INSURANCE:  
Choosing between Policies That Trigger on  
Farm Yields vs. County Yields**

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**Abstract**

Farmers typically consider USDA facilitated and subsidized crop insurance as a financial management tool. There are several federally facilitated, but privately delivered, yield and revenue insurance policies available to farms. There are also insurance policies, such as hail insurance, provided by the private sector without subsidy.

The research presented in this Fact Sheet will provide an approach Michigan farmers can use to compare the USDA facilitated yield insurance policies available for corn, soybeans, and wheat in counties where significant acreage of these crops are grown.

The focus will be on conditions under which insurance policies that trigger on county yield shortfalls (GRP) warrant consideration. This Fact Sheet does not consider revenue crop insurance plans; however, the issues discussed are relevant to farms considering the purchase of revenue insurance plans that trigger on the county revenue index shortfalls (GRIP).

This Fact Sheet is organized as follows: (1) key features of yield insurance policies that trigger on farm insurance unit yield vs. GRP are discussed; (2) conditions that must be met for GRP to provide meaningful risk transfer are outlined; and (3) widely held rules-of-thumb about GRP are examined.

12 pages

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## Crop Yield Insurance: Choosing between Policies That Trigger on Farm Yields vs. County Yields

Farmers typically consider USDA facilitated and subsidized crop insurance for one or more of the following reasons:

1. High debt to asset ratios limit the farmer's ability to self insure. Crop insurance limits the exposure to revenue shortfalls when yields are substantially below normal. Therefore crop insurance is a substitute for equity.
2. The farm is growing and the owners need to leverage existing equity vs. using the equity to self-insure. They need risk control tools that substitute for equity.
3. The farm has a moderate to low debt to asset ratio, but the owner wants to limit potential reductions in net worth. The owner prefers a more predictable revenue stream vs. relying solely on self-insurance. This group often includes farmers approaching retirement.

Crop insurance is one of the financial management tools that warrant consideration in each of these circumstances. There are several federally facilitated, but privately delivered, yield and revenue insurance policies available to farms. There are also insurance policies, such as hail insurance, provided by the private sector without subsidy.

The research presented in this Fact Sheet will provide an approach Michigan farmers can use to compare the USDA facilitated yield insurance policies available for corn, soybeans, and wheat in counties where significant acreage of these crops are grown.

The focus will be on conditions under which insurance policies that trigger on county yield shortfalls (GRP) warrant consideration. This Fact Sheet does not consider revenue crop insurance plans; however, the issues discussed

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This Fact Sheet is organized as follows: (1) key features of yield insurance policies that trigger on farm insurance unit yield vs. GRP are discussed; (2) conditions that must be met for GRP to provide meaningful risk transfer are outlined; and (3) widely held rules-of-thumb about GRP are examined.

### **Brief Description of Crop Yield Insurance Plans**

Features of yield crop insurance plans that trigger on farm yield vs. on county yield are sketched in this section. Farmers need to discuss each of these plans with an insurance agent well versed in their features to get a more complete understanding. This Fact Sheet focuses on the kinds of questions farmers should ask of themselves and insurance agents, as well as calculations that should be made before making an insurance plan choice.

The *Actual Production History* plan (APH) allows a farmer to insure yield based on their proven yield history. APH is the traditional yield insurance plan that has been in place in its current form since the mid-1980's. This plan's guarantees are based on individual insurance units within a farm. Losses, should they occur, are calculated for each insurance unit. Units are, approximately, a section; ownership, irrigation, and rental arrangements also enter into the definition of a unit. Thus, a medium sized farm business may have several insurance units, each of which has a separate base for establishing the yield guarantee and determining indemnities associated with yield shortfalls. If a farm is going to insure a crop, all acres of the crop in the county have to be insured. Farmers cannot pick and choose which units they want to insure.

## **Crop Yield Insurance: Choosing between Policies That Trigger on Farm Yields vs. County Yields**

The *Group Risk Plan* (GRP) takes a different approach; the insurance plan triggers on county yield instead of the farm yield. Since county yield is typically less variable than the farm yield, smaller deductibles (greater coverages) are permitted under GRP than under the APH plan.

GRP has a number of desirable features but it also has three significant shortcomings:

1. The first is inherent in the definition of the policy – there is yield basis since farm yields imperfectly track county yields. To receive an indemnity payment, a farm does not have to have a yield shortfall; the county can have a yield shortfall at the same time the farm has a normal yield. Conversely, a farm can have a yield shortfall and not receive a payment if the county has a normal yield. There is no guarantee that a farm will receive a payment when it “needs” one.
2. The GRP plan does not have a prevented planting or replant provisions; the APH plan has those provisions.
3. The GRP plan does not have grain quality provisions; the APH plan has quality provisions, although quality must fall significantly for some crops before the quality provisions apply.

GRP has several advantages, some of which will be explored in more detail in subsequent sections:

1. The premium rate is typically lower for similar rates of effective coverage (say, 90% coverage on the GRP plan and 75% coverage on APH plan) on the GRP plan compared to the APH plan since the GRP plan does not have the risk classification and “hidden action” problems that occur under individual trigger policies.

2. The GRP policy requires less paperwork since the information required for proven yields is not needed.
3. The GRP policies may be better suited to farmers who rent significant amounts of land, particularly if they have only controlled many tracts for a short period of time.

The mechanics of GRP are as follows:

1. Yield at which GRP triggers is calculated by multiplying the “expected” county yield set by the USDA Risk Management Agency (RMA) by the desired coverage level. Coverage levels of 85% and 90% are typically chosen. For example, if the expected county yield is 120 bushels and the coverage level is 90%, the yield at which the policy triggers is  $120 \times 0.90$  which is 108 bushels. If the county yield calculated from NASS/USDA information falls below 108 bushels the farm will receive an indemnity payment.
2. The formula used to determine if a farm receives a payment is shown below: GRP pays if

$$\text{Payment yield} < \text{Trigger yield}$$

where

$$\text{Trigger yield} = \text{Expected county yield} \times \text{Coverage}$$

The payment yield is the RMA term for the realized county yield.

1. GRP is a disappearing deductible policy. With a disappearing deductible it is possible to get the whole deductible back with a 100% loss. The deductible is returned because percent loss is multiplied by protection which does not include a level of coverage. Disappearing deductible policies are also common for hail insurance.

## Crop Yield Insurance: Choosing between Policies That Trigger on Farm Yields vs. County Yields

2. With a GRP policy, if there is a loss, the indemnity is calculated according to:

$$\text{Indemnity} = \$ \text{ Protection} \times \% \text{ loss}$$

where

$$\$ \text{ Protection} = \frac{\text{Expected county yield} \times \text{Indemnity price} \times \text{Scale factor}}{\text{Scale factor}}$$

and

$$\% \text{ loss} = \left( \frac{\text{Trigger yield} - \text{payment yield}}{\text{Trigger yield}} \right)$$

In summary, the value of the loss is calculated by multiplying the value of protection by the percent loss. The GRP insurance policy calls the percent loss the payment factor.

The GRP insurance policy defines the maximum protection that can be purchased as

$$\text{Max protection} = \frac{\text{Expected county yield} \times \text{Indemnity price} \times 1.5}{1.5}$$

Typically, the appropriate scale factor is in the range of 1.25 to 1.50. The expected county yield and the indemnity price are both established prior to insurance purchase. Case studies illustrating scale factors will be presented on page 6.

### Establishing Conditions Where GRP Warrants Consideration

This section covers a series of steps a farmer should undertake to find out whether GRP is potentially a good crop yield insurance plan. That is, is it a plan that provides the desired risk transfer at a reasonable price?

#### Step 1: Graph Farm Yields vs. County Yield

Do your farm yields track (correlate with) the county's yields from year to year? If not, GRP is not an adequate risk transfer tool for you. The first step is to graph your farm yields vs. county yields. Four case farms are used to illustrate what tracking means.

There are many factors that determine how a farm's yields correlate to county yields. The factors include: soil types farmed vs. a representative sample of county soils; drainage on the farm compared to county drainage; irrigation on farm vs. the county; microclimate; and spatial diversification of the farm across the county.

The case farms vary in size and geographic spread. Farm 1 is spread over half of the county. The soils on farm 1 match up well with the county. Also farm 1 uses irrigation on some of its coarser textured soils. Farm 2 is spread over a quarter of the county and its soils are about the same as the county to slightly heavier. Case farm 3 is spread out over about a quarter of the county and its soils are heavier than average for the county. Case farm 4 is limited in geographic scope and its soils are coarser textured than the county.

Figure 1 shows Farm 1's corn yields graphed against the county yields. The graph uses historical yield data that begins in the mid-1980's.

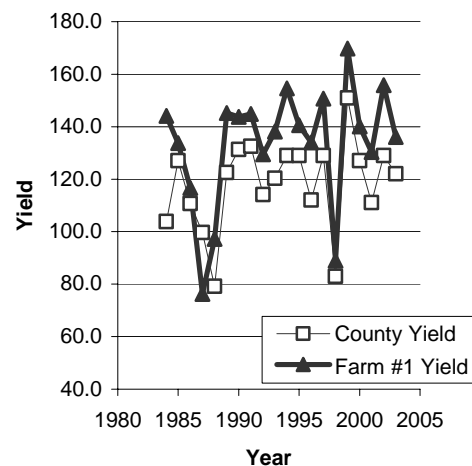


Figure 1: Farm 1 yields vs. county yields

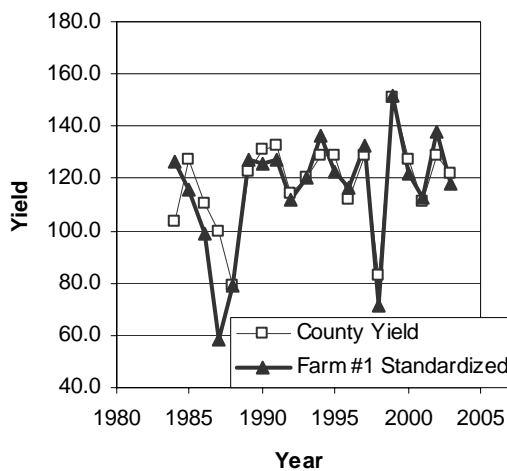
Farm 1 yielded above the county 19 of the last 20 years. More important, the farm's yields tend to track the county yields; but it is hard

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to tell how well without further standardization. To better show how farm yields track the county yields, farm yields were standardized to have the same average yield as the county.

The first step in standardization is to take the average of county yields and the average of the farm's yields and find the difference. If the farm's average yield is above the county's average yield, subtract the difference from each farm yield. If farm's average yield is less than the county's average yield, add the difference to each farm yield.

For Farm 1, average farm yield was 17.9 bushels higher than the average county yield; therefore, 17.9 bushels were subtracted from each year's farm yield. The results are plotted in Figure 2.



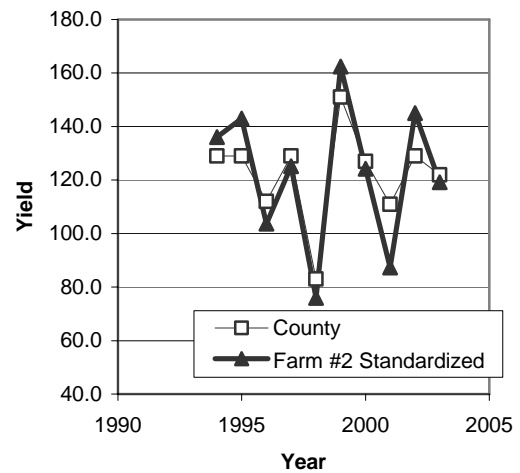
**Figure 2: Farm 1 standardized yield vs. county yield**

Farm 1's standardized yields track the county yield in most years. From 1988 – 2003, the GRP plan would have worked well; the year-to-year changes in farm and county yields track. When farm yields were below average, county yields were below average by a similar amount and scaling up would further improve the match. But, 1987 would have been problematic because the farm yield was about

50% of average while the county yield was down only modestly. This would have led to the farm getting a small insurance indemnity payment in a year when money was needed.

The correlation between farm 1 yield and county yields was .85 for the 1984 to 2003 period and 0.96 for the 1994 to 2003 period.

Farm 2 has 10 years of yield history as shown in Figure 3. The yields were standardized to the county average and graphed. The farm and county yields tracked well in 1998, but there could have been a problem in 2001 when standardized farm yields were substantially below county yields. This could have led to the farm needing money and not getting an adequate GRP indemnity payment. This contrasts with farm 1 where farm yields tracked county yields in 2001. The correlation between farm 2 yield and county yield was .93.



**Figure 3: Farm 2 standardized yield vs. county yield**

Farm 3 yield is shown in Figure 4. In 1998, both the farm and the county yield fell significantly, but the drop in the farm yield was less than the drop in the county yield. The GRP plan would have provided acceptable risk transfer over the 10 year period. Unfortunately, the yield series doesn't go back to 1987 so it is unknown if farm 3 would have

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had the same problem in 1987 as farm 1. The correlation between farm 3 yield and county yield is .78.

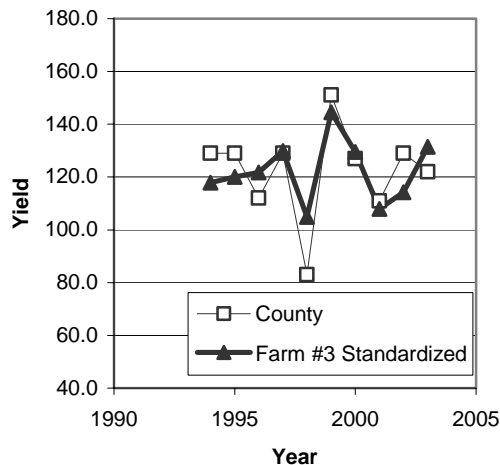


Figure 4: Farm 3 standardized yield vs. county yield

Farm 4 is shown in Figure 5. Standardized yields were significantly below the county yield in 1998 and 2001. Both farm and county yields were down, but the farm yield was down substantially more than the county yield. This illustrates why the ability to “scale up” is important so shortfalls in the county yield better match shortfalls in farm yield. The correlation between farm 4 yield and county yield was .93.

Farm 4 is probably not a good candidate for GRP even though the match between farm and county yield changes is good. Since farm 4 covers a small area in the county, there is a risk that it will face events that other areas of the county don't see to the same extent.

In all examples, at least 10 years of data were used, but 20 years are recommended. While 20 years of farm yields are often not available, farmers generally have a recollection of poor yield years and these can be checked against below average county years.

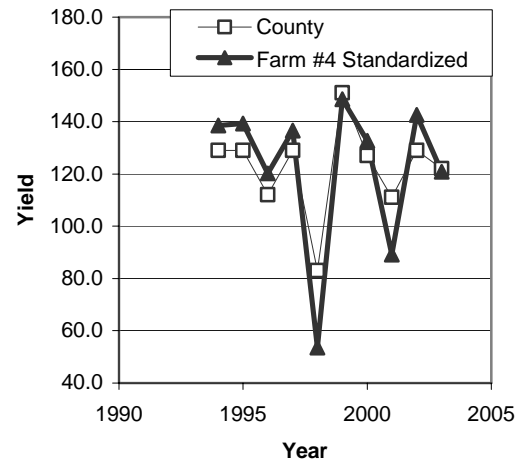


Figure 5: Farm 4 standardized yield vs. county yield

The closer farm yields track county yields the better GRP will work. If your farm's yields do not track county yields, this will lead to years where you would need to collect a crop insurance indemnity but you might not receive a payment or receive an inadequate payment.

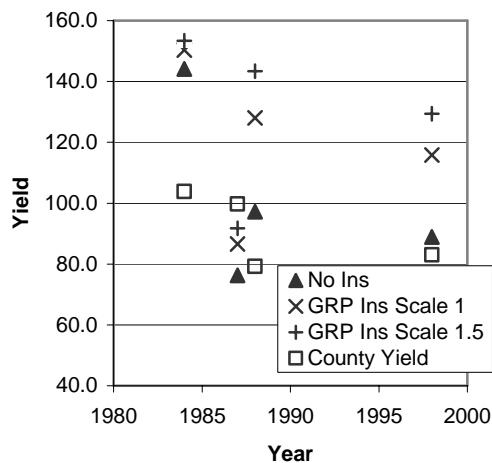
### Step 2: Calculate “Net” Farm Yield with the Insurance Indemnity Added

The second step in the GRP evaluation process – if tracking is acceptable – is to evaluate what the “net yield” would be if the insurance payment were added to the realized farm yield. Most of the time, there will be no insurance payment so net yields and realized yields are the same.

GRP permits the farm to scale up coverage to compensate for the fact that a farms' average yield can be greater than the expected county yield and for the fact that farm yield is typically more variable than county yield.

## Crop Yield Insurance: Choosing between Policies That Trigger on Farm Yields vs. County Yields

Figure 6 shows how scale factors affect farm 1's net corn yield. When insurance payments are made, bigger payments will be made with bigger scale factor values. Figure 6 shows how scaling up helps transfer more risk away from the farm as can be seen by comparing net yield when the scale factor is 1.5 vs. when it is 1.0.

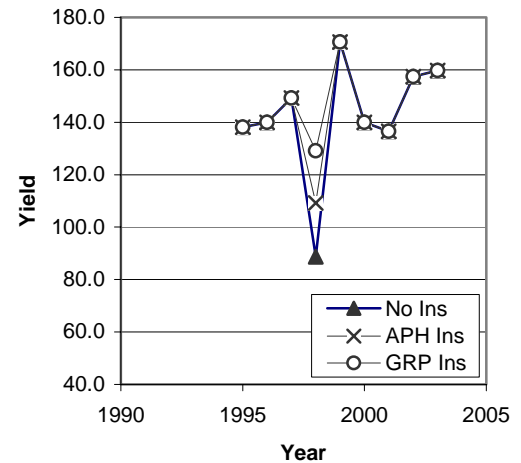


**Figure 6: Farm 1 yield without insurance vs. yield + GRP with scale of 1 vs. yield + GRP with scale of 1.5 vs. county yield.**

Figure 7 compares net farm yield for farm 1 for the 1995 to 2003 period for the APH plan at 75% coverage, the GRP plan at 90% coverage with a 1.5 scale factor, and farm yield without insurance. Recall, farm 1 had exceptional tracking from 1994 to 2003 period with a correlation of 0.96 between farm and county yields.

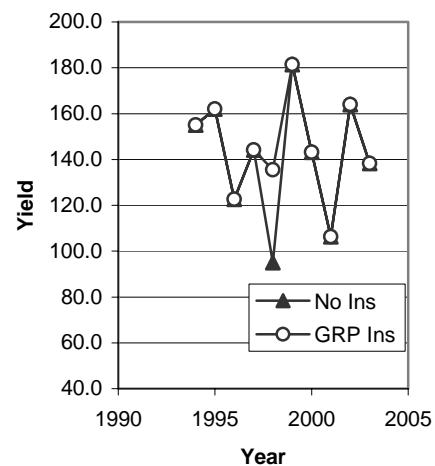
Figure 7 reveals how the different insurance programs would have affected the farm in 1998 when there was a drought. As expected, GRP with 90% coverage performed very well because the tracking was outstanding. The APH program risk transfer was intermediate between self-insurance and the GRP plan. The cost of the different insurance programs was not incorporated into this graph; however, it would be unusual for GRP to cost

more than the APH plan for similar levels of effective coverage.



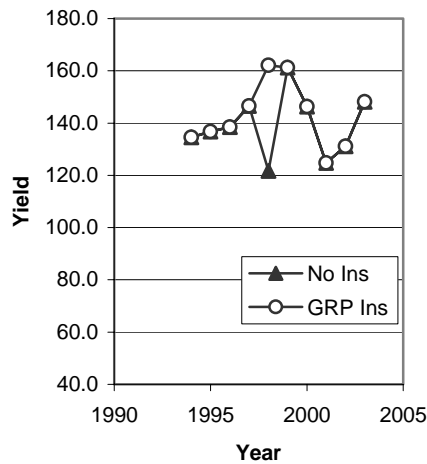
**Figure 7: Farm 1 yield without insurance vs. farm yield + APH insurance vs. farm yield + GRP insurance scaled 1.5.**

Figures 8, 9, and 10 show farm yield without insurance and farm yield plus GRP insurance for farms 2, 3, and 4, respectively.



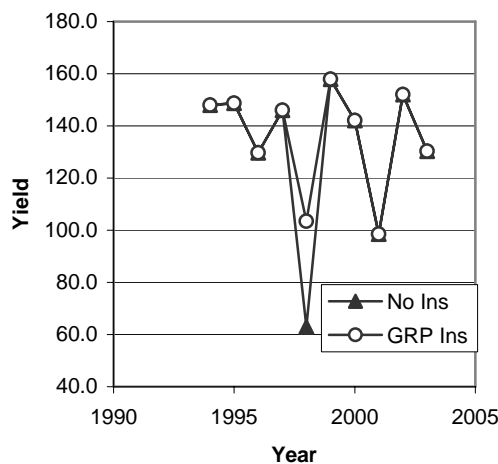
**Figure 8: Farm 2 yield without insurance vs. farm yield + GRP insurance.**

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**Figure 9: Farm 3 yield without insurance vs. farm yield + GRP insurance.**

GRP would have worked well for Farm 4 over the last 10 years even with its limited geographical scope. Nevertheless, the limitation of the scale factor to 1.5 resulted in an inadequate insurance payment in 1998. Also, as noted earlier, with the limited spatial diversity, GRP would typically not be recommended for Farm 4 because of the risk of events on the farm not being mirrored by the county.



**Figure 10: Farm 4 yield without insurance vs. farm yield + GRP insurance.**

We now turn to a computer simulation exercise that further illustrates the how the geographic spread of a farm in a county would affect the tracking between farm yield and county yield. We simulate 1000 years based on variation in yields shown in real Michigan data. If you like, we place a large number of cases in a “hat” and take 1000 draws – with replacement.

Our hypothetical county is represented by 16 locations as shown in Table 1. Each location has a weight of 1/16 in calculating the country average yield in a year. To keep the story manageable, all locations have a 140 bushel historical average yield and have the same level of yield variability.

**Table 1. Map of Example County**

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16

The analysis assumes the closer the locations are in a county, the higher their correlation. Yields from “nearest neighbor” points are assumed to have a 0.85 correlation; the correlation falls the further locations are apart, dropping to 0.5 for locations that are farthest apart (e.g., points 1 and 16).

An individual farm is based on its land in each of the 16 locations. For example, a farm could have 1/2 its acreage in location 1 and 1/2 in location 2. Clearly, the more representative the farm is of the county, the more farm and county yields will be move together. Indeed, if a farm has land in all of 16 locations, its yield will track to the county yield perfectly except for the sampling error in the USDA’s National Agricultural Statistics Service (NASS) estimate.

Yield correlations between locations are imperfect because weather events do not hit all locations equally; the greater the distance

## Crop Yield Insurance: Choosing between Policies That Trigger on Farm Yields vs. County Yields

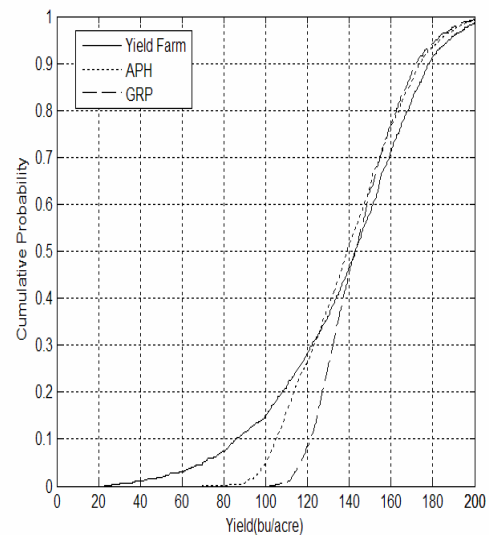
between locations, the lower the likelihood of being hit by the same weather event. Also, the same weather event will not have the same impact on different soils and soils tend to have a spatial distribution in a county.

Locations in the center of the county will correlate to the county yield better than locations on the perimeters of the county. If a farm is on the perimeter, an extreme weather event can affect the farm and not have as much of an affect on county yield. On the other hand, if an extreme weather event hits a location that is in the center, it is likely to hit more then just that location. The following section explores how APH and GRP policies would work for different degrees of spatial diversification.

Another way to look at the impact of crop insurance on financial risk it to look at the probability that crop yield plus the net from insurance – indemnity less premium – will be less than a specified yield threshold. Indemnities and premiums are measured in “bushels” to keep the story simple. This probability is called cumulative probability since it sums up the probabilities to the specified yield level.

Yield thresholds are described in terms of revenue requirements. For example, what yield would be required to cover variable costs? Or, the sum of variable costs, taxes, family living draws, and interest on loans?

Figure 11 is based upon a farm with land in each of the 16 locations. It shows the cumulative probability of yield, plus net cash flow from insurance, being less than alternative yield levels. Three probability curves are shown: (1) farm yield; (2) farm yield plus net from APH; and (3) farm yield plus net from GRP. Coverages for APH and GRP are 75% and 90%, respectively. This is the case where GRP performance is superior.



**Figure 11: Cumulative probability vs. yield, plus net from insurance, for a farm with land spread over the entire county.**

The cumulative probability is plotted on the vertical axis while yield is plotted on the horizontal axis. For example, under our assumptions about yield variability, there is a 15% chance yield will be less than 100 bushels. In contrast, the probability of getting a value of yield, plus the net from GRP, of 100 bushels is zero. The probability of getting a value of yield, plus the net from APH, of 100 bushels is five percent. The APH result assumes the farm has 16 insurance units.

Insurance substantially reduces risk for either plan but GRP is clearly better since, for any probability, yield plus the net from insurance is always at least as large for GRP as for APH. This example reflects the best that one could expect under GRP – a farm spatially diversified across the county.

There are some features of Figure 11 that require additional discussion. The yield guarantee under APH is 105 bushels – 140 bushels  $\times$  75%. But, the APH yield plus net from insurance cuts the farm yield probability curve at about 125 bushels, not 105 bushels. Why? This is the effect of units on effective coverage. The farm has 16 insurance units,

**Crop Yield Insurance: Choosing between Policies That Trigger on Farm Yields vs. County Yields**

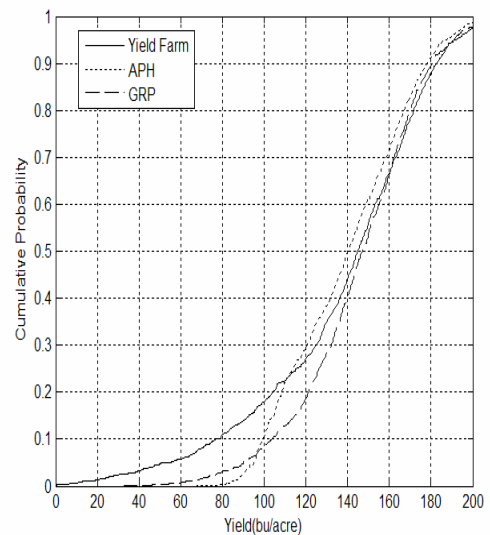
one for each location in the county, and there are times when individual insurance units are receiving an indemnity while others have higher yields.

Another way of looking at the APH plan, for farms with multiple insurance units, is to say the “effective” risk transfer is greater than the coverage stated in the insurance policy. This difference is greatest when the correlation between yields on different insurance units is low.

The impact of units is also reflected in the insurance premiums in two ways: frequency of collection and difficulties associated with risk classification and hidden action. Based upon a number of farm records, there appear to be a significant number of farms where the pre-subsidy insurance premium is significantly higher than their underlying yield risk. This has been built into our example. On the other hand, there are farmers whose pre-subsidy insurance premiums are less than their underlying yield risk; their yields plus net from APH would be shifted to the right in Figure 11.

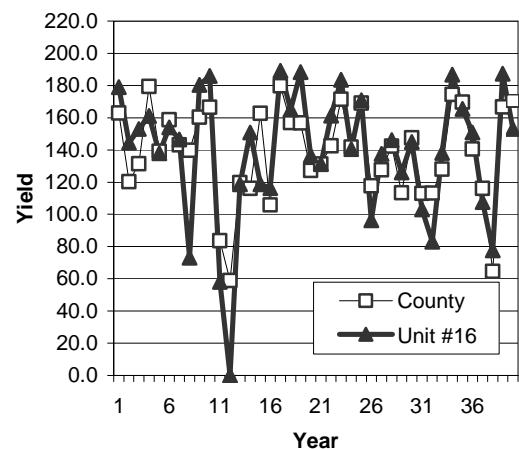
Figure 12 considers the other side of the coin. The farm in Figure 12 is located entirely in location 16 – the corner of the county. With only one unit the farm is not spatially diversified.

The effectiveness of GRP is significantly less against catastrophically low yields than it was for the spatially diversified farm. In most instances, APH would be the preferred insurance plan choice for this farm.



**Figure 12: Cumulative probability vs. yield, plus net from insurance, for a farm with land in a corner of the county.**

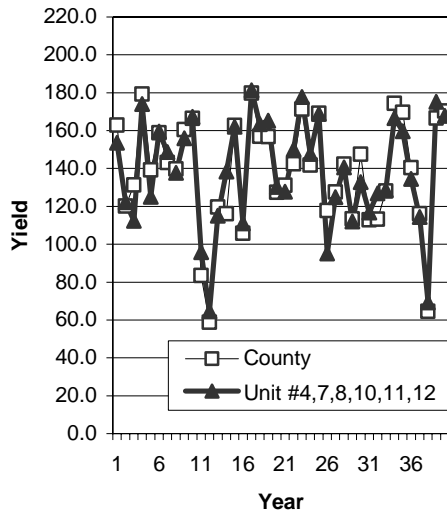
Figure 13 shows the tracking for one 40 year trend adjusted sequence for this farm. There are observations where the county and farm yields do not track. The graph shows why a farmer in this situation should be very cautious about using a GRP policy. There were substantial farm yield shortfalls in years 7 and 32 that were not accompanied by county yield shortfalls. The farm yield shortfall in year 12 was substantially larger than the county yield shortfall. There were good matches in years 11 and 38.



**Figure 13: Farm vs. county yield for a farm in a corner of a county**

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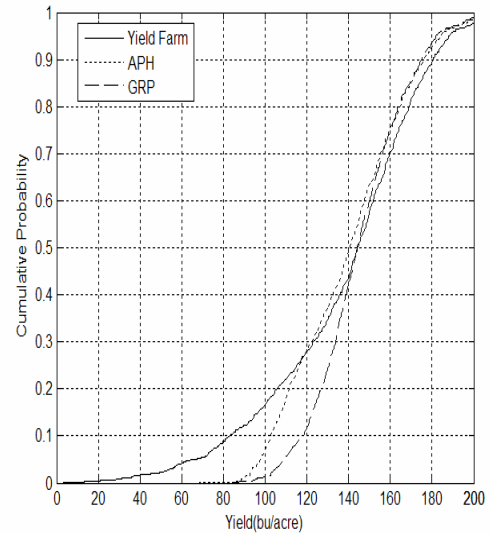
The next farm is intermediate between the polar cases shown in Figures 11 and 12. Figure 14 shows a 40 year trend adjusted yield sequence for a farm which has land in locations 4, 7, 8, 10, 11, 12; the farm versus county yield correlation is 0.95 for the sequence. With the farm and county yields tracking closely, the GRP plan would be an effective yield risk transfer tool. In the graph, there is not a single time when the farm has a yield shortfall and the county does not. With the 0.95 correlation, the chance of a farm needing a payment and not getting the payment is small.



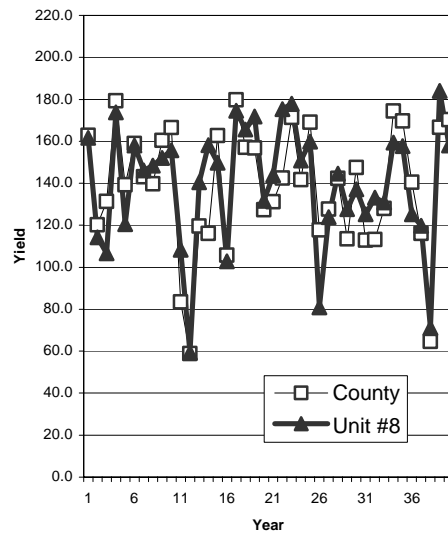
**Figure 14: Farm has land in locations 4, 7, 8, 10, 11, and 12. The farm-county yield correlation is 0.95.**

Figure 15 shows the associated cumulative probability summary for a farm which has land in locations 4, 7, 8, 10, 11, 12. The profile is nearly as good as a farm spatially diversified across the entire county. The GRP plan is potentially a good choice.

risk is significant. Farms with farm-county yield correlations much below 0.85 would typically be better served with an APH plan insurance policy.



**Figure 15. Cumulative probability vs. yield, plus net from insurance, for a farm with land in locations 4,7,8,10, 11, and 12**



**Figure 16: Farm vs. county yield with a 0.85 farm-county yield correlation.**

Figure 16 is for a smaller farm in the center of the county with a 0.85 farm-county yield correlation. The GRP policy works pretty well although there is a large miss in year 27 and smaller misses in years 3 and 5. Yield basis

**Truths, Partial Truths and Myths about County-Yield Trigger Insurance Policies**

**Proposition 1: Farm Yields and County Yields Need to be Highly Correlated for GRP to Reduce Risk (TRUE)**

If the farm yield does not track to the county yield you are just gambling on the county insurance payout. When gambling on the insurance payout, risk is not reduced to your farm. If the goal is to reduce risk then farm yields have to be highly correlated to county yields.

**Proposition 2: Higher Yielding Farms are Better Suited for GRP (Partially TRUE)**

GRP is not a candidate for higher yielding farms unless their yields are highly correlated with county yields. However, higher yielding insurance units tend to have a lower variation in yield. With lower variation, the chance of receiving an indemnity payment under the APH insurance plan is lower. GRP, with 90% coverage, can often transfer more risk from a lower risk farm than APH with 75% coverage – provided farm and county yields are highly correlated.

Having farm yields that are above or below the county average yield does not prove that GRP is right or wrong for your farm. The key is whether your yields are highly correlated with county yields.

**Proposition 3: Spatial Diversity Matters (TRUE)**

Farms that are spread across the county are better suited for GRP. Yield correlations between locations are imperfect because weather events do not hit all locations equally; the greater the distance between locations, the lower the likelihood of being hit by the same weather event.

**Proposition 4: Soil Type Diversity Matters (TRUE)**

The soil types on your farm play a role in how well yields track to county yields. If all the soils on your farm are lighter than the

county, the probability of a wet spring hurting yields is lower, but a drought will have a harsher impact on your yields than a farmer with heavy ground. The soil type makeup on a farm can affect how your yields correlate with county yields.

**Proposition 5: The Larger a Farm's Size there is More Spatial and Soil Diversity (Partially TRUE)**

Size does not always equal spatial and soil diversity. Also size does not necessarily mean the farm has soil diversity throughout the county. A farm could be spread out and only farm coarse textured soils in a county with a variety of soil textures.

A farm with land in two counties is allowed to have different policies for each county. A farmer might want to use GRP in a county where the farm is spread out and APH in a county where the farm is not spread out.

**Proposition 6: There is Less Paper Work with County Policies (TRUE)**

When insuring with GRP, there is less paper work because yield records are not required. For APH a farmer has to keep track of each unit's yield and report the yields. Nevertheless, it's still a good idea to keep yield records but it is not required. Also, farms sometimes switch from the GRP plan to the APH plan, in which case records are required for each insurance unit.

**Proposition 7: GRP Pays at the Same Time as Other Policies (MYTH)**

GRP does not pay indemnities as fast as APH policies because of the time involved in getting the county yield. The county yield is estimated by the USDA National Agricultural Statistics Service using farmer surveys (*Michigan Agricultural Statistics*). Once the county yield is computed, it is easy to calculate what the insurance payment will be for every farm that has purchased GRP. Insurance payments for GRP policies are typically made in March.

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### **Conclusions**

If farm yields correlate to county yields at 0.9 or better, GRP should be an effective yield risk transfer tool. If correlation is in the range of 0.85 to 0.90 GRP, is typically a good yield risk transfer tool, but the farmer needs to think clearly about how to manage the yield basis risk. There is an opportunity for significant difference between farm and county yields, although at low frequency. If the range is 0.8 to 0.85, use GRP with caution because of the basis risk. If the correlation is under 0.80, GRP is questionable as a yield risk transfer tool and typically inferior to the APH plan.

### **Appendix**

An Excel spread is available at <http://www.aec.msu.edu/agecon/blackj/RiskMgmtEdu.html>

Click on the GRP link, then there will be a link to the GRP spread sheet.

The spread sheet will allow you to make graphs like those shown in this article. A critical part of evaluating GRP is farm yield correlation to county yield, this correlation will be generated. The spread sheet work for corn, soybeans, and wheat.

Every county has a different yield history and estimated county yields. County and insurance data needs to be entered into the spread sheet.

County yield data is available at [http://www.nass.usda.gov:81/ipedbcounty/c\\_MIcrops.htm](http://www.nass.usda.gov:81/ipedbcounty/c_MIcrops.htm)

Expected county yield for GRP, and the definition of county yield used in the GRP policy, is available at <http://www3.rma.usda.gov/apps/docbrowser/docbrowserA.cfm>

The spread sheet needs to have individual farm data entered as well.

The spread sheet aids farmers and insurance agents when deciding if county insurance policies are an appropriate risk transfer tools. Each farm must be evaluated on a case by case basis.

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