Can we manage risk with less fallow in a low rainfall region?

David Brewer, Emerson Dell Farm, The Dalles, Oregon
Fallow as a risk management tool - “we’ve never had a crop failure”

11-12” precipitation zone.
Mostly deep Walla Walla silt loam soils.
   Top foot pH mid 5s, OM 1.3-1.9%
Traditionally WW - Fallow rotation. (70 bu.)
Direct Seeding since 1997.
Annual spring crops in rotation.
Crop failures in 2001 with annual crops.
1/3<sup>rd</sup> Fallow -  
1/3<sup>rd</sup> Winter Wheat on Fallow -  
1/3<sup>rd</sup> Annual Spring Crops.

Rotation to control winter annual grassy weeds.  
5 years out of winter wheat.  
Yield bump from rotation and weed control.  
Very little grass weed herbicide.  
Moving to: More complex rotation, keep it clean.  
  Keeping the residue levels up.  
  Minimum disturbance seeding.  
  Less Fallow?
Can we survive with less fallow in our cropping systems?

The hidden cost of fallow is in soil quality.

Grapes, glyphosate dependence and herbicide resistance. Is cheap chem fallow going away?

Crop insurance tied to fallow. Risk management.
Moisture inefficiency of fallow.

16 years of testing - 39% of average annual precip in 6 feet at fall seeding.

Getting better - 42% recent years.

Normally not seeding to moisture anyway.

Can we benefit the soil and crops by growing a cover crop on the moisture we are loosing anyway?

Residue is king - sheltering the soil from wind.
Cover crop test plots 2014.
10 way mix seeded 5/6 and 5/10.
7.5” spacing with a JD1590.
Starter fert only.
Oats, Japanese Millet, Sorghum/Sudan, Ethiopian Cabbage, Vetch, Peas, GRAZA radish, Barley, Winfred kale-turnip, buckwheat.

Photo taken June 16th.
Cover crops need fertility too.

Grazed with finishers in July before spraying out July 24th.

Deer every night until seeded to WW in fall.

Basically zero residue at seeding other than Ethiopian Cabbage skeletons.

Continuous Crop Insurance.

Photo taken June 24th
6 way mixes seeded May 10th.

Triticale, Oat, Radish or Turnip, Pea and Phacelia or Mustard.

Late seeded after chem fallow made, short fertility.

Concerns:

- Cereals wanted to make seed quickly.
- Brassicas in crop rotation - black leg

Photo taken July 5th
Bigger than expected tap roots.

Cool soil under radish top.

Plots ungrazed.

Plots sprayed out July 14th.

Cereal residue bright white the rest of summer.

Little deer pressure and nearly all residue present at fall seeding.

Photo taken July 5th.
Preseeding Soil Samples and 2015 Soft White Winter Wheat Yields

Significantly less water in top foot.

Similar water below the 2nd foot where ungrazed.

Ungrazed plots actually more water than CF below 2nd foot.

Nitrate numbers were similar.

Watch Ammounium!

Key Lesson: Residue is King in dry years!
Cover Crop Test Plots 2015

Seeded April 24th with JD 1895, 10” spacing.
Total fertility added at seeding - 57-8.5-0-12.
4 way mix - Peas, Vetch, Buckwheat, Sorghum-Sudan at 70 and 40#/ac.
3 way mix - Peas, Oats, Barley at 100 and 60 #/ac.

Lighter rates were adequate I believe.

Photo taken June 19th.
Keeping the residue levels up.

Minimum disturbance seeding.

Grew more biomass in a very dry spring.

Sprayed out 6/24/15.

Everything made seed I suspect.

Honey bees and lady bugs!

Photo taken June 19th.
Residue levels at fall seeding.
Bright cereal residue.
Broadleaf residue darkens and disappears.
Very dry at seeding.
Botched soil samples.
  Estimating at least 1.5” less water.
  High Ammonium again.
Will sample this winter.
Gophers!
Photo taken September 30th.
Forage crops have a place in the system.

Annual forage crops on non-irrigated creek bottom fields since 1998.

Harvesting crops in place with cattle.

Using temporary electric fence.

Grass finishing all calves on the farm.

Planting a sequence of crops for finishing level gains.
Fall seeded Triticale, Barley, Pea mix.

Seeded 11/3/14 at 100 # with 52-16-0-13.
Grazed 1st pass 4/8-5/6 with 31 finishers.
2 year olds averaged 5.32 GPD to 1200 #s
1.5 year olds averaged 4.71 GPD to 1050 #s

Photo taken May 3rd.
Natural Grass Fed Beef.
Sold to Portland stores and direct market customers.

1\textsuperscript{st} pass gains equal $485/ac gross.

Electric fence supplies only harvesting equipment required. Fertility left on field.

Photo taken May 3\textsuperscript{rd}.
Second pass over fall crop.

Managing the regrowth for no kernels in heads.

3.35 GPD = additional $117/ac gross income.

Total gross income = $601/ac in a drought year.

Best 2015 winter wheat on fallow would have to sell for $8.70/bu and that’s without accounting for fallow or in crop herbicide, harvest, storage, and trucking costs for the wheat.

Photo taken May 24th.
Cattle processed in June.
26 months of age.
Live weight average 1430 #s.
Hanging weight average 787 #s.
50% graded full Choice.

A key step for us was moving the calving date start to peak grass (4/25), so that finishing on peak grass also at 2 years of age.
The forage requirement of the underground herd must now be accounted for also.

November 3rd, 2014, 3 weeks after first fall rains. May 13th, 2015
More castings than residue.
Summer Forage Crop

Sorghum-Sudan Hybrid

Brassicas - Winfred a kale-turnip cross and GRAZA a fodder radish.

Seeded in alternate rows 5/13/15.

Seeded with JD 1895 with 90-17-0-25 between starter and deepband.

Photo taken May 31st.
The only crop on the ranch that liked the June weather.

June 14th both photos. Brassicas shaded out weeds.
We had quality feed for the cattle and started strip grazing it with 2x daily moves.

June 21\textsuperscript{st}. Finishers in June 25\textsuperscript{th}.
As good as it got with some sub-irrigation

July 1\textsuperscript{st} both photos.

The cattle grazed the tops.
Sleek and happy cattle

We learned not to force them to graze it too short the first pass for faster regrowth.

By June we had lost our irrigation water so we did not have the irrigated perennial grass to graze between trips across the summer crop.

Photo taken July 1st.
Signs of biological activity.

Now you know I am nuts.

Yes that’s what it looks like.

Patty is 12 hours old at the most and already riddled with dung beetles.

Photo taken July 12th.
Finishing level gains in the heat of summer without irrigation.

Cattle gained 2 pounds per day grazing the field 2x over 42 days.

Half went to process 8/6 at 22 months.

1282 # live weight, 750 # hanging weight.

90% graded SE+ of better.

Steer pictured graded CH-.

The final 5 head grazed the field a third time gaining 1.45 #/day before processing 9/21.

Photo taken August 6th.
Spring yearlings to field 10/18 for another 45 days of pasture, 4th grazing.

November 16 both photos. Some really big radishes.
Seeded to a 4 way mix 12/16.
Triticale, Barley, Pea and Vetch at 115 #s
JD 1895 cut through turnips easily.
Lots of earthworms in root masses.
Less obvious evidence of earthworms on surface.

Photo taken December 16th.
This is fun.
So much to learn and try!

As methods there may be a million and then some, but principles are few. The man who grasps principles can successfully select his own methods. The man who tries methods, ignoring principles, is sure to have trouble.

Ralf Waldo Emerson