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possibility that errors in the same direction in both estimates of acreage and yield will be multiplied into a wide over- or under-estimate of the crop. As yet, this method does not give equally good results in all States, but we will know more about it when we have data for a few more years.

As the Cotton Belt is not a homogeneous area, there is no reason why we should not use different approaches to the problem in different States. In the western part of the Belt, where the normal moisture is less than the optimum, an increase in weevil infestation—resulting from more than normal precipitation—can mean something quite different, from the standpoint of yield or production, than would a similar increase in weevil infestation in the eastern part of the Belt, where the normal precipitation is more than optimum. To no inconsiderable degree, we are dealing with separate universes that must be treated separately while endeavoring to find the best method of estimating the crop for each State.

It is gratifying that the Crop Reporting Board this season conducted a split test in two States, one in the East and the other in the West, using a quantitative question at the individual farm or plantation level which could be applied on a ratio basis to a State-wide estimate of the crop. There is reason to believe that the

studies originated at *The Journal of Commerce* several years ago prompted this test. It is to be hoped that they will be continued, and conducted on a broader scale than formerly.

There is some question, of course, as to whether a direct quantitative question necessitating responses on a baleage basis with reference to actual individual production last year and estimated individual production in the current year will yield as good results as those where the reference is on a ratio basis. It has been our experience that reporters sometimes furnish two answers to our quantitative ratio question, one giving the estimated ratio for the reporter's own farm and the other for his vicinity or county. Invariably, the individual farm ratio is higher than the vicinity or county ratio. That could mean (1) that crop reporters are better than average farmers or (2) that farms of the crop reporters are not representative of their vicinities even after allowing for this differential.

Within the framework of the present mailed-survey system of cotton-crop estimating, considerable improvement obviously is possible through the application of continuing research. If this could be coupled with the use of more modern methods of sampling and estimating, the possibility of major errors in cotton-crop estimates would be substantially reduced.

Improving the Crop Reports

By Lauren Soth

THE JOB assigned to me is to tell how the crop reports could be improved from the viewpoint of the consumer or user of agricultural statistics. I can certainly qualify as a consumer, or at least as a retailer of crop reports. Our newspapers gobble up all the information the United States Department of Agriculture issues on crop conditions, storage stocks, and so on. We value it highly as news. The figures released not only have an important bearing on markets and consequently are the raw material

going into decisions of farmers and other businessmen, they also are the basis for various "automatic" formulas in farm legislation—determining the level of price support, whether crop acreage controls go into effect, and so on.

Now, just as a general comment, before going any farther, I should say that our fact-gathering in agriculture in the last several years has not kept up with our requirements. We have gone farther in the use of the figures than the figures themselves justify. Take the

matter of farm price supports based on parity. Anyone who knows much about local markets and the reporting of those markets realizes that some of the price statistics are shaky ground for all that is built on top of them. We have laws spelling out in great detail just what price supports should be, down to the last percentage of parity. Yet the figures that determine parity are pretty flimsy.

I believe this is generally true of the crop reports and other agricultural estimates. I don't blame the Crop and Livestock Reporting Service, which is made up of as devoted, hard-working, and conscientious people as you'll find anywhere. I believe the Bureau of Agricultural Economics simply has not had enough money to improve its services to the degree that our increased dependence upon those services justifies.

Corn-Crop Estimates

Let me talk a few minutes about corn. Anyone who lives in Iowa knows that great difficulties are involved in estimating the yield of this crop before harvest. Still, I think the Crop Reporting Service could do a better job than it has been doing in giving accurate indications of the condition of the growing crop.

As a user of corn-crop estimates, I should like to see reports every 2 weeks during July, August, and September. Once a month just isn't often enough to keep up with changing conditions during the summer. Frequently during these months farmers, businessmen, or Government officials must rely more upon private estimates made by members of the grain trade than upon the Crop Reporting Service. By the time the August 1 report comes out, usually around the tenth of the month, it may be obviously out of date. Then for 30 days you have to make your own judgments about the crop.

It should be possible also, I think, to get out estimates more quickly after the data are in. By using telephone, telegraph, and radio, could not these reports be issued 4 or 5 days after the date for which the information is collected? And what about these new electronic computers? Could they be used to speed up the calculating?

That brings up another suggestion which might contribute to both speed and accuracy.

Would not probability samples, perhaps just for the mid-month reports, be a good supplement for the mail questionnaire returns? A small sample, if a good one, could provide better information, and the data could be processed more quickly.

One of the big criticisms of the corn estimates in recent years has been the tendency to underestimate the effects of unusual weather situations. We have had several cold, wet spring seasons during the last few years, and I believe the Crop Reporting Service has consistently failed to predict the effect on stands of corn, and on the yield. Perhaps this means that we don't have enough basic research on how such wet, cold planting seasons affect corn development. If that is true, then the solution is to get more such research studies started.

The crop reports seem often to underestimate the effects of dry weather during the growing season. You may have 3 weeks of very dry weather after the first estimate of yield is released on July 10. By August 1, the impact of this drought may not yet be apparent in the appearance of the corn. The State statisticians doubtless make some corrections because of the dry weather, but apparently they don't make enough. The reports may not indicate what has happened to yield until September, or even October. Here is another case where basic research regarding the effect of weather is needed—or needed to be *used*—in arriving at an estimate of corn production.

The corn borer has been hard to figure in recent years, too. As more experience is gained, this difficulty will be overcome, I suppose. It will require information on how much spraying has been done, whether it was done at the right time, and so on. Commercial fertilizer is becoming a bigger factor in corn yield every year. Should information on the use of fertilizer be gathered and taken into account in the reports?

All these factors I have been talking about imply that better crop reporters are needed—and that they should be distributed according to a logical sampling plan.

Facts on Feeding Value Needed

Getting an accurate estimate of the number of bushels produced is not an easy task, especially during a variable season, with unusual

quirks of weather and insect damage. But even doing a good job on bushel yields is not enough. We need more information on the feeding value of the crop—especially the moisture content. In 1951 the crop report overestimated the quantity of feed for livestock that was produced. This year I wonder if the feeding value is not underestimated—in spite of the fact that Iowa's crop is reported as the largest on record.

How to make an estimate of feeding value I will leave to the experts. But there ought to be some scientific way to do the job. Perhaps the total yield in bushels could be given, along with another figure adjusted for normal feeding value.

It would be helpful if information could be furnished on a smaller area basis. Suppose that each first-of-the-month report not only gave a production estimate by States but also by districts within the important corn States. There have been some fairly sharp differences in production in different areas of Iowa, but they are covered up by the over-all figure. What goes for production also goes for carryover.

I appreciate the fact that all this costs money, but it seems to me that the United States could well afford to invest more in this work of providing accurate statistics about our important crops.

To sum up what I have said about the corn estimates:

1. Make corn yields and production estimates every 2 weeks during the summer.
2. Publish the crop estimates more quickly after the basic data are gathered.
3. Place more reliance on historical and research data in trying to estimate the effect of unusual weather and insect damage—rather than relying on the appearance of the growing crop.
4. Make estimates of feeding value in addition to bushel yields.

5. Publish yield and carryover estimates on a smaller area basis.

Pig-Crop Estimates

Now let me say a word about the pig-crop reports. I was asked to talk only about corn, but I want to take full advantage of this opportunity to file requests.

The old semiannual pig-crop report is technologically obsolete. The pig crop is becoming more evenly distributed around the year, even in cold climates such as in Iowa, and we need more detailed facts on when the pigs are to be farrowed. The reporting service has been doing a good job of providing monthly estimates of farrowings in the spring. But this is a little late. Would it be possible to get farmers' farrowing intentions by months? Even if done by 2-month periods, it would help provide a better picture of future pork production. Then I think the surveys might well be made at least four times a year instead of twice.

I should like to close by filing a complaint about the way the crop report figures are published.

The figures released by the crop and livestock reporting service give a false impression as to their accuracy. This is especially true for the early reports of a crop season. The July corn estimate is given down to the last thousand bushels, which is plainly ridiculous. You may reply that anybody with good sense would *know* that the figure has a big margin of error. But lots of people don't have good sense.

Why not publish the figure to the nearest 100 million bushels in July and August, getting down to a finer point by October? Or if the statisticians insist upon publishing the figure carried out to the last three ciphers, why not publish along with it a probable error both ways?