```
% this is 17r/planning/packing_plan.org
% generated by ../maize/crops/merge_plan_data.perl
% on Sun May 21 01:26:51 CDT 2017 for crop 17r.
%
% The most recent plan data are derived from ../demeter/data/plan.pl for the 16r.  These
% are substituted into the packing_plan.pl data for 16r to generate
% packing_plan/10 facts that are in the previous sequence, but not numbered.
%
% Wait until all packing_plan/10 facts are written, and in the correct sequence,
% before re-running the script to insert the sequence numbers for planting!


* general remarks


** background <2017-05-20 Sat> :toni:

The general plan is to have a small field since we have a lot to do, both
for work and fun in the field; a lot to do in the lab; and lots of
manuscripts and proposals to write.




** goals  <2017-05-21 Sun> :toni:


Goals are:

   + capture imagery for drone algorithm development
      + fly entire field and farms
      + asymmetric targets, placed asymmetrically on watering posts; these
        need to be durable for the whole season so they don't have to be
        put up and taken down each time
      + perpendicular and top-down for all fields; and oblique angles; and
        circling to keep landmarks in view for mosaicing
      + along and across rows
      + get ticket
      + train Kate and Avi

   + instrumentation development and experimentation

   + try to unstick stuck pedigrees with row shading: les15; cytogenetics?

   + push along branches that are close to finishing

   + doubled haploids from Candi
   + back-cross Balint-Kurti mutants
```

+ stay in the lab and process data!

+ PHOTOGRAPH BEFORE POLLINATIONS!

+ finish mutant data collection before pollinations

+ make a nice color bar for the field, and use that.

+ talk with a production agronomist in extension --- Ken Sudduth?; what should we measure that would help farmers with their decision-making?

** TODO send to Guri and Ross ASAP

```
% Mo20W/les23 K1802 3rd selfed
inventory('16R4465:0004111','16R4465:0004111',num_kernels(whole),avi,date(20,05,2017),time(21,56,46),v00260).

% W23/les23 K1802 5th selfed
inventory('15R4339:0006503','15R4339:0006503',num_kernels(whole),linh,date(6,5,2016),time(11,34,29),v00250).

% M14/les23 K1802 4th selfed
inventory('15R4340:0006601','15R4340:0006601',num_kernels(whole),linh,date(6,5,2016),time(11,34,29),v00250).




% Mo20W/les23 K1804 3rd selfed
inventory('15R4370:0006703','15R4370:0006703',num_kernels(whole),linh,date(6,5,2016),time(11,34,29),v00250).

% W23/les23 K1804 4th selfed
inventory('15R4341:0006805','15R4341:0006805',num_kernels(whole),linh,date(6,5,2016),time(11,34,29),v00250).

% M14/les23 K1804 3rd selfed
inventory('15R4371:0006904','15R4371:0006904',num_kernels(whole),linh,date(6,5,2016),time(11,34,29),v00250).




% Mo20W/les23 K3514 3rd selfed
inventory('15R4342:0007002','15R4342:0007002',num_kernels(whole),linh,date(6,5,2016),time(11,34,29),v00250).

% W23/les23 K3514 4th selfed
inventory('15R4343:0007101','15R4343:0007101',num_kernels(whole),linh,date(6,5,2016),time(11,34,29),v00251).
```

```
% M14/les23 K3514 3rd selfed
inventory('15R4372:0007201','15R4372:0007201',num_kernels(whole),linh,date(6,5,2016),time(11,34,29),v00251).




% Mo20W/les23 K16306 3rd selfed
inventory('16R4466:0004206','16R4466:0004206',num_kernels(whole),avi,date(20,05,2017),time(21,56,46),v00260).

% W23/les23 K16306 3rd selfed
inventory('15R4344:0007301','15R4344:0007301',num_kernels(whole),linh,date(6,5,2016),time(11,34,29),v00251).

% M14/les23 K16306 3rd selfed
inventory('15R4373:0007403','15R4373:0007403',num_kernels(whole),linh,date(6,5,2016),time(11,34,29),v00251).
```

Also my Mo20W, W23, and M14.

** TODO pack for Susan's chromosome walk

```
packing_plan(,1,['16R405:M0003112','16R4222:0009405'],1,[inc,self,'B',fly],'Les2; is 6th!','K0202',20,20).
inventory('16R405:M0003112','16R4222:0009405',num_kernels(quarter),avi,date(20,05,2017),time(21,56,46),v00267).

packing_plan(,1,['16R405:M0001811','16R4356:0010005'],1,[inc,self,'B',fly]],'Les6; is 6th!; ','K2212','16R',15,10).
inventory('16R405:M0001811','16R4356:0010005',num_kernels(quarter),avi,date(20,05,2017),time(21,56,46),v00266).
```

need D10:

```
inventory('12R305:W0008918','12R3727:0040606',num_kernels(whole),avi,date(26,05,2014),time(06,13,58),v00145).

W23/D10 4th bc
'12R305:W0008918','12R3727:0040606',v00145
```

** weather (v. wet so far, <2017-05-21 Sun>)

** strategy and tables

In 17r, need to do serious bulking and push recessives along. Relatively

few bcs in dominants, and those that are are mostly stalled or rebuilds.

#+tblname: planning

type	num rows	modified
elite	10	10
selves	8	8
Les15	15	15
lls1*	5	5
other recess	7	7
bulks for flying	52	52
dominants	18	18
gardner	6.5	6.5
balint-kurti	16	16
total non-inbred		137.5
inbred	44	44
total rows		181.5

#+TBLFM: @11$3=vsum(@2..@10)::@13$3=vsum(@11..@12)

#+NAME:inbreds

	S	W	M	B	total rows by plntg
over-planting factors	1.5	1.5	2	1.5	
1st plntg lines	13	17	14	20	
2nd plntg lines	20	18	25	20	
3rd plntg lines	5	3	7	0	
1st plntg ears	39	51	42	60	
2nd plntg ears	60	54	75	17	
3rd plntg ears	15	9	21	0	
1st plntg rows, inc losses	2.925	3.825	4.2	4.5	
2nd plntg rows, inc losses	4.5	4.05	7.5	1.275	
3rd plntg rows, inc losses	1.125	0.675	2.1	0.	
true 1st plntg rows + some 2nd plntg rows	4.275	5.04	6.45	4.8825	
rows by inbreds, all plantings	9.9	9.765	16.05	6.1575	
rounded 1st plntg rows	5	5	7	5	22
rounded 2nd plntg rows	5	4	8	2	19
rounded 3rd plntg rows	2	2	2	0	6
total rounded rows	12	11	17	7	47

#+TBLFM: $2=@-3*3::@6$2=@-3*3::@6$3=@-3*3::@6$4=@-3*3::@6$5=@-3*3::@7$2=@-3*3::@7$3=@-3*3::@7$4=@-3*3::@7$5=@-3*3::@8$2=@-3*3::@8$

```
3=@-3*3::@8$4=@-3*3::@8$5=@-3*3::@9$2=(@-3/20)*@2$2::@9$3=(@-3/20)*@2$3::@9$4=(@-3/20)*@2$4::@9$5=(@-3/20)*@2$5::@10$2=(@-3/20)*@2
$2::@10$3=(@-3/20)*@2$3::@10$4=(@-3/20)*@2$4::@10$5=(@-3/20)*@2$5::@11$2=(@-3/20)*@2$2::@11$3=(@-3/20)*@2$3::@11$4=(@-3/20)*@2$4::
@11$5=(@-3/20)*@2$5::@12$2=@-3+0.3*@-2::@12$3=@-3+0.3*@-2::@12$4=@-3+0.3*@-2::@12$5=@-3+0.3*@-2::@13$2=vsum(@10..@12)::@13$3=vsum(
@10..@12)::@13$4=vsum(@10..@12)::@13$5=vsum(@10..@12)::@14$6=vsum($2..$5)::@15$6=vsum($2..$5)::@16$6=vsum($2..$5)::@17$2=vsum(@14.
.@16)::@17$3=vsum(@14..@16)::@17$4=vsum(@14..@16)::@17$5=vsum(@14..@16)::@17$6=vsum(@14..@16)
```

```
#+NAME:stakes
|--------------------------------------+-------|
| full rows elite                      |    10 |
| full rows inbreds                    |    47 |
| full rows mutants                    |    67 |
| half rows mutants                    |    76 |
| half rows peter’s and candi’s corn   |   45. |
| total stakes                         |  245. |
| total rows needed, exclusive of border | 184.5 |
#+TBLFM: @3$2=52+15::@4$2=(8+12+18)*2::@5$2=(16+6.5)*2::@6$2=vsum(@1..@5)::@7$2=vsum(@1..@3)+vsum(@4..@5)/2
```

```
#+BEGIN_SRC count by planting
bash-3.2$ grep ’\],1,\[’ packing_plan.org | wc
     132    1187   16898
bash-3.2$ grep ’\],2,\[’ packing_plan.org | wc
     103     561   11729
bash-3.2$ grep ’\],3,\[’ packing_plan.org | wc
       6       6     462
#+END_SRC
```

```
** crop notes

#+begin_rmk had to avoid sw and se corners <2017-05-30 Tue>
We had 20 good rows running east-west, parallel to the long axis of the
field.  The southwest and southeast corners are quite wet and so were
avoided; row 1 (r00001) begins on the southwest side.  Skipped n rows in
the southwest corner (planted in sweet corn) and m rows in the southeast
corner (planted in Amish 1 roasting corn from 16r).
#+end_rmk


#+begin_rmk sweet corn jammed in <2017-05-30 Tue>
Weather and soil perfect.  Not much room: had to jam a single border row on
the north and south sides into the track of the tractor tread, right next
to the grass.  These had 1--5 seeds/hole; began in northwest corner and
switched to multiple seeds/hole midway in the second range.  On the east
and west sides, we have about half a range of sweet corn, again right up to
```

```
the grass.
#+end_rmk



#+begin_rmk elite, sweet, and fun corn <2017-05-30 Tue>
elite:  First planting.

sweet:  First planting.

fun:  Amish roasting corn, selfed from plant 1, 16r.  Second planting.
#+end_rmk



#+begin_rmk accidental double-planting of r00016 <2017-05-30 Tue>
:avi: accidentally overplanted row 16 (r00016) with elite corn at 4 or 6
inch spacing.  We'll see if we can't distinguish that from W23 and hoe it
out.
#+end_rmk


* DONE %%%%%%%%%%%%%%%%%%%%%%%%%%%%%% elite line, 10 rows %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

#+begin_src prolog  :tangle yes

packing_plan(1,1,[elite],1,[fly],'','','16R',60,20).
packing_plan(2,1,[elite],1,[fly],'','','16R',60,20).
packing_plan(3,1,[elite],1,[fly],'','','16R',60,20).
packing_plan(4,1,[elite],1,[fly],'','','16R',60,20).
packing_plan(5,1,[elite],1,[fly],'','','16R',60,20).
packing_plan(6,1,[elite],1,[fly],'','','16R',40,20).
packing_plan(7,1,[elite],1,[fly],'','','16R',40,20).
packing_plan(8,1,[elite],1,[fly],'','','16R',40,20).
packing_plan(9,1,[elite],1,[fly],'','','16R',40,20).
packing_plan(10,1,[elite],1,[fly],'','','16R',40,20).

#+end_src
```

```
* DONE %%%%%%%%%%%%%%%%%%%%%%%%%%%%%% inbreds, 47 rows %%%%%%%%%%%%%%%%%%%%%%%%

** DONE 1st planting

#+begin_src prolog :tangle yes

packing_plan(11,1,['09R201:S0xxxxxx,09R201:S0xxxxxx'],1,[inbred],'','',20,20).
packing_plan(12,1,['09R201:S0xxxxxx,09R201:S0xxxxxx'],1,[inbred],'','',20,20).
packing_plan(13,1,['09R201:S0xxxxxx,09R201:S0xxxxxx'],1,[inbred],'','',20,20).
packing_plan(14,1,['09R201:S0xxxxxx,09R201:S0xxxxxx'],1,[inbred],'','',20,20).
packing_plan(15,1,['09R201:S0xxxxxx,09R201:S0xxxxxx'],1,[inbred],'','',20,20).


packing_plan(16,1,['09R301:W0xxxxxx,09R301:W0xxxxxx'],1,[inbred],'','',20,20).
packing_plan(17,1,['09R301:W0xxxxxx,09R301:W0xxxxxx'],1,[inbred],'','',20,20).
packing_plan(18,1,['09R301:W0xxxxxx,09R301:W0xxxxxx'],1,[inbred],'','',20,20).
packing_plan(19,1,['09R301:W0xxxxxx,09R301:W0xxxxxx'],1,[inbred],'','',20,20).
packing_plan(20,1,['09R301:W0xxxxxx,09R301:W0xxxxxx'],1,[inbred],'','',20,20).


packing_plan(21,1,['09R401:M0xxxxxx,09R401:M0xxxxxx'],1,[inbred],'','',20,20).
packing_plan(22,1,['09R401:M0xxxxxx,09R401:M0xxxxxx'],1,[inbred],'','',20,20).
packing_plan(23,1,['09R401:M0xxxxxx,09R401:M0xxxxxx'],1,[inbred],'','',20,20).
packing_plan(24,1,['09R401:M0xxxxxx,09R401:M0xxxxxx'],1,[inbred],'','',20,20).
packing_plan(25,1,['09R401:M0xxxxxx,09R401:M0xxxxxx'],1,[inbred],'','',20,20).
packing_plan(26,1,['09R401:M0xxxxxx,09R401:M0xxxxxx'],1,[inbred],'','',20,20).
packing_plan(27,1,['09R401:M0xxxxxx,09R401:M0xxxxxx'],1,[inbred],'','',20,20).



packing_plan(28,1,['13R504:B0xxxxxx,13R504:B0xxxxxx'],1,[inbred],'','',20,20).
packing_plan(29,1,['13R504:B0xxxxxx,13R504:B0xxxxxx'],1,[inbred],'','',20,20).
packing_plan(30,1,['13R504:B0xxxxxx,13R504:B0xxxxxx'],1,[inbred],'','',20,20).
packing_plan(31,1,['13R504:B0xxxxxx,13R504:B0xxxxxx'],1,[inbred],'','',20,20).
packing_plan(32,1,['13R504:B0xxxxxx,13R504:B0xxxxxx'],1,[inbred],'','',20,20).



#+end_src
```

** DONE 2nd planting

#+begin_src prolog :tangle yes

```
packing_plan(33,1,['09R201:S0xxxxxx,09R201:S0xxxxxx'],2,[inbred],'','',20,20).
packing_plan(34,1,['09R201:S0xxxxxx,09R201:S0xxxxxx'],2,[inbred],'','',20,20).
packing_plan(35,1,['09R201:S0xxxxxx,09R201:S0xxxxxx'],2,[inbred],'','',20,20).
packing_plan(36,1,['09R201:S0xxxxxx,09R201:S0xxxxxx'],2,[inbred],'','',20,20).
packing_plan(37,1,['09R201:S0xxxxxx,09R201:S0xxxxxx'],2,[inbred],'','',20,20).


packing_plan(38,1,['09R301:W0xxxxxx,09R301:W0xxxxxx'],2,[inbred],'','',20,20).
packing_plan(39,1,['09R301:W0xxxxxx,09R301:W0xxxxxx'],2,[inbred],'','',20,20).
packing_plan(40,1,['09R301:W0xxxxxx,09R301:W0xxxxxx'],2,[inbred],'','',20,20).
packing_plan(41,1,['09R301:W0xxxxxx,09R301:W0xxxxxx'],2,[inbred],'','',20,20).


packing_plan(42,1,['09R401:M0xxxxxx,09R401:M0xxxxxx'],2,[inbred],'','',20,20).
packing_plan(43,1,['09R401:M0xxxxxx,09R401:M0xxxxxx'],2,[inbred],'','',20,20).
packing_plan(44,1,['09R401:M0xxxxxx,09R401:M0xxxxxx'],2,[inbred],'','',20,20).
packing_plan(45,1,['09R401:M0xxxxxx,09R401:M0xxxxxx'],2,[inbred],'','',20,20).
packing_plan(46,1,['09R401:M0xxxxxx,09R401:M0xxxxxx'],2,[inbred],'','',20,20).
packing_plan(47,1,['09R401:M0xxxxxx,09R401:M0xxxxxx'],2,[inbred],'','',20,20).
packing_plan(48,1,['09R401:M0xxxxxx,09R401:M0xxxxxx'],2,[inbred],'','',20,20).
packing_plan(49,1,['09R401:M0xxxxxx,09R401:M0xxxxxx'],2,[inbred],'','',20,20).



packing_plan(50,1,['13R504:B0xxxxxx,13R504:B0xxxxxx'],2,[inbred],'','',20,20).
packing_plan(51,1,['13R504:B0xxxxxx,13R504:B0xxxxxx'],2,[inbred],'','',20,20).
```

#+end_src

** DONE 3rd planting

#+begin_src prolog :tangle yes

```
packing_plan(52,1,['09R201:S0xxxxxx,09R201:S0xxxxxx'],3,[inbred],'','',20,20).
packing_plan(53,1,['09R201:S0xxxxxx,09R201:S0xxxxxx'],3,[inbred],'','',20,20).



packing_plan(54,1,['09R301:W0xxxxxx,09R301:W0xxxxxx'],3,[inbred],'','',20,20).
packing_plan(55,1,['09R301:W0xxxxxx,09R301:W0xxxxxx'],3,[inbred],'','',20,20).



packing_plan(56,1,['09R401:M0xxxxxx,09R401:M0xxxxxx'],3,[inbred],'','',20,20).
packing_plan(57,1,['09R401:M0xxxxxx,09R401:M0xxxxxx'],3,[inbred],'','',20,20).
```

#+end_src

```
* DONE %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%% mutants, 105 rows %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

** DONE %%%%%%%%%%%%%%%%%%%% bulks, Bs, selves, flying, 52 rows %%%%%%%%%%%%%

*** DONE Les2  4 rows

#+begin_src prolog :tangle yes

packing_plan(58,1,['16R405:M0003112','16R4222:0009405'],1,[inc,self,'B',fly],'is 6th!','K0202','17R',20,20).
packing_plan(59,1,['16R405:M0003112','16R4222:0009405'],2,[inc,self,'B',fly],'is 6th!','K0202','17R',20,20).


packing_plan(60,1,['16R405:M0001811','16R4356:0010005'],1,[inc,self,'B',fly],'is 6th!; phe 17.7 in 16r','K2212','17R',20,20).
packing_plan(61,1,['16R405:M0001811','16R4356:0010005'],2,[inc,self,'B',fly],'is 6th!; phe 17.7 in 16r','K2212','17R',20,20).

#+end_src


*** DONE Les4 18 rows

+ M14, K0302 doubles available; otherwise done for now

+ W23, K0303 done

+ Mo20W, K2106 done

#+begin_src prolog :tangle yes



packing_plan(62,1,['13R205:S0002205','13R4082:0005502'],1,[inc,self,fly],'is 6th!; additional bulking good','K0302','17R',20,20).
packing_plan(63,1,['13R205:S0002205','13R4082:0005502'],2,[inc,self,fly],'is 6th!; additional bulking good','K0302','17R',20,20).

packing_plan(64,1,['13R305:W0000702','13R4083:0005603'],1,[inc,self,fly],'is 6th!; no phe 17.7 16r, but appeared later; check osc;
 forbear male had great phenotype, smaller lesions on lower leaves than Mo20W on 9.1 in 12n; sheath lesions were more diagnostic',
'K0302','17R',20,20).
packing_plan(65,1,['13R305:W0000702','13R4083:0005603'],2,[inc,self,fly],'is 6th!; no phe 17.7 16r, but appeared later; check osc;
 forbear male had great phenotype, smaller lesions on lower leaves than Mo20W on 9.1 in 12n; sheath lesions were more diagnostic',
'K0302','17R',20,20).

packing_plan(66,1,['14R205:S0000215','14R4229:0009701'],1,[inc,self,'B',fly],'is 6th!','K0303','17R',20,20).
packing_plan(67,1,['14R205:S0000215','14R4229:0009701'],2,[inc,self,'B',fly],'is 6th!','K0303','17R',20,20).

packing_plan(68,1,['12R405:M0000310','12R3587:0023110'],1,[inc,self,fly],'is 6th!; phenotype 9.1 in 12n; phe 17.7 in 16r','K0303',
'17R',20,20).
```

```
packing_plan(69,1,['12R405:M0000310','12R3587:0023110'],2,[inc,self,fly],'is 6th!; phenotype 9.1 in 12n; phe 17.7 in 16r','K0303',
'17R',20,20).

packing_plan(70,1,['12N205:S0036705','12N3948:0017506'],1,[inc,self,'B',fly],'is 6th!; check osc; male had good phenotype 9.1 in 1
2n; phe 17.7 in 16r','K2101','17R',20,20).
packing_plan(71,1,['12N205:S0036705','12N3948:0017506'],2,[inc,self,'B',fly],'is 6th!; check osc; male had good phenotype 9.1 in 1
2n; phe 17.7 in 16r','K2101','17R',20,20).

packing_plan(72,1,['12N305:W0038310','12N3949:0017706'],1,[inc,self,fly],'is 6th!; in 12n, male had weak phenotype 9.1, better by
13.1, but good phenotype by 15.1; no phe 17.7 in 16r','K2101','17R',20,20).
packing_plan(73,1,['12N305:W0038310','12N3949:0017706'],2,[inc,self,fly],'is 6th!; in 12n, male had weak phenotype 9.1, better by
13.1, but good phenotype by 15.1; no phe 17.7 in 16r','K2101','17R',20,20).

packing_plan(74,1,['11N405:M0032808','11N3419:0010704'],1,[self,inc,fly],'is 6th!; addtnl bulking good; check osc; male had good p
henotype 9.1 in 12n; phe 17.7 in 16r','K2101','17R',20,20).
packing_plan(75,1,['11N405:M0032808','11N3419:0010704'],2,[self,inc,fly],'is 6th!; addtnl bulking good; check osc; male had good p
henotype 9.1 in 12n; phe 17.7 in 16r','K2101','17R',20,20).

packing_plan(76,1,['15R305:W0000711','15R4352:0010904'],1,[inc,self,'B',fly],'is 6th; no phe 17.7 in 16r; repeat of 16r','K2106','
17R',20,20).
packing_plan(77,1,['14R305:W0000803','14R3958:0010412'],2,[inc,self,'B',fly],'is 6th; no phe 17.7 in 16r; repeat of 16r','K2106','
17R',20,20).

packing_plan(78,1,['15R405:M0001101','15R4353:0011002'],1,[inc,self,'B',fly],'is 6th; phe 17.7 in 16r','K2106','17R',20,20).
packing_plan(79,1,['15R405:M0001101','15R4353:0011002'],2,[inc,self,'B',fly],'is 6th; phe 17.7 in 16r','K2106','17R',20,20).



#+end_src



*** DONE Les7  4 rows

#+begin_src prolog :tangle yes

packing_plan(80,1,['16R305:W0001610','16R4279:0010511'],1,[inc,self,'B',fly],'is 6th!; fungus; no phe 15r; phe 17.7 in 16r; crummy
 tassels in 14r','K2312','17R',20,20).
packing_plan(81,1,['16R305:W0001610','16R4279:0010511'],2,[inc,self,'B',fly],'is 6th!; fungus; no phe 15r; phe 17.7 in 16r; crummy
 tassels in 14r','K2312','17R',20,20).

packing_plan(82,1,['16R205:S0001202','16R4390:0010609'],1,[inc,self,'B',fly],'is 6th!; no phe 15r; phe 17.7 in 16r','K2312','17R',
20,20).
packing_plan(83,1,['16R205:S0001202','16R4390:0010609'],2,[inc,self,'B',fly],'is 6th!; no phe 15r; phe 17.7 in 16r','K2312','17R',
20,20).


#+end_src
```

*** DONE Les8 8 rows

+ Mo20W, K0604 done

+ W23, K0604 done; doubles available

#+begin_src prolog :tangle yes

```
packing_plan(84,1,['14R405:M0001105','14R4283:0021405'],1,[inc,self,'B',fly],'is 6th!; may be fast; phe 17.7 in 16r','K0604','17R'
,20,20).
packing_plan(85,1,['14R405:M0001105','14R4283:0021405'],2,[inc,self,'B',fly],'is 6th!; may be fast; phe 17.7 in 16r','K0604','17R'
,20,20).

packing_plan(86,1,['14R205:S0000105','14R4284:0021512'],1,[inc,self,'B',fly],'is 6th!','K2405','17R',20,20).
packing_plan(87,1,['14R205:S0000105','14R4284:0021512'],2,[inc,self,'B',fly],'is 6th!','K2405','17R',20,20).

packing_plan(88,1,['12N305:W0039207','12N3614:0024110'],1,[inc,self,fly],'is 6th!; poor yield on 13r selves','K2405','17R',20,20).
packing_plan(89,1,['12N305:W0039207','12N3614:0024110'],2,[inc,self,fly],'is 6th!; poor yield on 13r selves','K2405','17R',20,20).

packing_plan(90,1,['14R405:M0001103','14R4285:0021603'],1,[inc,self,'B',fly],'is 6th!','K2405','17R',20,20).
packing_plan(91,1,['14R405:M0001103','14R4285:0021603'],2,[inc,self,'B',fly],'is 6th!','K2405','17R',20,20).
```

#+end_src

*** DONE Les9 2 rows

#+begin_src prolog :tangle yes

```
packing_plan(92,1,['16R205:S0001210','16R4391:0010710'],1,[inc,self,'B',fly],'is 6th!; phe 17.7 in 16r','K2506','17R',20,20).
packing_plan(93,1,['16R205:S0001210','16R4391:0010710'],2,[inc,self,'B',fly],'is 6th!; phe 17.7 in 16r','K2506','17R',20,20).
```

#+end_src

*** DONE Les11 4 rows

#+begin_src prolog :tangle yes

```
packing_plan(94,1,['16R405:M0003214','16R4510:0011204'],1,[inc,self,'B',fly],'is 6th!; male had phe 17.7 in 16r; pick one of three
','K0901','17R',20,20).
packing_plan(95,1,['16R405:M0003214','16R4510:0011204'],2,[inc,self,'B',fly],'is 6th!; male had phe 17.7 in 16r; pick one of three
','K0901','17R',20,20).

packing_plan(96,1,['16R405:M0003206','16R4511:0011304'],1,[inc,self,'B',fly],'is 6th!; male had phe 17.7 in 16r; alternate for 16R
405:M0003214; pick one of three','K0901','17R',20,20).
packing_plan(97,1,['16R405:M0003206','16R4511:0011304'],2,[inc,self,'B',fly],'is 6th!; male had phe 17.7 in 16r; alternate for 16R
405:M0003214; pick one of three','K0901','17R',20,20).
```

#+end_src

*** DONE Les17 4 rows

+ the more lesions and the more rapid the lesion development, the poorer
  the ears, up to no ears

#+begin_src prolog :tangle yes

```
packing_plan(98,1,['16R405:M0003312','16R4027:0012203'],1,[inc,self,'B',fly],'is 6th!; alternate for 12R405:M0011105; 3/5 mutants,
 also segregating for semi-dwarfism','K3007','17R',20,20).
packing_plan(99,1,['16R405:M0003312','16R4027:0012203'],2,[inc,self,'B',fly],'is 6th!; alternate for 12R405:M0011105; 3/5 mutants,
 also segregating for semi-dwarfism','K3007','17R',20,20).

packing_plan(100,1,['16R405:M0000808','16R4298:0012403'],1,[inc,self,'B',fly],'is 6th!; phe 17.7 in 16r; preferred in 16r; alterna
te for 12R405:M0011105','K3007','17R',20,20).
packing_plan(101,1,['16R405:M0000808','16R4298:0012403'],2,[inc,self,'B',fly],'is 6th!; phe 17.7 in 16r; preferred in 16r; alterna
te for 12R405:M0011105','K3007','17R',20,20).
```

#+end_src

*** DONE Les18 2 rows

+ M14, K1411 has a lot of crummy tassel

#+begin_src prolog :tangle yes

```
packing_plan(102,1,['16R405:M0002208','16R4300:0012606'],1,[inc,self,'B',fly],'is 6th!; male had phe 17.7 in 16r; tendency to crum
my tassel','K1411','17R',20,20).
packing_plan(103,1,['16R405:M0002208','16R4300:0012606'],2,[inc,self,'B',fly],'is 6th!; male had phe 17.7 in 16r; tendency to crum
my tassel','K1411','17R',20,20).
```

#+end_src

*** DONE Les21-N1442 4 rows

#+begin_src prolog :tangle yes

```
packing_plan(104,1,['15R205:S0000101,15R4183:0017105'],1,[inc,self,'B',fly],'is 6th!; no phe 17.7 in 16r but appeared later in 2/8
 plants','K7205','17R',20,20).
packing_plan(105,1,['15R205:S0000101,15R4183:0017105'],2,[inc,self,'B',fly],'is 6th!; no phe 17.7 in 16r but appeared later in 2/8
 plants','K7205','17R',20,20).

packing_plan(106,1,['15R305:W0000701,15R4363:0017408'],1,[inc,self,'B',fly],'is 6th!; phe 17.7 in 16r; preferred','K7205','17R',20
,20).
packing_plan(107,1,['15R305:W0000701,15R4363:0017408'],2,[inc,self,'B',fly],'is 6th!; phe 17.7 in 16r; preferred','K7205','17R',20
,20).
```

#+end_src

*** DONE Les*-mi1   2 rows

#+begin_src prolog :tangle yes

```
packing_plan(108,1,['16R205:S0001303','16R4537:0014611'],1,[inc,self,'B',fly],'is 6th!; male had phe 17.7 in 16r','K12205','17R',2
0,20).
packing_plan(109,1,['16R205:S0001303','16R4537:0014611'],2,[inc,self,'B',fly],'is 6th!; male had phe 17.7 in 16r','K12205','17R',2
0,20).
```

#+end_src

** DONE %%%%%%%%%%%%%%%%%%%% Les15, 15 rows %%%%%%%%%%%%%%%%%%%%

*** DONE Les15 15 rows

OK, let’s try again. Full rows and overplanting.

#+begin_src prolog :tangle yes

```
packing_plan(110,1,['09R201:S0056209','09R1416:0025907'],1,['S'],'is 1st; forebear','K6711','17R',40,20).
packing_plan(111,1,['09R201:S0040305','09R1416:0025907'],1,['S'],'is 1st; sib of 09R201:S0056209','K6711','17R',40,20).
packing_plan(112,1,['10R205:S0002302','10R2252:0031702'],1,['S'],'is 2nd; forbear of 12R205:S0008815 and 12R205:S0009109','K6711',
'17R',40,20).
packing_plan(113,1,['12R205:S0008815','12R3270:0014314'],1,['S'],'is 3rd','K6711','17R',40,20).
packing_plan(114,1,['12R205:S0009109','12R3270:0014314'],1,['S'],'is 3rd','K6711','17R',40,20).

packing_plan(115,1,['14R305:W0000703','14R4137:0004215'],1,['W'],'is 5th','K6711','17R',40,20).
packing_plan(116,1,['14R305:W0000716','14R4137:0004215'],1,['W'],'is 5th','K6711','17R',40,20).
packing_plan(117,1,['14R305:W0000705','14R4137:0004215'],1,['W'],'is 5th','K6711','17R',40,20).

packing_plan(118,1,['09R401:M0040909','09R1416:0025906'],1,['M'],'is 1st; forebear','K6711','17R',40,20).
packing_plan(119,1,['10R405:M0000715','10R2254:0032002'],1,['M'],'is 2nd; forebear of 12R405:M0009302 and 12R405:M0011707','K6711'
,'17R',40,20).
packing_plan(120,1,['10R405:M0001010','10R2254:0032002'],1,['M'],'is 2nd; sib of 10R405:M0000715','K6711','17R',40,20).
packing_plan(121,1,['10R405:M0006607','10R2254:0032003'],1,['M'],'is 2nd; sib of 10R405:M0000715','K6711','17R',40,20).
packing_plan(122,1,['10R405:M0006610','10R2254:0032010'],1,['M'],'is 2nd; sib of 10R405:M0000715','K6711','17R',40,20).
packing_plan(123,1,['12R405:M0009302','12R3486:0014708'],1,['M'],'is 3rd; has repeatedly failed','K6711','17R',40,20).
packing_plan(124,1,['12R405:M0011707','12R3486:0014708'],1,['M'],'is 3rd; sib of 12R405:M0009302','K6711','17R',40,20).
```

#+end_src

** DONE %%%%%%%%%%%%%%%%%%%% selves, 8 rows %%%%%%%%%%%%%%%%%%%%

*** DONE les23 13 half-rows

+ sent the first non-contaminant-possibilities to guri with some others

#+begin_src prolog :tangle yes

```
packing_plan(125,1,['16R305:W0001401','16R4467:0004309'],1,[self],'is 6th!; male had phe 17.7 16r','K1802','17R',15,10).
packing_plan(126,1,['16R405:M0001705','16R4468:0004411'],1,[self],'is 5th; male had phe 17.7 16r','K1802','17R',15,10).

packing_plan(127,1,['16R305:W0001408','16R4470:0004603'],1,[self],'is 5th; male had phe 17.7 16r','K1804','17R',15,10).
packing_plan(128,1,['16R405:M0001707','16R4471:0004707'],1,[self],'is 4th; male had phe 17.7 16r','K1804','17R',15,10).

packing_plan(129,1,['16R205:S0001309','16R4472:0004811'],1,[self],'is 4th; male had phe 17.7 16r','K3514','17R',15,10).
packing_plan(130,1,['16R305:W0001511','16R4473:0004903'],1,[self],'is 5th; male had phe 17.7 16r','K3514','17R',15,10).
packing_plan(131,1,['16R405:M0003103','16R4474:0005001'],1,[self],'is 4th; male had phe 17.7 16r','K3514','17R',20,10).

packing_plan(132,1,['16R305:W0000714','16R4475:0005105'],1,[self],'is 4th; male had phe 17.7 16r','K16306','17R',15,10).
packing_plan(133,1,['16R405:M0003107','16R4476:0005202'],1,[self],'is 4th; male had phe 17.7 16r','K16306','17R',15,10).

packing_plan(134,1,['16R305:W0001612','16R4477:0005303'],1,[self],'is 1st in W; dominant mutant in row? contaminant?; phe 17.7 16r
','K16306','17R',15,10).
packing_plan(135,1,['16R305:W0001618','16R4477:0005311'],1,[self],'is 1st in W; dominant mutant in row? contaminant?; phe 17.7 16r
','K16306','17R',15,10).
packing_plan(136,1,['16R405:M0001704','16R4477:0005305'],1,[self],'is 1st in M; dominant mutant in row? contaminant?; phe 17.7 16r
','K16306','17R',15,10).
packing_plan(137,1,['16R405:M0001708','16R4477:0005303'],1,[self],'is 1st in M; dominant mutant in row? contaminant?; phe 17.7 16r
','K16306','17R',15,10).
```

#+end_src

*** DONE les3 3 half-rows

% may like cooler weather, lots of light, very late developping, must cross
% blindly, favored lower leaves in 12r. Phenotype variable, from small
% necroses to brown necroses on midrib to yellow-green splotchies on lower
% or upper leaves. Functionally recessive, possibly malleable phenotype.
%
% In 12n, a strong necrotic phenotype developed well before flowering.

#+begin_src prolog :tangle yes

```
packing_plan(138,1,['16R205:S0001112','16R4478:0005404'],1,[self],'is 3rd; male had phe 17.7 16r; sometimes late developping pheno
type; yellow-green splotchies, earlier in the process of lesion formation; very different from K11903; favored lower leaves in 12r
; cross all plants blindly; may be functionally recessive; excellent light-brown necrotic lesion phenotype 8.1 in 12n, well before
 flowering; evidence of small, slight oscillations','K11906','17R',15,10).
packing_plan(139,1,['16R305:W0000702','16R4481:0005706'],1,[self],'is 3rd; male had phe 17.7 16r and preferred then; sometimes lat
e developping phenotype; yellow-green splotchies, earlier in the process of lesion formation; very different from K11903; favored
lower leaves in 12r; cross all plants blindly; may be functionally recessive; excellent light-brown necrotic lesion phenotype 8.1
in 12n, well before flowering; evidence of small, slight oscillations','K11906','17R',15,10).
packing_plan(140,1,['16R405:M0002211','16R4482:0005809'],1,[self],'is 3rd; male had phe 17.7 16r and preferred then; sometimes lat
e developping phenotype; yellow-green splotchies, earlier in the process of lesion formation; very different from K11903; favored
lower leaves in 12r; cross all plants blindly; may be functionally recessive; excellent light-brown necrotic lesion phenotype 8.1
in 12n, well before flowering; evidence of small, slight oscillations','K11906','17R',15,10).
```

#+end_src

```
** DONE %%%%%%%%%%%%% recessives to back-cross, 12 rows  %%%%%%%%%%%%%%%%%%

+ 1st planting as usual; these are fairly far along, so may not be
  completely fast.

*** DONE lls1 2 half-rows

#+begin_src prolog  :tangle yes
packing_plan(141,1,['16R4460:0003602','16R4460:0003602'],1,[check,'S'],'is 3rd selfed','K1702','17R',15,10).
packing_plan(142,1,['16R4460:0003602','16R4460:0003602'],1,[check,'S'],'is 3rd selfed','K1702','17R',15,10).
#+end_src



*** DONE lls1 121D K3402 4 half-rows

#+begin_src prolog :tangle yes

packing_plan(143,1,['16R4461:0003713','16R4461:0003713'],1,[check,'W'],'is 3rd selfed','K3402','17R',15,10).
packing_plan(144,1,['16R4461:0003713','16R4461:0003713'],1,[check,'W'],'is 3rd selfed','K3402','17R',15,10).
packing_plan(145,1,['16R4462:0003808','16R4462:0003808'],2,[check,'M'],'is 2nd selfed','K3402','17R',15,10).
packing_plan(146,1,['16R4462:0003808','16R4462:0003808'],2,[check,'M'],'is 2nd selfed','K3402','17R',15,10).


#+end_src



*** DONE lls1121D K5302 4 half-rows

#+begin_src prolog :tangle yes
packing_plan(147,1,['16R4463:0003902','16R4463:0003902'],1,[check,'W'],'is 3rd selfed','K5302','17R',15,10).
packing_plan(148,1,['16R4463:0003902','16R4463:0003902'],1,[check,'W'],'is 3rd selfed','K5302','17R',15,10).
packing_plan(149,1,['16R4464:0004010','16R4464:0004010'],1,[check,'M'],'is 3rd selfed','K5302','17R',15,10).
packing_plan(150,1,['16R4464:0004010','16R4464:0004010'],1,[check,'M'],'is 3rd selfed','K5302','17R',15,10).
#+end_src
```

*** DONE les5 6 half-rows

```
#+begin_src prolog :tangle yes
packing_plan(151,1,['16R4484:0006001','16R4484:0006001'],2,[check,'S'],'is 1st selfed in S; recessive','K68503','17R',15,10).
packing_plan(152,1,['16R4485:0006103','16R4485:0006103'],2,[check,'W'],'is 1st selfed in W; recessive','K68503','17R',15,10).
packing_plan(153,1,['16R4486:0006204','16R4486:0006204'],2,[check,'M'],'is 1st selfed in M; recessive','K68503','17R',15,10).

packing_plan(154,1,['16R4487:0006309','16R4487:0006309'],2,[check,'S'],'is 1st selfed in S; recessive','K68507','17R',15,10).
packing_plan(155,1,['16R4488:0006409','16R4488:0006409'],2,[check,'W'],'is 1st selfed in W; recessive','K68507','17R',15,10).
packing_plan(156,1,['16R4489:0006503','16R4489:0006503'],2,[check,'M'],'is 1st selfed in M; recessive','K68507','17R',15,10).

#+end_src
```

*** DONE les23; with awareness of Guri's and Ross's result, that Mo20W/les23 has no phenotype 8 half-rows

```
#+begin_src prolog :tangle yes
packing_plan(157,1,['16R4465:0004111','16R4465:0004111'],1,[check,'S'],'is 3rd selfed','K1802','17R',15,10).
packing_plan(158,1,['16R4466:0004206','16R4466:0004206'],1,[check,'S'],'is 3rd selfed; check sex organs; 15r had excellent tassel
and no ear','K16306','17R',15,10).

packing_plan(159,1,['15R4370:0006703','15R4370:0006703'],1,[check,'S'],'is 3rd selfed; no phe 17.7 16r; repeat of 16r','K1804','17
R',15,10).
packing_plan(160,1,['14R205:S0002812','14R4236:0017206'],1,[check,'S'],'is 3rd selfed; no phe 17.7 16r; repeat of 16r','K1804','17
R',15,10).

packing_plan(161,1,['15R4372:0007201','15R4372:0007201'],1,[check,'M'],'is 3rd selfed; phe 17.7 16r; repeat of 16r for insurance',
'K3514','17R',15,10).

packing_plan(162,1,['15R305:W0000908','15R4373:0007409'],2,[check,'S','W','M'],'dominant mutant in row? contaminant?; phe 17.7 16r
; repeat of 16r','K16306','17R',15,10).

#+end_src
```

** DONE %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%% primary and secondary dominants bcs, 18 rows %%%%%%%%%%%%%%%%%%%%%%%%

These guys are either very early or very late in bcs.

*** DONE Les1 1 half-row

+ abandoned K0104 for now

#+begin_src prolog :tangle yes
packing_plan(163,1,['16R405:M0002212','16R4496:0009201'],1,['M'],'is 3rd; branch rebuild; phe 17.7 in 16r','K0106','17R',15,10).

#+end_src

*** DONE Les2 3 half-rows

#+begin_src prolog :tangle yes

packing_plan(164,1,['14R305:W0000704','14R4220:0006819'],1,['W'],'is 4th; repeat of 15r and 16r; phe 17.7 in 16r','K0202','17R',15
,10).

packing_plan(165,1,['16R305:W0001406','16R4498:0009505'],1,['W'],'is 3rd; branch rebuild; male had phe 17.7 in 16r','K0207','17R',
15,10).
packing_plan(166,1,['16R305:W0002911','16R4499:0009614'],1,['W'],'is 3rd; branch rebuild; later phe in 15r; male had phe 17.7 in 1
6r','K0207','17R',15,10).

#+end_src

*** DONE Les2-N845A 3 half-rows

#+begin_src prolog :tangle yes
packing_plan(167,1,['13R405:M0002605','13R4148:0019101'],1,['M'],'is 5th; repeat 15r and 16r; 13R405:M0002601 had only 3 plants in
 16r and no phe 17.7','K5515','17R',30,10).

packing_plan(168,1,['16R205:S0002616','16R4445:0009807'],1,['S'],'is 5th; male had phe 17.7 in 16r','K5525','17R',15,10).
packing_plan(169,1,['16R305:W0001411','16R4393:0009910'],1,['W'],'is 3rd; may be chlorotic; one mutant in 15r; phe 17.7 in 16r','K
5525','17R',15,10).

#+end_src

*** DONE Les7 4 half-rows

+ Mo20W, K0509 done for now

+ M14, K0509 doubles available; otherwise done for now

+ W23, K0509 appears stalled

#+begin_src prolog :tangle yes
packing_plan(170,1,['10R305:W0001502','10R1035:0021906'],1,['W'],'is 3rd; no phe 15r; repeat 16r; no phe 17.7 in 16r but several m
utants appeared later; ancestor of 13R305:W0000803; stalled branch?; pick one of two','K0509','17R',15,10).
packing_plan(171,1,['10R305:W0001511','10R1035:0021903'],1,['W'],'is 3rd; no phe 15r; repeat 16r; no phe 17.7 in 16r but appeared
later; alternate for 11N305:W0039501; stalled branch?; pick one of two','K0509','17R',15,10).
packing_plan(172,1,['11N305:W0039501','11N3192:0013810'],1,['W'],'is 4th; no phe 15r; repeat 16r; no phe 17.7 in 16r but appeared
 later; forebear of 13R305:W000080; stalled branch?; pick one of two','K0509','17R',15,10).
packing_plan(173,1,['16R305:W0001607','16R3607:0010403'],1,['W'],'is 5th; no phe 15r; no phe 17.7 in 16r but appeared later; alter
nate for 11N305:W0039501; stalled branch?; pick one of two','K0509','17R',15,10).

#+end_src

*** DONE Les9 1 half-row

+ Mo20W, K0707 small ears

+ W23, K0707 self problematic

#+begin_src prolog :tangle yes
packing_plan(174,1,['16R405:M0002210','16R4392:0010801'],1,['M'],'is 5th; phe 17.7 in 16r; forebears had poor germination in 15r a
nd 16r; overplant','K2506','17R',30,10).
#+end_src

*** DONE Les10 3 half-rows

+ M14, K0801 consistently had crappy tassels and no ears in 2nd; 1st low; rebuild from S

+ chronic ear issues in K2606

```
#+begin_src prolog :tangle yes
packing_plan(175,1,['16R205:S0002711','16R4507:0010903'],1,['S'],'is 5th; phe 17.7 in 16r; fast; forebear had no ears in 12r; male
 parent had bad tassel in 14r','K2606','17R',15,10).
packing_plan(176,1,['16R405:M0003314','16R4508:0011011'],1,['M'],'is 3rd; phe 17.7 in 16r; may be fast; alternate branch for 15R40
5:M0003909','K2606','17R',15,10).
packing_plan(177,1,['15R405:M0003909','15R4398:0013904'],1,['M'],'is 3rd; phe 17.7 in 16r; repeat 16r; may be fast; tassel looked
sterile in 15r, but this is the progeny','K2606','17R',15,10).

#+end_src
```

*** DONE Les12 4 half-rows

+ Mo20W/{K1001, K2711} had been stalled

```
#+begin_src prolog :tangle yes

packing_plan(178,1,['16R205:S0000613','16R4513:0011501'],1,['S'],'is 4th; clear phe 15r; phe 17.7 in 16r; alternate branch for 12R
205:S0002216; given metabolic effects, cut out most wild-types','K1001','17R',20,10).
packing_plan(179,1,['16R205:S0000602','16R4007:0011605'],1,['S'],'is 5th; finally got this far; clear phe 15r; phe 17.7 in 16r; a
few ok tassels in 14r; check osc; missed in 12n; phenotype poor; given metabolic effects, cut out most wild-types','K1001','17R',2
0,10).

packing_plan(180,1,['12R205:S0002217','12R3454:0028708'],1,['S'],'is 3rd; repeat of 13r, 14r, 15r; phe 17.7 in 16r; good ears and
tassels on some plants in 14r; modifier jump in 12n; given metabolic effects, cut out most wild-types','K2711','17R',20,10).
packing_plan(181,1,['16R205:S0000604','16R4011:0011703'],1,['S'],'is 4th; check phenotype against 12R205:S0002217 carefully; phe 1
7.7 in 16r; good ears and tassels on some plants in 14r; modifier jump in 12n; given metabolic effects, cut out most wild-types','
K2711','17R',20,10).
#+end_src
```

*** DONE Les13 2 half-rows

```
#+begin_src prolog :tangle yes
packing_plan(182,1,['16R305:W0001502','16R4514:0011806'],1,['W','M'],'is 4th','K1109','17R',15,10).

packing_plan(183,1,['16R405:M0002103','16R4516:0012007'],1,['M'],'is 3rd; male had phe 17.7 in 16r','K2805','17R',15,10).
#+end_src
```

*** DONE Les19 1 half-row

```
#+begin_src prolog :tangle yes
packing_plan(184,1,['15R405:M0001310','15R4401:0014902'],1,['M'],'is 5th; repeat 16r; phe 17.7 in 16r; overplant','K3206','17R',30
,10).
#+end_src
```

*** DONE Les20-N2457 13 half-rows

+ a mess; kernel counts often low, good phenotype but no tassels

+ steps not planted out have cl < 50

+ do in Hawai'i?; but let's see how the 15r corn works out

+ overplant all of these

#+begin_src prolog :tangle yes

```
packing_plan(185,1,['15R205:S0002306','15R4403:0015507'],1,['S'],'is 3rd; repeat 16r; overplant; no phe 17.7 in 16r; only 2 plants
','K7110','17R',30,10).

packing_plan(186,1,['16R305:W0003012','16R4526:0013504'],1,['W'],'is 3rd; male had phe 17.7 in 16r','K7110','17R',30,10).
packing_plan(187,1,['16R305:W0003016','16R4528:0013704'],1,['W'],'is 4th; male had phe 17.7 in 16r; preferred in 16r','K7110','17R
',30,10).
packing_plan(188,1,['15R305:W0002904','15R3654:0016401'],1,['W'],'is 5th; repeat 16r; overplant; no phe 17.7 in 16r, 0/12 plants',
'K7110','17R',30,10).

packing_plan(189,1,['16R405:M0003204','16R4531:0014008'],1,['M'],'is 4th; no phe 17.7 in 16r but appeared later in 4/8 plants','K7
110','17R',30,10).
packing_plan(190,1,['16R405:M0002004','16R4532:0014101'],1,['M'],'is 5th; no phe 17.7 in 16r but appeared later in 5/6 plants','K7
110','17R',30,10).

packing_plan(191,1,['16R205:S0002715','16R4519:0012802'],2,['S','M'],'is 2nd; recreated from martys; alternate; phe 17.7 in 16r','
K68602','17R',30,10).
packing_plan(192,1,['16R305:W0003006','16R4520:0012908'],2,['W','M'],'is 2nd; recreated from martys; alternate; phe 17.7 in 16r','
K68602','17R',30,10).

packing_plan(193,1,['15R0686:0000000','15R0686:0000000'],2,['M'],'is 1st; forebear of 15R405:M0003411, which had no phe 17.7 16r',
'K68602','17R',30,10).

packing_plan(194,1,['15R205:S0002411','15R0686:0015307'],2,['S'],'is 1st; repeat 16r; recreated from martys; phe 17.7 in 16r','K68
607','17R',30,10).

packing_plan(195,1,['16R305:W0001416','16R4523:0013207'],2,['W'],'is 2nd; recreated from martys; phe 17.7 in 16r','K68607','17R',3
0,10).

packing_plan(196,1,['15R405:M0001601','15R0686:0015307'],2,['M'],'is 1st; repeat 16r; recreated from martys; phe 17.7 in 16r','K68
607','17R',30,10).
```

#+end_src

*** DONE Les21 1 half-row

```
#+begin_src prolog :tangle yes
packing_plan(197,1,['14R405:M0001610','14R4048:0026106'],1,['M'],'is 4th; repeat 15r and 16r; phe 17.7 in 16r; overplant; check os
c; stems may be brittle','K3311','17R',30,10).
#+end_src
```

* DONE %%%%%%%%%%%%%%%%%%%%%%%%%%%%%% Balint-Kurti new mutants, 16 rows %%%%%%%%%%%%%%%%

```
#+begin_src prolog :tangle yes

packing_plan(198,1,['15R205:S0002104','15R0667:0021107'],2,['S','W'],'is 1st','K66707','17R',15,10).
packing_plan(199,1,['15R405:M0003601','15R0667:0021107'],2,['W','M'],'is 1st','K66707','17R',15,10).

packing_plan(200,1,['15R205:S0002310','15R0668:0021201'],2,['S','W'],'is 1st','K66801','17R',15,10).
packing_plan(201,1,['15R405:M0003501','15R0668:0021201'],2,['W','M'],'is 1st','K66801','17R',15,10).

packing_plan(202,1,['15R205:S0002601','15R0669:0021307'],2,['S'],'is 1st','K66907','17R',15,10).
packing_plan(203,1,['15R305:W0002804','15R0669:0021307'],2,['W'],'is 1st','K66907','17R',15,10).
packing_plan(204,1,['15R405:M0003407','15R0669:0021307'],2,['M'],'is 1st','K66907','17R',15,10).

packing_plan(205,1,['15R205:S0002511','15R0669:0021311'],2,['S','W','M'],'is 1st','K66911','17R',15,10).

packing_plan(206,1,['15R205:S0002403','15R0670:0021405'],2,['S'],'is 1st','K67005','17R',15,10).
packing_plan(207,1,['15R305:W0002905','15R0670:0021405'],2,['W'],'is 1st','K67005','17R',15,10).
packing_plan(208,1,['15R405:M0003408','15R0670:0021405'],2,['M'],'is 1st','K67005','17R',15,10).

packing_plan(209,1,['15R205:S0002404','15R0671:0021502'],2,['S','W'],'is 1st','K67102','17R',15,10).
packing_plan(210,1,['15R405:M0003403','15R0671:0021502'],2,['W','M'],'is 1st','K67102','17R',15,10).

packing_plan(211,1,['15R205:S0002408','15R0672:0021608'],2,['S','W'],'is 1st','K67208','17R',15,10).
```

```
packing_plan(212,1,['15R405:M0003504','15R0672:0021608'],2,['W','M'],'is 1st','K67208','17R',15,10).

packing_plan(213,1,['15R205:S0002206','15R0673:0021705'],2,['S','W'],'is 1st','K67305','17R',15,10).
packing_plan(214,1,['15R405:M0003618','15R0673:0021705'],2,['W','M'],'is 1st','K67305','17R',15,10).

packing_plan(215,1,['15R405:M0003717','15R0674:0021810'],2,['S','W','M'],'is 1st','K67410','17R',15,10).
packing_plan(216,1,['15R405:M0003502','15R0675:0021910'],2,['S','W','M'],'is 1st','K67510','17R',15,10).

packing_plan(217,1,['15R205:S0002309','15R0676:0022002'],2,['S','W'],'is 1st','K67602','17R',15,10).
packing_plan(218,1,['15R405:M0003303','15R0676:0022002'],2,['W','M'],'is 1st','K67602','17R',15,10).

packing_plan(219,1,['15R205:S0002401','15R0677:0022110'],2,['S','W'],'is 1st','K67710','17R',15,10).
packing_plan(220,1,['15R405:M0003611','15R0677:0022110'],2,['W','M'],'is 1st','K67710','17R',15,10).

packing_plan(221,1,['15R405:M0003711','15R0678:0022212'],2,['S','W','M'],'is 1st','K67812','17R',15,10).

packing_plan(222,1,['15R205:S0002208','15R0679:0022304'],2,['S','W'],'is 1st','K67904','17R',15,10).
packing_plan(223,1,['15R405:M0003807','15R0679:0022304'],2,['W','M'],'is 1st','K67904','17R',15,10).

packing_plan(224,1,['15R205:S0002410','15R0680:0022411'],2,['S','W'],'is 1st','K68011','17R',15,10).
packing_plan(225,1,['15R405:M0003613','15R0680:0022411'],2,['W','M'],'is 1st','K68011','17R',15,10).

packing_plan(226,1,['15R405:M0001213','15R0681:0022505'],2,['S','W','M'],'is 1st','K68105','17R',15,10).

packing_plan(227,1,['15R405:M0001305','15R0682:0022603'],2,['S','W','M'],'is 1st','K68203','17R',15,10).

packing_plan(228,1,['15R405:M0001618','15R0683:0022701'],2,['S','W','M'],'is 1st','K68301','17R',15,10).

packing_plan(229,1,['15R405:M0001904','15R0684:0022802'],2,['S','W','M'],'is 1st','K68402','17R',15,10).
#+end_src
```

* DONE %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%% Gardner doubled haploids, 6.5 rows %%%%%%%%%%%%%%%%

#+begin_src prolog :tangle yes

```
packing_plan(230,1,['16R205:S0002604','16R0687:0014708'],2,[check,'S','W','M'],'is 1st; may need to self; Gardner landrace doubled
 haploid; lesions','K68708','17R',15,10).
packing_plan(231,1,['16R0688:0014805','16R0688:0014805'],2,['S','W','M'],'Gardner landrace doubled haploid; lesions','K68805','17R
',15,10).
packing_plan(232,1,['16R0689:0014903','16R0689:0014903'],2,['S','W','M'],'Gardner landrace doubled haploid; lesions','K68903','17R
',15,10).
packing_plan(233,1,['16R0690:0000000','16R0690:0000000'],2,['S','W','M'],'repeat 16r; Gardner landrace doubled haploid; lesions','
K69000','17R',15,10).
packing_plan(234,1,['16R205:S0000603','16R0691:0015106'],2,[check,'S','M'],'is 1st; may need to self; Gardner landrace doubled hap
loid; lesions','K69106','17R',15,10).
packing_plan(235,1,['16R305:W0000711','16R0691:0015106'],2,[check,'W','M'],'is 1st; may need to self; Gardner landrace doubled hap
loid; lesions','K69106','17R',15,10).
packing_plan(236,1,['16R205:S0002607','16R0693:0015303'],2,[check,'S','W','M'],'is 1st may need to self;; Gardner landrace doubled
 haploid; lesions','K69300','17R',15,10).
packing_plan(237,1,['16R0694:0000000','16R0694:0000000'],2,['S','W','M'],'repeat 16r; Gardner landrace doubled haploid; lesions','
K69400','17R',15,10).
packing_plan(238,1,['16R205:S0001111','16R0698:0015802'],2,[check,'S','W','M'],'is 1st; may need to self; Gardner landrace doubled
 haploid; lesions','K69800','17R',15,10).
packing_plan(239,1,['16R0700:0000000','16R0700:0000000'],2,['S','W','M'],'repeat 16r; Gardner landrace doubled haploid; lesions','
K70000','17R',15,10).
packing_plan(240,1,['16R0701:0000000','16R0701:0000000'],2,['S','W','M'],'repeat 16r; Gardner landrace doubled haploid; lesions; p
oor germination; repeat','K70100','17R',15,10).
```

#+end_src

* CNLLD %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%% demo corn %%%%%%%%%%%%%%%%%%%%%%%%

Field at Bradford, 17' rows, 6 rows 30 cl each. Strong lesions, plant late.

I am pretty sure the big metabolic effect 9short, spindly) for W23 is with Les7, as we
planted out all the steps in 13r and sampled. So use this demo to confirm
that.

pri dom	Les7	K0509	S	6	y	y	y		
pri dom	Les7	K0509	W	5					stalled 13r? pedigree steps planted 16

r |
pri dom	Les7	K0509	M	6	y	y	y	some?
pri dom	Les7	K2312	S	5					stalled 14r? no phe 15r
pri dom	Les7	K2312	W	6					deferred in 16r
pri dom	Les7	K2312	M	6					deferred in 16r

#+begin_src prolog :tangle no

#+end_src

table for Susan and Sherry

row	numerical genotype	symbolic genotype	single seed tracking number	commments
991	14R4091:0011801 x 14R4091:0011806	Mo20W/Les7 6th bc bulked	K0509	
992	13R305:W0000803 x 13R3974:0021303	W23/Les7 5th bc	K0509	no phe 15r
993	14R3975:0011905 x 14R3975:0011906	M14/Les7 6th bc bulked	K0509	
994	14R205:S0000109 x 14R4280:0021111	Mo20W/Les7 5th bc	K2312	no phe 15r
995	15R305:W0000709 x 15R4360:0012605	W23/Les7 6th bc	K2312	
996	14R405:M0001211 x 14R4282:0021308	M14/Les7 6th bc	K2312	