LYGUS IN THE WESTERN LANDSCAPE – UTAH

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1) WHAT ARE THE GENERAL LANDSCAPE AND WATER SOURCE, WINTER TEMPERATURES, RAINFALL? Rangeland, forage crops, grain, and corn with scattered vegetables and in some areas fruit with a mixture of rain-fed and irrigated land and usual freezing temperatures in winter after snowfall. The species that predominates is *Lygus hesperus* with some other lygus species prominent on weeds (*Lygus elisus*). In Nevada, there is often a more pronounced mixture of *L. hesperus* and *L. elisus* or even sometimes fields dominated by *L. elisus.* In Idaho, Washington, Oregon and California the main lygus we have encountered is *L. hesperus* and one has to be careful about assuming lygus bugs on weeds are *Lygus hesperus.* The old "color" cues that you once heard cited do not work. We use Kelton's key to the adults. Please refer to Figure 1 for distribution according to samples submitted to USU Diagnostic Lab.

2) WHERE DO LYGUS OVERWINTER AND IN WHAT STAGES? Overwintering lygus can be found in multiple stages under flat mullein leaves but adult overwintering is most common. They probably exist in other weed duff and protected areas as well but we have not surveyed those.

3) HOW MANY GENERATIONS OCCUR? Probably 2 or 3 in the north, more in the south would be my guess. Alan Roe of the USU Plant Diagnostic Lab has provided a graphic on the next page (Figure 2).

4) WHAT ARE THE KEY CROPS AND PLANTS IMPORTANT IN LYGUS DEVELOPMENT? Alfalfa hay and weeds are probably the key crops or plants (Table 1).

5) WHAT ROLE AND IMPORTANCE DO NON-ECONOMICALLY SUSCEPTIBLE HOSTS PLAY IN LYGUS BUILDUP? Non-economic hosts are probably important in lygus buildup. We have not studied it.

6) HOW DOES THE POPULATION NORMALLY BUILD IN YOUR AREA? By in-field buildup in alfalfa without major migratory flights but this deserves more study.

7) WHAT ARE THE SUSCEPTIBLE CROPS? Alfalfa seed has declined drastically in Utah but that is the major target. Lygus bugs are not considered to be significant pests of alfalfa hay. Fruit and berries draw some damage.

The major advantage of Utah is it is a state where economic pressure from lygus bugs is relatively low because of the crops grown but populations do build up. We rarely see major abundance of nymphs, not like alfalfa seed fields in the northwest. Alfalfa hay is a major source during the season and it is mostly culturally cut to control alfalfa weevils; very few alfalfa fields are sprayed now. Thus Utah populations are a good source of indexing values for insecticide resistance studies. Despite some skepticism from some segments of industry, the contact

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bioassays of *Lygus hesperus* in zip lock bags or glass vials works extremely well and is capable of documenting progress toward resistance. There is usually a very broad window of apparent efficacy in relation to LC50 values; in other words, LC50 values will rise as growers still perceive good enough control to continue spraying. The best way, therefore, to interpret what a bioassay value means is to know the field-measured efficacy of a spray. For bifenthrin, we have found susceptible *Lygus hesperus* populations will have a plastic bag LC50 of about 40 ug/bag but farmers will begin to notice shortened efficacy time by 200 ug/bag. LC50s have risen with continued spraying past 600 ug/bag. We have quite a lot of data on *Lygus hesperus* LC50s in some areas of the west and northwest.

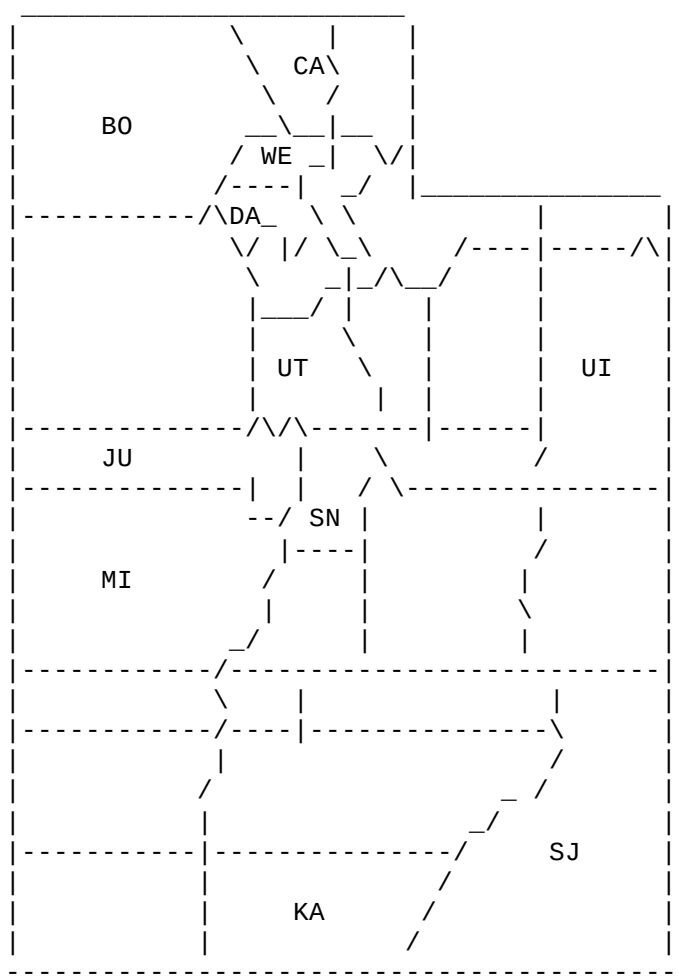
For those interested in other crops, similar contact bioassays are also effective. Onion thrips are one example of another insect we have worked upon.

The presence or efficacy of biological control agents has not been much studied in Utah.

Figure 1. Distribution summary for Lygus from samples that have been submitted to the Utah State Diagnostic Lab. (Editor's notes: Data provided by Alan Roe. Data are representative of only those samples submitted (n=40) and is not intended to be a definitive distribution of lygus in Utah.)

Common Name: GENUS LYGUS
Scientific Name: LYGUS SPP.
Family: MIRIDAE
No. of Records: 40

GEOGRAPHIC DISTRIBUTION



Code	County	Count
BE	Beaver	
BO	Box Elder	5
CA	Cache	18
CB	Carbon	
DA	Davis	2
DG	Daggett	
DU	Duchesne	
EM	Emery	
GA	Garfield	
GR	Grand	
IR	Iron	
JU	Juab	2
KA	Kane	1
MI	Millard	3
MO	Morgan	
PI	Piute	
RI	Rich	
SA	Salt Lake	
SJ	San Juan	3
SN	Sanpete	2
SE	Sevier	
SU	Summit	
TO	Tooele	
UI	Uintah	1
UT	Utah	2
WA	Wasatch	
WS	Washington	
WY	Wayne	
WE	Weber	1

Figure 2. Chronological distribution of lygus from samples submitted (n=40) to USU Diagnostic Lab. Data from Alan Roe.

CHRONOLOGICAL DISTRIBUTION

	J	F	M	A	M	J	J	A	S	O	N	D
Eggs												
Nymphs/Larvae			1			1	1					
Pupae												
Adults		5	16	6	1			2				
Damage/Exuvia					11			1				
Unspecified				1	2	1	2	11	2	1	1	
All Combined		5	16	6	11	2	12	2	21	3	2	1

Table 1. Hosts identified from 40 samples submitted to USU Diagnostic Lab. Data from Alan Roe.

HOST/SITUATION SUMMARY

ALFALFA 17
ALFALFA, SEED 2
APPLE 1
APRICOT 1
BEAN,SNAP 1
HOME GARDEN 1
PEAR 1
POTATO 3
WHEAT 1

ELM 1
HOME YARD 1
MULLEIN,COMMON 10