

A photograph of a vineyard during a dormant season. The rows of grapevines are bare and supported by dark wooden posts. A central path is filled with a dense carpet of bright yellow cover crops, likely mustard or rapeseed, which stretches into the distance. The background shows rolling hills under a clear sky.

Cover Crops For Healthy Vineyards

Nigel Dreksler

*Kamprath
Seed*

Planning Cover Crops in Foothill Vineyards

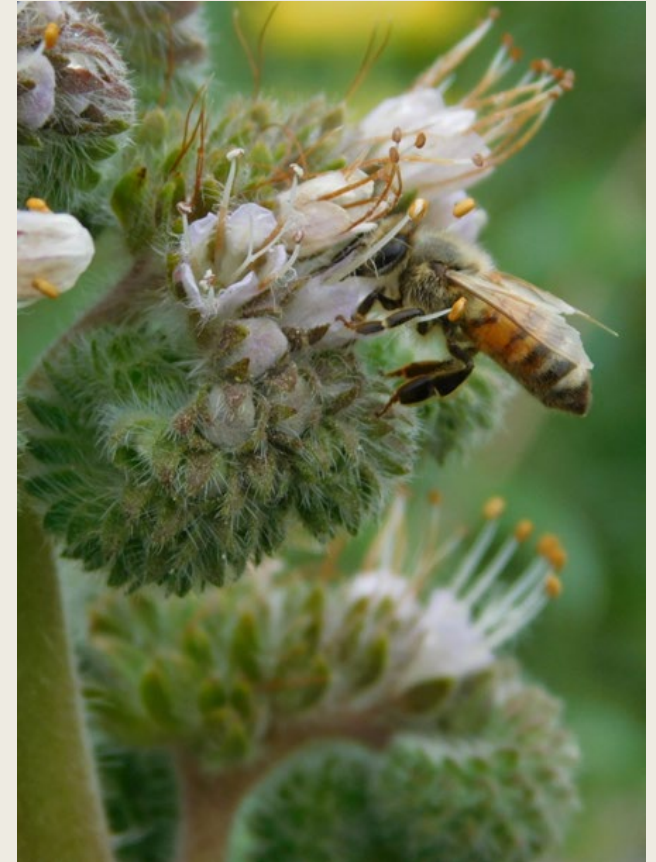
- Be Proactive so we don't have to be Reactive
- Foothill vineyards present unique challenges:
 - Slopes
 - Soil 'strength'
 - Soil depth
 - Irrigation
 - Frost, climate – rain
 - Vineyard sizes
 - Available equipment



Strategies for Success

What we need to know before we can talk seed:

- Soil Type, Depth, Chemistry, Infiltration
 - Agronomic Reports (Soil Samples)
- Cropping Pattern, Type/Variety of Crop
- Climate, Seasons, Rainfall Amounts
- Location, Exposure, Slope
- Available Equipment and Cultural Practices/Capabilities
- Management Philosophy and Available Expertise
 - *Have you Cover Cropper Before?*
 - *What are **My** Limitations?*



Seasonal Cover Crop Checklist

- What seed do you want?
 - Type of cover crop determines how many pounds you will need
 - Smaller the seed, higher the cost per pound, but lower the rate per acre
- Where to get seed?
 - Seed Dealer, Chem Retailer, Farm Supply, Call and Ask us!
- When to get seed?
 - Order well before harvest or wait and see... supplies usually don't run out, but...
- How to plant it?
 - Custom it? Do-It-Yourself? Will you have to buy equipment to plant it
- How to manage it?
 - Custom It? is machinery you need available to rent or do you have it



Why Cover Crop?

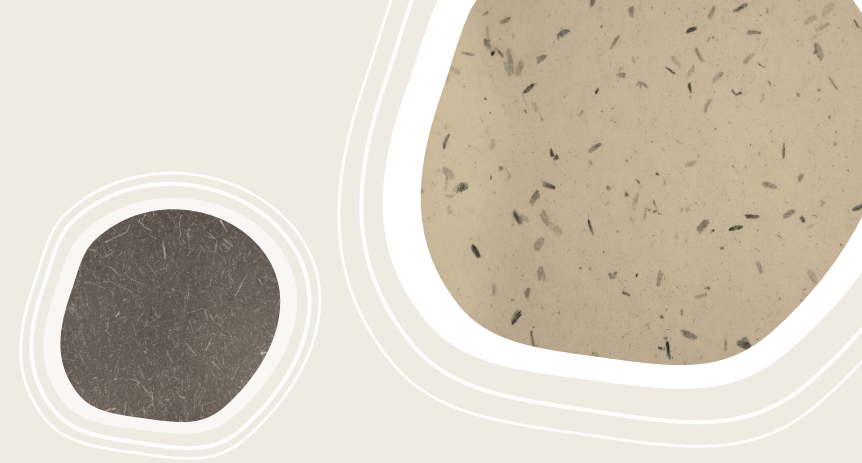
Two Major Reasons:

1. Protect Soil from Erosion
2. Soil Improvement,
Improving 'soil health'

Other Possible Reasons:

1. Water Infiltration
2. Weed suppression
3. Insect habitat – beneficial
4. Soil Compaction
5. Carbon Sequestering
6. Fertility
7. Field access
8. Forage
9. Eye appeal?

Main Goal – Successful implementation - results.

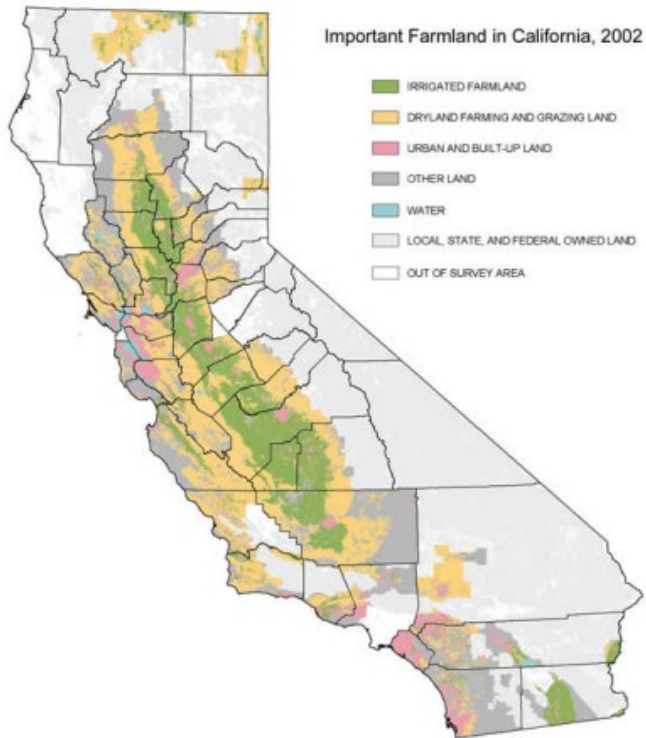
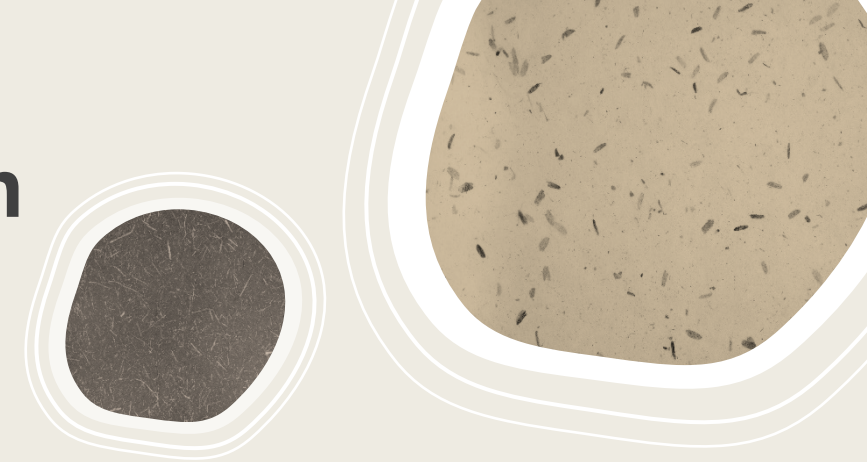


We Use What We Already Have

- ‘Native Vegetation’
 - What a lot of dry land or semi dryland vineyards utilize – what they can get
 - Sometimes it is the remnants of an old Cover Crop
 - Skippy soil coverage
 - Specific and Limited Soil Biota
 - Usually, less biomass than a planted Cover Crop
 - It’s Weeds!



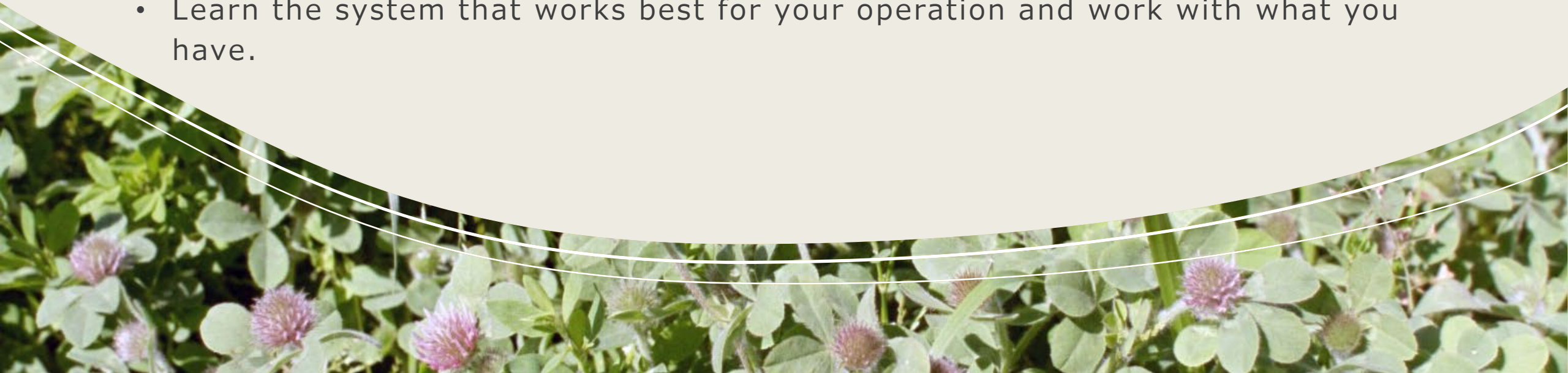
California Ag Land Loss and Erosion



- A 1% increase in soil loss due to water erosion (in tons per acre) can lead to \$235.87 per acre reduction in agricultural land value. ([Le Chen and Roderick Rejesus 2023])
- California is approximately 100 million acres of land, roughly 43 million are in agriculture. 16 million acres are grazing land, and 27 million acres in cropland. 9 million acres are irrigated land and considered to be prime (1/3)
- “If current development trends continue, 1.3 million acres of California agricultural land, including 670,000 acres of prime, unique and statewide important farmland, will be developed by 2050.” Equating to roughly a \$2 Billion Loss in yearly production in CA. Only 5 counties in CA have a higher production total than this.


Expectations vs. Reality

- Plan out what you hope to accomplish: have goals, seek out trusted advisors, and be EARLY!
 - Seed markets are not always fast moving – International/Domestic shipping and availability
 - Plan ahead of time and check availability – the earlier the better for Organic
 - Do not try to solve all issues at once, there is no silver bullet. \$\$\$
 - Learn the system that works best for your operation and work with what you have.



What are my Options?

- Biomass mixes
 - Peas, beans, and vetch
 - Small grains
 - Brassica mix
- Reseeding annual mixes
 - All annual legume
 - Grass and annual legume mix
- Perennial mixes
 - Dryland adapted, native grasses



209-823-6242
www.kamprathseed.com

205 Stockton Street
Manteca, California 95337

COVER CROP MIXES

Not only do our Cover Crop mixes help with erosion control, but they add much needed nutrients back into your soil. With a variety of options, we have the right mix for you based on your needs.

TREE & VINE MIX QUICK LOOK

SEED RATE	15-20 lbs per acre
PLANTING DEPTH	1/4"
GROWTH HEIGHT	12+ inches
PLANTING TIME	Mid September - November
BAG SIZES	1-50lbs

COMPANION SOD MIX QUICK LOOK

SEED RATE	30-35 lbs per acre
PLANTING DEPTH	1/4"
GROWTH HEIGHT	12+inches
PLANTING TIME	Mid September - November
BAG SIZES	1-50lbs

TREE & VINE CLOVER MIX SEED MAKE UP

COMMON NAME	TYPE	% OF MIX
NEW ZEALAND WHITE CLOVER	LEGUME*	70%
STRAWBERRY CLOVER	LEGUME*	30%

COMPANION SOD MIX SEED MAKE UP

COMMON NAME	TYPE	% OF MIX
GATOR DWARF PERENNIAL RYEGRASS	GRASS	60%
CREEPING RED FESCUE	GRASS	40%

ANNUAL CLOVER MIX QUICK LOOK

SEED RATE	25-30 lbs per acre
PLANTING DEPTH	1/4"
GROWTH HEIGHT	12+ inches
PLANTING TIME	Mid September - November
BAG SIZES	1-50lbs

ANNUAL CLOVER MIX SEED MAKE UP

COMMON NAME	TYPE	% OF MIX
CRIMSON CLOVER	LEGUME*	15%
JESTER BARREL MEDIC	LEGUME*	16%
ROSE CLOVER	LEGUME*	10%
LOSA SUBTERRANEAN CLOVER	LEGUME*	10%
ANTAS SUBTERRANEAN CLOVER	LEGUME*	10%
MONTI SUBTERRANEAN CLOVER	LEGUME*	10%
DENMARK SUBTERRANEAN CLOVER	LEGUME*	10%
NITRO PERSIAN CLOVER	LEGUME*	7%
LIGHTNING PERSIAN CLOVER	LEGUME*	7%
BALANSA CLOVER	LEGUME*	5%

www.kamprathseeds.com

*Legumes are pre-inoculated with Rizo-Kote process

sales@kamprathseeds.com
© 2023 Kamprath Seeds

Reseeding Cover Crops, Erosion Control Mixes

Legumes

- Crimson Clover
- Rose Clover
- Subterranean Clover
- Persian Clover
- Balansa Clover
- Burr clover

Grasses

- Blando Brome
- Zorro Fescue
- Annual ryegrass



Annual Reseeding Cover Crops

Advantages

- Pretty when it flowers in April-May
- Shorter growth at bud break
- Less biomass to deal with
- Reduces dust
- Renews for several years at least (Viable Seed)
- Fixes some nitrogen
- Can smother spring sprouting weeds, reduces summer weeds
- Can contain flowers or insectary plants, IPM aspect

Disadvantages

An all-Clover Mix is not a good weed competitor or erosion practice - early on

- Plants are small
- Provide Less soil coverage

Relatively expensive up front

Require more finesse to establish and manage

- Seedbed preparation
- Wait until seed set before final mowing to get reseeding

Perennial Grass Cover Crop System

Advantages

- 'Permanent' cover crop, long term investment
- Relatively low growing, easy maintenance
- Good weed competition once established, but start 'weed free'

Disadvantages

- Slow establishment
- Expensive, seed cost or application rates
- Potential competition for water
- Bumpy ride if it gets too thin



Perennial Grass Cover Crops

Native or Dryland Adapted grasses

- Summer dormant
- Deep rooted Bunchgrasses
- Long lived cover crop
- Pretty specific planter and management
- Once a year mowing?

Introduced Perennial Grasses

- Perennial Ryegrass-Fine Fescues Blends
- Turf grass mixes
- These are all bunch grasses
- Shallower rooted, less long-lived
- Cheaper seed, higher planting rates, more maintenance



How Legumes Produce Nitrogen

In almost all scenarios, a Legumes maximum potential is directly related to their uptake of nitrogen.

Legumes capture and utilize nitrogen freely from the atmosphere through converting atmospheric N into Plant available N In Root Nodules.

Nodulation Is Initiated by Chemicals produced by Rhizobia (or Nitrogen fixing Bacteria)

Nodulation requires the presence of a healthy population of rhizobium to infect the root hairs.

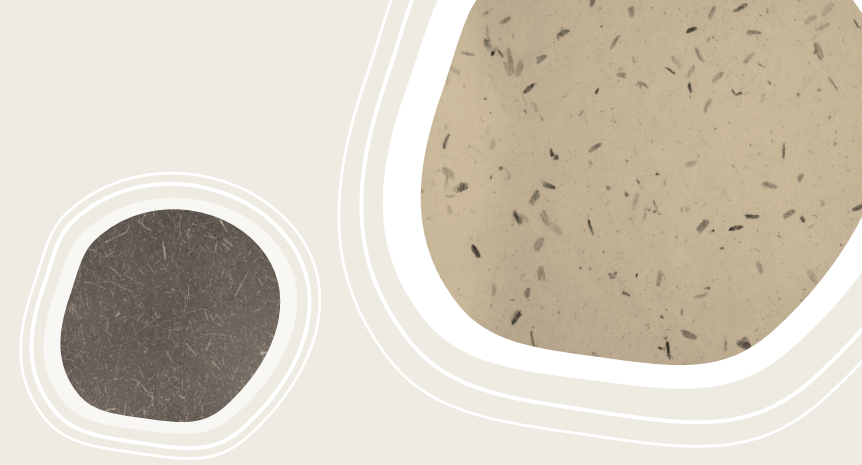
Picture: <https://extension.unh.edu/resource/cover-cropping-home-garden-fact-sheet> (UNH Extension) – hairy vetch



Seed To Soil Contact – Broadcasting Seed



- Moisture exchange
- Nutrient uptake
- Anchorage for emerging seed – stays in place
- Facilitates a successful germination
- Large seed require more soil coverage to ensure they receive the needed nutrients and moisture to germinate



Seed Coatings, NCO, & Inoculation

Why?

- Increases Seed bulk density – broadcast uniformity
- Increases surface area – seed to soil contact
- Hydroscopic – capillary action wicks moisture

Legumes:

- Nitrogen fixation
- Live Rhizobium matching the plants requirement
- More Biomass – Fixing 'N'

Organic versions available for alfalfas, clovers, and legumes



Optimizing Seed To soil Contact - Broadcasting

Incorporation Techniques:

- Cultipack
- Ring Roller
- Chain-link Fence/whatever you can make work?

Goal:

Press the seed into the soil to increase the soil-seed contact and improve germination rates.



Establishment of a cover crop

Seed Bed Preparation:

- Do you Normally Till before or after you Harvest?
- Do you till at all?

Seeding rates:

- What are you planting?
- What's available? **If you want organic/native seed Plan Months Out**

When are you able to plant?

- Before or After Harvest?
- **Before it RAINS!!!**





Termination Options

1. Crimping
 2. Animals
 3. Mowing
 4. Incorporation
 5. Chemical
- mulch of flail mowed cover crop shades out weed seedlings, suppresses weed growth
 - Mustards incorporated into the soil have shown to decrease weed seed viability

Some Concerns to Consider with Cover Crops – ‘Yeah, But!’

Red Blotch Virus, other insect vectored viruses

- Legumes are host to vector- 3-cornered alfalfa hopper

Increased insect problems

- Usually not an issue, usually we see fewer problem insects

Changes in microclimate

- Stay cooler longer in the spring due to less radiant heat from clean soil

Nematodes

- Lesion nematode host on almost anything, increased soil biota can affect populations

Expansion of Problem Weeds

- Changes in management may help a ‘new’ weed express more, i.e. fleabane

Seed Industry Logistics

- How Long does it take to get seed?
- Where does the seed come from?
- Seed Tests and Viability
- Price/availability
 - We grow seed, forecast, and predict
 - Organic and Summer annual
 - Climate factors
 - Trade
 - Regulations and legalities



How/Where do I order Seed?

CUSTOM SEED MIX DESIGN FORM

NAME * **EMAIL ***

PHONE NUMBER **COMPANY**

PROJECT NAME **LOCATION** **ESTIMATED PLANTING DATE**

ESTIMATED ACRES **CROP THIS WILL BE IMPLEMENTED WITH ***

NEED TO BE ORGANIC *
 Yes No

CASH CROP IRRIGATION **AVERAGE PRECIPITATION**

PLANTING TERRAIN (FLAT, HILLS, ETC.) **SOIL TYPE**

AGRONOMIC SOIL REPORTS

PROPOSED SOWING METHOD Broadcast Drill Hydroseed Not Sure Yet

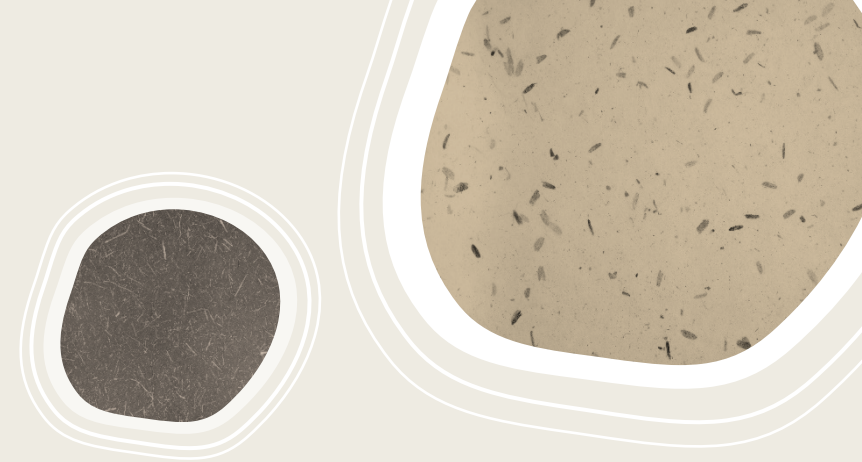
PROPOSED TERMINATION METHOD Crimp Spray Incorporate Mow Graze Not Sure Yet

HAVE YOU USED COVER CROPS IN THE PAST
 Yes No

MANAGEMENT GOALS (CHECK ALL THAT APPLY)
 Erosion Control Water Infiltration Weed suppression Insect Habitat Soil Compaction Carbon Sequestration
 Biodiversity Soil Improvement

OTHER INFORMATION OR CONSIDERATIONS

- Go to our Website!
- Look at mix options
- Fill out our Custom Mix Designer
- Kamprath seed has a network of dealers that we support and outfit with our seed catalog:
 - We build mixes, market, and support with continuing education.
 - Provide Demo/Trial Opportunities and seed Agronomy support in-house.
 - Price orders, provide mix information/direction, and tech sheets



Dealers and Demos

- Local Demos/trials
- Our Local Dealers:
 - Spence Ranch Feed & Supply
 - Placerville Fruit Growers Inc.
 - Nutrien Ag Solutions
 - Wilbur-Ellis
 - Helena
 - Mid-Valley Ag



Contact Us

☎ 800-466-9959

☎ 209-823-6242

☎ 209-823-2582 (Fax)

📧 info@kamprathseed.com

📧 sales@kamprathseed.com

Operation hours: 8 am – 4 pm

Receiving hours: 8 am – 12 pm and 1 pm – 3:00 pm

Questions?

Nigel Dreksler

C: 209-224-7351

nigel@kamprathseed.com

www.kamprathseed.com