POTATO MINIMUM TILLAGE PANEL

by

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Good morning, ladies and gentlemen and also fellow potato growers. It was a great pleasure that we had the opportunity to try minimum tillage potato production on our farm in 1976. Also to have the help and support of Dr. Robert Thornton and Dr. Robert Kunkel.

The field that I'm going to talk to you about today was planted to wheat in 1975, straw was baled off after the wheat was harvested, disked in and turnips were planted. One hundred pounds of nitrogen was applied to the turnips. We ran an average of two steers per acre on the field for 104 days. Prior to planting potatoes we didn't do anything to the field, we had the use of the WSU Lockwood potato planter. Potatoes were planted on the 29th day of April. Wheat regrowth was green but had been sprayed just prior to planting with Paraquat. I think it is a real plus to put the Paraquat on before you plant. One side of the field with mini-till we didn't Paraquat until after we planted and had a little concern about regrowth. I plan on doing some mini-till this year again and I plan to put the Paraquat on before we plant.

About 10 days after planting, the wheat was all dead and the potatoes haven't emerged yet. We learned one thing about putting Paraquat on. If the ground gets a little dry after you put it on, it doesn't kill good. It does a good job of killing the wheat if the soil is kept moist. During the early period, preemergence to the potatoes, you should let the soil surface get slightly dry. Our first irrigation was applied before all the potatoes had emerged. With the proper use of the Lockwood-WSU planter, we didn't have any wheat at all in the row, the planter had taken care of all the wheat that was in the row area. The between row wheat was all killed by the Paraquat. The only concern we have at this time was is that we were beginning to get some germination on annual weeds. This year I plan to put Lasso on the field prior to ermegence to control annual weeds. We used a John Deere rotary hoe in the potato field just after emergence to control the annual weeds. I plan on using this tool to incorporate Lasso or I'll put the Lasso on when I go over with the rotary hoe prior to emergence of potatoes. The rotary hoe not only takes out the annual weeds that have started to grow, but it shreds the clumps of sod thrown up and that's the way it was when it was left in the field by the planter. We had weeds by the thousands coming, the rotary hoe covered a lot of little weeds and dug them out, it didn't seem to hurt the potatoes any.

Five days after we finished with the rotary hoe we were beginning to side-dress the potatoes. The fertilization program on these potatoes was: half the fertilizer on top of the ground before planting. This was 75 lbs. of nitrogen, 75 lbs. of phosphate, 125 lbs. potash, 5 zinc and 1 boron. This was broadcast on the field before planting. I don't particularly like this and I don't think I'm going to do it this year. I plan to put all the fertilizer on with a suspension applicator. This is an applicator that was made by Dale Sealoff of Warden, Washington and it's a machine that I like very much. It did a nice job for us. We didn't have any trouble with it and Dale's going to do his own modification on it before we use it again, it's a machine that I have a lot of respect for and could be used for other things.

At side-dressing time, we put on 122 lbs. of nitrogen, 120 lbs. of phosphate, 180 lbs. of potash and 4 lbs. of zinc. We also were injecting the fertilizer 3 pts. of Difonate for wireworm control. The side-dressing machine was equipped with standard beet knives and sweeps between the rows. We took the beet knives off because the operator had to stay exactly on the row or the knives would cut the potatoes out. We didn't have any premarked depression to drive by, just the dry ground and it was impossible to keep the machine just exactly on the row. The knives had deflectors on them for pulling the dirt in and around the plant. This works real well for covering small weeds but like I say, it has to be kept exactly on the row in order

to do what it's designed to do. At the time the potatoes were side-dressed, they were growing very rapidly. I plan on side-dressing the potatoes this year earlier, even before they come up. This year the potatoes were setting tubers and using quite a lot of moisture when we side-dressed. I feel that a week to 10 days earlier on the fertilizer application would have been better. With this planting, the stolens were growing down in the soil and our potatoes were set fairly low, we didn't have any green ends in our potatoes at all. You need to have plenty of moisture in the soil profile when you inject fertilizer, particularly if your potatoes are already up and growing.

If the operator gets off the row a little bit with the fertilizer, you can easily get fertilizer blight. We might have pruned some roots, it seemed like the fertilizer was a little bit on the hot side. If we got off the row with the machine, you could sure tell it on the plants, however, they did recover within a few days and later on in the season you could not see the effects of it.

Two weeks after we finished our side-dressing, I was quite concerned about the debris in the center of the row. There's quite a lot of debris out there in the fields at this time, and I thought sure that we would have a problem during harvest. This was not the case. We went through the field with ditchers (a set of shovel ditchers) just before the plants close to rows. This was the last operation before harvest. On July 29 we had good even color in the fields, the plants appeared very healthy, at this particular point we were very well pleased. Thirty days later, on September 1, we had quite a lot of early dying in the field and as near as we could tell we were running out of fertilizer. Just prior to harvest we did have a few weeds, but nothing that hurt our yield. These weeds came right in next to the plants. They were there when we went through with the shovels but we did not throw enough dirt to cover them. The ditch is only three to four inches deep and we didn't have any green ends at all. At harvest, the quality was real good, ran right at 85 to 90 percent No. ones. The size was small but they yielded approximately 24 ton/acre. On the other half circle conventionally planted we had 26 ton/acre. This yield difference I feel was due to not having enough fertilizer down in the fall and not side-dressing soon enough. We planted 22 sacks of seed with the planter and we felt that we just had too many plants per acre, at least that's my feeling. We had one person on the harvestor picking vines and had no trouble with the debris from the cover crop. We came in directly behind the harvestor and planted NuGaines wheat for a cover crop and we plan to plant no-till corn in 1977.

In a small trial plot right along Highway 17 we planted with no till planter. This field was planted with potatoes in 1975. Part of the field was plowed and planted the balance of the field with the Lockwood-WSU no-till planter. We didn't do anything to that portion of the field at all. It was covered with weeds, truck tracks, and last year's vines as they came off the harvestor. Everything was as the harvestor left it.

These potatoes yielded at approximately 27 Ton/Acre. Not too bad for investing only planting, fertilizing, cultivation, irrigation and harvest.