# Drought for Thought

This summer was parching. If you were a farmer, it may also have been very costly. We at SCIENCE NEWS received an isolated glimpse of just how devastating it could be in periodic reports from the family of one of our own.

Through June 18 of this year, Diane Edwards was a popular writer at SCIENCE NEWS. But as her swan song hinted (SN: 7/2/88, p.13), she also has roots in the soil. The granddaughter, daughter and sister of dryland winter-wheat farmers in Big Sandy, Mont., she recently responded to the call of her Big Sky country and exchanged her computer and Rolodex for work gloves and boots. She planned to help the family with this year's harvest. After that, who knows? Maybe a little teaching. Maybe writing that Montana novel. Maybe just a little cathartic mending of fences (a rare tornado felled a lot of trees — and fence — on the family's ranchland).

But as Diane began making plans to leave, dispatches from home arrived expressing increasing concern about a potential drought. In dryland farming, one counts on spring snowmelt to slake the thirst of growing crops. But as Keith Edwards (Diane's dad) notes: "We had no snow — all winter." Nor any to speak of in the preceding two years. In fact, he says, "1988 is statistically the driest year we've ever had."

The result is visible in the fruits of his family's labors (see photo). Dessicated fields yielded just 3 to 8 bushels of wheat per acre — far below the 30 bushels per acre of a normal year, or the 25 needed to break even on costs. There were times when Diane's brothers couldn't see where they'd harvested because the stubble left in the combine's wake stood about as high as the uncut rows. Their decision to go ahead and harvest was as much a matter of pride as economics, they say, because if they're lucky, 5 bushels per acre may just about cover the cost of cutting their wheat. Even with crop insurance — which the Edwards have — "we're in real trouble," Keith says.

Legions of farmers throughout the country tell similar stories. On Sept 12, in its most recent update, the Agriculture Department estimated that 1988 production of wheat, corn, sorghum, barley, oats and milled rice will total just 190.8 million tons — down 31.1 percent from last year's harvest. Soybean production is expected to be off 22.6 percent.

While most news accounts focus on the prospect of farm foreclosures or higher U.S. food prices, some agricultural economists, like Lester Brown, president of the Washington, D.C.-based Worldwatch Institute, find that perspective too parochial. The really big picture, Brown believes, should illustrate the drought's potential to aggravate world hunger — and, perhaps more important, reveal why this drought is making world food supplies so precarious.

The drought wasn't a uniquely American disaster. China, a close second to the United States in grain production, experienced a comparable drought this summer. Another summer like this and the world's largest country could become a major grain importer at the very time when stocks of the world's largest grain exporter — the United States — dry up.

Last year, world carryover stocks of grain (what's in storage right before the new harvest) fell a record 56 million metric tons. Brown's preliminary estimates indicate 1988 carryover stocks will plummet another 152 million tons. "This percentage decline from the year before is larger than at any time in history — and that goes all the way back to the Dust Bowl," he says.

This two-year drop would lower world carryover stocks to levels providing enough grain for a mere 54 days of consumption — less than the level that doubled world grain prices in 1973. Moreover, this surplus isn't sitting in one place, waiting to be drawn down. It's roughly equivalent to what is normally in the grain-supply pipeline — in grain elevators, trucks, trains or ships; in the storehouses of millers or at commercial bakeries. When supplies drop to pipeline levels, Brown says, minor panic sets in. Users, fearing temporary supply disruptions — and therefore the need to shut down their operations for a time — try to stockpile more grain. This can dramatically drive up prices.

The decline in carryover stocks will affect all of the 100 or so food-importing countries, Brown says. They will face larger food-import bills; many will suffer increased malnutrition, and social instability may accompany skyrocketing food prices. Hardest hit will be those poor nations already saddled with immense foreign debt. Many may find themselves unable to secure the credit necessary to make adequate food purchases. And those receiving food aid may find that foreign assistance buys considerably less grain than in previous years.

With good weather, carryover stocks can begin rebuilding next year. But it won't be as easy as in 1974. This year, roughly 78 million acres of U.S. cropland sit idle under federal programs. Some 23.5 million acres set aside under the Conservation Reserve Program will not likely contribute soon. Designed to preserve degraded or highly erodible land, this program requires that the land be idled for 10 years.

Another 55 million acres lie idle under the acreage-reduction and paid-diversion programs. Here participating farmers set aside acreage for one year to help control commodity surpluses. With no stunning surpluses this year, much of this could be back in full production next year. However, as farmers tend to idle their least productive lands, each 100 acres returned to the plow might only offer a crop yield equal to 60 good acres. Moreover, Brown points out, this 55 million acres is 11 percent less than what was available for recultivation in 1974.

Large grain surpluses have lulled most Americans into a sense of food security. But Brown contends the surpluses resulted largely from shortsighted agricultural policies and economic pressures that encouraged U.S. farmers to till highly erodible fields — losing more than a billion tons of topsoil annually (SN: 10/6/84, p.212) — and to pump irrigation water from aquifers at rates exceeding their recharging (SN: 12/22&29/84, p.397). In depending on these practices, "we feed ourselves today by borrowing against our children's food supply," Brown charges. This can't continue indefinitely, he argues in "The Changing World Food Prospect: The '90s and Beyond," a report to be published next week.

Brown says that if the U.S. grain output resulting from nonsustainable use of soil and water were subtracted from world output, the grain surpluses of the 1980s would disappear. "If data were available to extend this calculator to the rest of the world," he says, "it would show that sustainable world food output is now

*Keith and Diane survey the small yields of the Big Sandy area.*

Craig Edwards

running well below consumption" — even before the 1988 drought.

What makes that assessment especially troubling is the growing number of mouths that must be fed. According to Carl Haub, director of the Washington, D.C.-based Population Reference Bureau, world population now increases by about 90 million annually.

The shrinking cropland base exacerbates the precariousness of world food supplies. Millions of erosion-prone acres are being withdrawn from production globally — largely because of topsoil loss. More and more farmers are idling acreage that cannot be cultivated without irrigation, as water tables fall precipitously from overirrigation or as surface waters shrink. China's cropland loss is aggravated by its prosperity. As its population grows and develops economically, commercial and residential construction is booming, often upon this agrarian society's prime croplands.

Perhaps the most frightening prospect for food planners is that the 1988 drought might signal the beginning of a long-term "greenhouse" warming and increasing drought (SN: 7/2/88, p.4).

Yet Keith Edwards remains stolid. At least for the time being. Citing similar parching droughts in 1919, 1936 and 1985, he says, "We get used to this uncertainty [in the weather]. But we never like it."

*— Janet Raloff*