

Sonoran Desert Grain Rotation

by *Steve Maher*

In November of 1989, inspired by Masanobu Fukuoka, I decided to start a continuous grain-legume rotation on my 1.25 acres of Sonoran desert land. This land lies at about 2500 foot elevation and was a grassland until the advent of subsidized cattle grazing in the late 1900's. The soil now is sandy and very thin, covering hard red clay. Summer temperatures can reach 110 degrees. The lowest temperature since 1987 has been about 15 degrees. About 10 inches of rain falls annually, most of it coming during summer downpours.

I began by excavating an area of about 10 feet by 5 feet to a depth of about 3 inches, piling the earth on the downslope side as a berm. This took me down to hard red clay. (I now believe it would have been better to excavate deeper, piling the topsoil on the upslope side and the subsoil on the downslope side.) I then used a heavy fork to loosen the soil in the basin and spread the topsoil back in the bed, adding such supplements as bone meal, kelp, rock dust, and manure. The final depth should be about 3 to 5 inches below the soil surface, both to collect overland runoff and to make watering easier. [Or, a no-dig method such as sheet mulching could be used to prepare the soil in basins—ed.]

For seed, I chose Sonoran white winter wheat (available from Native Seeds/SEARCH), alfalfa, and some mixed clovers that I had on hand. I scattered the seed, then raked it in. There was virtually no rain in November of 1989, so I watered the seeds. Germination was good for the wheat, poor for the alfalfa, and almost nonexistent for the clovers. The plants grew well with a few irrigations until the wheat was harvested in late May. The plants were healthy and the yield was good. I then chopped down all the plants, threshed the wheat, and returned all the straw to the field. Cowpeas were then seeded by pushing them in with a finger.

By this time, it was June and I had to water the seed. Much easier to wait for the rains in July when the floods (oops, rains) returned. I also tossed a handful of four year old sorghum seed.

Summer was lush. Not only cowpeas, but a whole host of desert grasses and a few weeds sprouted and grew madly through October with no watering.

Steve Maher is an organic gardener, seed-saver, and permaculture enthusiast in Tucson, Arizona.

In November, it was time to harvest the cowpeas and start all over again. This time, I seeded the wheat and clovers and some fenugreek seed into the standing crop, chopped it down, and spread it over the bed as mulch. I also spread some horse manure on the field.

Again, no rain in November, and my anxious mind persuaded me to water the seeds. Germination was excellent. I felt thrilled to see the little plants poking their heads through the mulch. They all survived some winter freezes and looked green and healthy.

From the year's experience, the cycle would look something like this:

October-December: Prepare beds. Seed in winter grains and legumes. Water if necessary.

December-May: Watch 'em grow. Water if necessary.

May: Seed the summer crops. Harvest winter crops. Spread residue back on the field. Wait for rain.

July: Rain, hopefully.

August-October: Harvest summer crops. Start over.

The possibilities are almost endless. This may be a good way to prepare the area for changing to a vegetable rotation (maybe to daikon first to loosen the soil). Another possibility is a perennial grain-legume rotation.

In this area, sorghum is a perennial. In fact, four plants that grew in a swale in 1989 sprouted from the roots in April 1990. They survived a rainless and very hot spring with no supplemental water and grew to over 5 feet tall when the rains came, producing two crops of seed. Since alfalfa goes dormant in the summer, sorghum and alfalfa might make a good perennial combination. Throw in a few annuals and you could have quite a system. ♦

Winter Crops		Summer Crops	
<i>Grains</i>	<i>Legumes</i>	<i>Grains</i>	<i>Legumes</i>
wheat	alfalfa	sorghum	cowpeas
oats	clovers	millet	teparty beans
barley	fenugreek	corn	pinto beans
rye	fava beans	amaranth	soybeans
			Crotolaria
			guar
			Sudan grass
			lab lab beans