Growing grain sorghum

as 5 or 6 feet a year in some places.

In the west central area of Kansas, the aquifer is fairly thin but close to the surface, and irrigation began late in the 19th century. Original saturated thickness may have been 80 feet or so rather than the 200 feet or more which is not uncommon elsewhere.

In most of western Kansas, pumping from the aquifer began in earnest after World War II with the coming of high capacity pumps and cheap natural gas to provide power. Awareness of the decline of the water table did not spur organized action until the early 1970's. The mechanism chosen was formation of groundwater management districts (GWMD's) similar to those in California and other places dependent on groundwater. The five districts formed so far in Kansas let water users determine their own destiny so long as the measures they adopt do not conflict with laws on the books.

The restrictions prescribed in GWMD No. 1 in the dry, west central region provide for spacing of wells and a limit on use of 2 acre-feet of water per acre per year that can be pumped for irrigated land. Permits to irrigate forbid depletion of more than 40 percent of the groundwater over 25 years. Kansas wells are not metered so a kind of honor system prevails, which generally seems to work.

Predictions about the future of high plains agriculture are risky, if only because knowledge about water resources is still imperfect. Much more should be known after completion of a $6-million federally sponsored study on the Ogallala aquifer region in the six high plains states mentioned earlier.

A possibility being explored is bringing in water from outside the study region. One option for western Kansas would be the transport of Missouri River water, most probably from a point at St. Joseph, Missouri. The project and its costs would be monumental even by public works standards.

Another way to supplement the water of the area would be to tap the Dakota aquifer, a formation that underlies the Ogallala in many places. The Dakota dates from the Cretaceous period, 96 to 138 million years ago. A sandstone formation, it yields water less easily than the Ogallala's sand and gravel. Its water generally is more expensive to pump and has a higher salt content. An assessment of the Dakota aquifer is being made by the U.S. Geological Survey as part of a national water resources survey.

A significant break was given owners of aquifer water rights in a 27 September decision in federal district court in Wichita allowing irrigators to claim a depletion allowance similar to those which go to owners of oil wells. The decision applies only to the Ogallala at this point. In Kansas, where 2 to 3 million acres are irrigated by water from the aquifer, benefits of $1 billion are being estimated. It is thought that the tax break will prop up land values and help ease the transition from irrigation farming.

That transition will hardly be painless, but for western Kansas, the depletion of the aquifer hardly imposes a doomsday scenario. Use of the Ogallala was akin to rich strikes of gold, silver, or oil. Now the bonanza is being mined out. Western Kansas has adapted before, from ranching to wheat farming to corn raising. Change and retrenchment will be necessary. How it happens will test scientific agriculture and enlightened self-interest.—JOHN WALSH

Too Many Doctors in the House

Medical schools should produce fewer doctors, says a new report, but some foresee a lack of physician-researchers

The federal government has said it before and is saying it once again: there will be too many physicians in practice by 1990. Not only that, they will apparently be practicing in the wrong medical field. Clinical researchers say their group will be shortchanged in the midst of the so-called physician oversupply.

There will be an overabundance of 70,000 physicians in most specialties by the end of this decade, an advisory committee recently reported to the Department of Health and Human Services (HHS). The government contends that an oversupply of practitioners results in unnecessary medical costs.

Medical schools are worried about how they will survive if Congress acts to stem the surplus and adopts some of the committee's proposals that would limit their funds. The Graduate Medical Education Advisory committee recommended a 17 percent cut in freshman-year enrollment at medical schools and the termination of federal capitation funds. Capitation has been used as a special enticement to medical schools to boost class size. August G. Swanson, director of academic affairs at the Association of American Medical Colleges, says that, if the recommendations are carried out, medical schools will have to lay off medical faculty and some schools might be shut down.

Medical schools have been threatened with the loss of capitation funds in recent years. Former Secretary of Health, Education and Welfare Joseph Califano tried to eliminate capitation in 1979 during his crusade to cut health care costs.

Capitation was initiated in the early 1970's to alleviate what was thought to be a physician shortage. The government paid schools a bonus of $2084 for each medical student or per capita. The amount has dropped off in recent years, and this year hit a low of $784. Even though the bonus amount has fallen off the funding is still important to some schools, says a lobbyist for universities.

Faced with a capitation cutoff, the schools say they may simultaneously suffer lost revenue from tuition if freshman enrollment is reduced by the suggested 17 percent.

Legislation that phases out capitation is already before Congress. A House and

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Senate committee is expected to consider the two versions of a health manpower bill in lame duck session that begins 12 November. Predictions about the legislation's chances for passage are mixed. Both bills eliminate capitation. However, the Senate version rewards medical schools $250 per student for meeting goals that, for example, promote primary care and clinical investigation and also encourage community health programs in disease prevention.

The HHS committee, which was headed by Alvin Tarlov, chairman of the Department of Medicine at the University of Chicago Pritzker School of Medicine, also recommended that:

- Federal and state governments should terminate loans and scholarships to U.S. students who begin study overseas. It said 40,000 to 50,000 of the 70,000 surplus physicians will be graduates of foreign medical schools.
- Current class sizes in training programs for nonphysician health professions such as physician's assistants and nurse practitioners should be maintained, which in effect, gives them a greater role in health care.
- Geographic boundaries used to define the maldistribution of physicians should be redefined. The new method of calculation would not only include data about the ratio of physicians to the population of a given area, but would also take into account the time it takes a patient to get to a doctor. If adopted, the new definition would change the distribution of the National Health Service Corps and other government health services.

The report has received mixed reviews from medical groups because it says most specialties will have too many practitioners. Specialty groups criticize the committee's methods of figuring the surplus. The report says, however, that some specialties will be balanced, including the primary care fields of general practice, family practice, internal medicine, and pediatrics. It predicts shortages in psychiatry, physical medicine and rehabilitation, and emergency medicine.

Secretary of HHS Patricia Harris said that she is concerned that minorities and women might lose out in medical school admissions if enrollments are cut back and competition intensifies even more for fewer slots. The department is now considering what action to take on the report.

Even though the number of physicians is expected to mushroom, too few will choose medical research, according to medical school officials who spoke at a recent symposium in New York entitled, "The Academic Physician: An Endangered Species." Most of the speakers bemoaned the shortage of clinical investigators who are physicians. But almost none of them seemed willing to say that the problem is a crisis. Clinical investigators will not go the way of the whooping crane, said David Rogers, president of the Robert Wood Johnson Foundation, Princeton, New Jersey.

James B. Wyngaarden, chairman of the Department of Medicine at Duke University Medical Center, said that the disparity between the salaries of a private practitioner and an academician is just part of the problem that deters young physicians from making a career of clinical research. Wyngaarden is vice-chairman of a National Research Council committee that is studying manpower in biomedical research.

He said that another obstacle is the requirement by the federal government that requires a payback from recipients of most research traineeships and fellowships awarded by agencies, including the National Institutes of Health. The payback provision discourages young doctors from exploring a career in research. Pending congressional legislation would waive up to a year of service but the measure is tied to a bill that may not be passed.

The number of traineeships awarded by NIH to physicians and M.D.-Ph.D.'s slipped from about 3200 in 1973 to only 1500 in 1976, Wyngaarden said. But the awards going to Ph.D.'s. rose steadily from about 1100 to 1500 during the same time period. Although Ph.D.'s cannot work directly with patients as doctors can, postdoctoral fellows are replacing physicians in clinical research labs. But the issue of the role of Ph.D.'s versus M.D.'s in clinical research "created more heat than light," he said.

Not everyone was worried about a shortage of clinical investigators. Harvard professor of medicine, Robert Petersdorf, said he was troubled more about the quality of investigators than their numbers. "We need better trained investigators, not necessarily more of them."

He said that academicians complain too much about their salaries compared to those of their counterparts in private practice. "The threadbare suit of the academic has been replaced by the newest model from Brooks Brothers." He said that young physicians expect too much from their research careers by wanting "the gentility of the academician of yesteryear, the income of the cardiovascular surgeon, and the kudos of the molecular biologist who clones a new gene. . . ."

In the past, Wyngaarden has painted a bleak picture of the future of clinical investigators. But at the symposium he said that he was more optimistic of late because of several changes: NIH has raised researchers' stipends, bringing them in line with residency training salaries. The American Board of Internal Medicine now allows some credit for researchers in its certification. Congress boosted the pay scale for Veterans Administration physicians, who often work at nearby university medical centers. Private foundations are granting research awards to young physicians.

"The threadbare suit of the academic has been replaced by the newest model from Brooks Brothers," said a professor.

To spur more interest in research, medical schools should accept more applicants interested in research, said Samuel O. Thier, chairman of the Department of Medicine at Yale. But many suggestions focused on sources of funding including those outside NIH.

Speakers said that medical schools need to broaden their base of financial aid and turn more to private foundations.

By the end of the 1-day conference, there was neither a consensus of the exact nature of the problem or solutions to the shortage. Theodore Cooper, former dean of Cornell University Medical College and now an executive vice president of the Upjohn Company, informally summed it up this way: The severity of the problem, on a scale 10 of smiles and frowns, is 5 to 4 in favor of the smiles.

As for the report of the physician oversupply, medical schools are reportedly hoping that the House and Senate will reach a compromise on the health manpower bills. Otherwise, they may face tougher bills in the next Congress which might incorporate the proposals of the HHS committee report.

—MARJORIE SUN