



UNIVERSITY  
OF ARIZONA  
AGRICULTURAL  
EXPERIMENT STATION  
**TIMELY HINTS FOR FARMERS**

No. 119

September 15, 1916

**NEW LEGUMES FOR GREEN MANURING**

While alfalfa and sour clover, as pointed out in Timely Hint No. 36, are very successful for green manuring under our climatic conditions, yet they have the disadvantages that sour clover is not relished as a forage, and that alfalfa is not suited for use as an annual green manuring plant. From time to time during recent years certain additional legumes have been found that are adapted to the summer and to the winter seasons and that have the advantage, in most cases, of making good forage.

*Winter growing legumes.*—While common garden peas are not suitable for a green manuring crop on a large scale, Canada field peas and the nearly related Colorado stock pea make excellent growth in the irrigated valleys of southern Arizona. These varieties should be planted in October or November, make good progress until the cold weather of December and January, and then resume vigorous growth during the spring. Chick peas (Mexican garbanzos) also grow during the winter season of the year. The following table shows yields of hay produced by these three varieties of peas in the Colorado River Valley, near Yuma:

	Yield per acre		Minimum temperatures, 1914-1915
	1914	1915	
Colorado Stock peas.....	1740 lb.	8080 lb	Dec. 13—26° F.
Canada Field peas... ..	2800 lb.	9100 lb	Dec. 15—22° F.
Chick peas.....	.....	7780 lb.	Jan. 6—26° F. Jan. 18—24° F.

These yields at their best are quite satisfactory, about equaling sour clover, which may afford 3 to 4 tons of dry matter per acre under southern Arizona conditions.

Another winter growing legume of considerable promise is purple vetch (*Vicia atropurpurea*) which, under the mild climatic conditions of southern California, has made a quite satisfactory showing. It is stated, however, that purple vetch is seriously damaged by temperatures below 20° F. It probably will succeed in the Colorado and Salt River Valleys.

An advantage of the cultures mentioned above, over sour clover, is, in the case of Canada and Colorado stock peas, that the forage is edible and may be used to feed miscellaneous live stock. Chick pea hay is also relished by stock although it is believed in certain districts that it is unwholesome. We have fed it, however, without injurious effects, to horses and cattle. Vetch, like sour clover, is not relished as hay.

*Summer growing legumes*—Summer growing annual legumes well adapted to a hot and arid climate are cow peas, tepary beans, and peanuts. Of the various varieties of cow peas probably the Whippoorwill is best adapted to this region. This produces a heavy tonnage of green forage which, though coarse, in this dry climate makes excellent hay, leaving the stubble to be plowed under to enrich the soil. Cow peas are quite drought resistant and well adapted to dry-farming operations.

Tepary beans also afford a heavy yield of green material under irrigation and make a more satisfactory showing under dry-farming than any other leguminous crop. They also make excellent hay, relished by all classes of live stock. Yields of tepary hay of 3720 pounds, 5075 pounds, and 6800 pounds per acre under irrigation have been obtained by us.

Peanuts, likewise, grow throughout the summer season, affording a considerable quantity of green substance and a yield of nuts which, as in the case of the heavy yielding Spanish variety, may be foraged by hogs.

These quick growing annuals, in the case of peas and vetch, afford a means of restoring a soil which has been exhausted by summer growing crops, especially the sorghums; while summer growing legumes, such as cow peas, teparies and peanuts, afford a means of enriching soils upon which has been grown a crop of wheat or barley. At the same time, in most cases they will materially contribute to the forage supply of the farm.

In Southwestern orchard practice leguminous green manuring crops plowed under afford the cheapest and most satisfactory means of adding needed organic matter and nitrogen to the soil. Barnyard manure is also excellent for the purpose but is no longer available in sufficient quantities; while commercial fertilizers are not only costly, but, in the case of citrus trees, for instance, do not give as good results as are afforded by leguminous green manuring crops.

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