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EXPERIMENT CTATION THE



AT RALEIGH, NORTH CAROLINA.

Crop Conditions-Rust In Small Grain. Experiment Station Report_Co-Operative Dairying_Trucking In the South_Questions and Replies.

The Experim-nt Station Bulletin.

The standing offer is made to send the bulletins of the station to all in the state who really desire to receive them. They are specially prepared to be serviceable as far as possible to the practical farmer. Thousands of farmers have already taken advantage of this offer. Unless you really want to be benefited please do not apply for them as we have none to throw away. If you desire to read them, write on postal card to Dr. H. B. Battle, Director, Raleigh, N. C.

Crop Conditions During September, 1895

The following is extracted from the weekly weather crop bulletin of the state weather service for Oct. 7, 1895, and gives the crop conditions at the close of the season:

The month of September was favorable to about the fifteenth; then, however, a severe drought set in, with probably the most remarkable hot spell ever recorded in this State for September. The maximum temperature remained above 90 degrees (except in the mountain sections) for nine consecutive days, the highest being 103 degrees in the Central District and exceeding 100 at many points in the Eastern. These conditions forced a rapid opening of cotton; small bolls and leaves were shed considerably, and the top crop to a great extent was prematurely ripened. The corn crop was, however, beyond the reach of damage. All the smaller crops, late potatoes, peas, peanuts, etc., suffered from drought. The conditions were very favorable for saving hay and fodder, of which large quantities have been stored. But fall lowing and planting have been completely interrupted by the dryness. At the end of September, streams and wells were getting very low. The drought continued during the first week of October, and farming operations are at a standstill except picking cotton, which has progressed rapidly, and gathering of corn Cotton has opened so rapidly that the crop will probably be gathered early. The harvest of rice is about completed. On the first of October frost occurred over a considerable portion of the State, which did some damage to tobacco yet uncut.

Pucinnia coronata, has for its alternate hosts the buck thorns, Rhamus lanceolota, frangula and other species. Pucinnia Rubigo-vera has for its alternate hosts the common and disagreeable weeds Viper's buglass, Echium vulgare, and Gromwell, Lithospermum arvense.

Knowing that to complete their cycle of growth these fungi require a host widely different from grasses and grains if we could extirpate all such host plants within a half mile or so of a grain or grass field we could effectually stop their further development. Yet we can not hope to exterminate these casts in one or two seasons even by completely destroying their alternate host-plant. Once the "Red rust" or aredo spores of the Coronata and Rubigo-vera species are produced on grains or cereals, these in our warm climate where growing glumaceous plants are found in a green condition all the year round may go on reproducing themselves indefinitely as well as producing at the same time the succeeding black form, the telento spores, which are then able to stock the ground or infect any chance alternate host plant which negligence or accident may al low to remain.

As these spores are extremely small and light and are produced in almost incredible numbers the few alternate host plants which may survive even the most watchful care may supply æcidio spores enough to infect hundreds of acres of grass or grain.

Common and destructive as the rust fungi are in the United States, in Australia they are still more so and several conventions of scientific men and practical farmers have been held there to devise methods for repressing the pests but so far without much success. Practical experience recommends the following measures:

1. Use dry or well drained land for smail grains.

2. Plant only hard stemmed, hairy, early maturing varieties of wheat.

3. Plant those varieties which in your locality resist rust best-the socalled "Rust proof" wheat and oats. 4. Sow thinly to give plenty of sun-

light and air to the plants. 5. Plow the land deeply as soon as the crop is harvested to destroy volun-

teer growth or burn the stubble and straw on the field. The latter plan is best where grain is grown on a large scale.

n. Carefully search out and destroy all alternate host plants found within one half mile of a wheat or oat field.

full mailing lists of the station, but is supplied to those in North Carolina who apply for them. To others on receipt of 25 cents.

Co-Operative Dairying.

The station has been ready for some time to assist farmers in undertaking some co-operative dairying.

Up to date for over five months one farmer has furnished some milk to the Station Dairy at the Experiment Farm. As a part of the practice of a special student, this small milk supply was examined five days and daily tests made of the per cent of fat. This milk was separated by itself and the skim milk was tested each day. Then the crea a which had been kept by itself w.s churned and the butter milk was tested. Subtracting the amount of fat formed in skim milk and butter milk from what had been found in the milk for five days, left what was incorporated into the butter or lost in the mechanical operations. The total amount thus found calculated as butter at 85 per cent fat indicated a yield of . 205 pound less than was actually made for sale.

This milk was paid for by the Babcock test, or rather the fat was paid for, and the skimmed milk was returned to the producer. At 25 cents per pound for butter fat an average of \$1.37 per 100 pounds was realized for the milk. This is 11 cents nearly per gallon. At the dairy, if we count the butter worth at wholesale price of 25 cents per pound, there were 4 cents per pound realized for the making and selling. When the selling price was 27 cents per pound there was realized \$0.597 on ten pounds and seven ounces of butter. This would be 5.7 cents per poun i which, if it could be carried out on a sufficiently large scale, would pay well. It would also pay well to produce milk at 11 cents per gallon for the butter fat contained in it, and have the skim milk returned to feed pigs, calves and chickens, or possibly lamos -F. E. Emery, Agriculturist, North Carolina Experiment Station.

Trucking In the South.

A bulletiu (No. 112) has been issued by the North Carolina Agricultural Experiment Station, describing the methods deemed advisable for raising dealers, among whom the following trucking crops especially in North Carolina These crops are asparagus, beans, beets, early and late cabbages, cauliflower and lettuce, cucumbers, celery, egg plant, muskmeions and watermelous, onions, peas, Irish and sweet potatoes, radishes, spinach, tomatoes and turnips. There are 68 pages devoted to this bulletin and the various subjects are treated in a thoroughly practical way. An appendix of 14 pages describes the various formulas suggested for the several crops, what ingredients to use to give the desired percentages for the different crops, and how to mix them. This balletin is sent free to parties in North Carolina requesting it, and to others on receipt of 10 cents in postage.

There are varieties of stock beets called mangolds, or sometimes mangels which grow mostly above the ground which are comparatively free from soil holding roots. These are more easily grown and ...arvested though they do not contain so much sugar.

Variety of Trees for Peach Orchard.

"I wish to set a peach orchard so that I will have three or four trees bearing all the time from June to October. Will you please advise me as to what varieties to get ?- J. T. H., Burlington, N. C.

[Answered by W. F. Massey, Horticul-turist, N. C. Experimental Station.]

I would suggest the following varieties: Alexander, Mountain Rose, Early York, Mary's Choice, Reeve's Favorite, Old Mixon Free, Elberta, Crawford's Latt. Beer's Smock, Wilkins' Heath, Salway, and Chairs' Choice.

Varieties of Trees For Apple Orchard,

I wish to set out an apple orchard. Would like to have a variety, say two or three to ripe... each month, from June to October. Could you offer any suggestions as to those best suited to this (Richmond) county ?- J. Mc. P., Laurel Hill, N. C.

[Answered by W. F. Massey, Horticul-turist, N. C. Experiment Station.]

I think that you will find the followlist a good one for your section:

Early Apples-Red Astrakan, Carolina Red June, Yellow Transparent, Early Harvest. Fall Apples, Magnum, Bonum, Maryland Maiden's Blush, Fallawalder. Winter Apples-Winesap, Limber Twig, Golden Russett, Buckingham, Grimes' Golden, Junaluskee, Nickajack, York Imperial.

Co-Operative Creamery Association.

Too little attention has been given to this important form of enterprise in this State. It is to be hoped more interest will be taken in the near future and that the men who look into this industry will take hold of it as they do of corn or tobacco growing and make it a success.

Whoever wishes to investigate cooperative dairying can have the active help of this station. He should price apparatus and buildings of several are old and reliable manufacturers of dairy supplies:

The Only One To Stand the Test.

Rev. William Copp, whose father was a physician for over fifty years, in New Jersey, and who himself spent many years preparing for the practice of medicine, but subse. quently entered the ministry of the M. E. Church, writes: "I am glad

to testify that I have had analyzed all the sarsaparilla preparations known in the trade, but

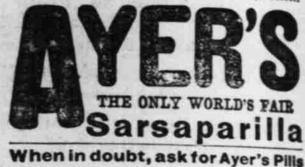
AYER'S

Writ

Thi

is the only one of them that I could recommend as a blood-purifier. I have

given away hundreds of bottles of it, as I consider it the safest as well as the best to be had."-WM. COPP. Pastor M. E. Church, Jackson, Minn,



BARS THE "COOCHEE-COOCHEE."

Georgia Legislature Down on Midway Dancers.

An Atlanta special states that the Georgia Legislature, which convened there last week, passed a bill in the lower house forbiding the performance of "coochee choocee," or wigglewaggle dances, after the fashion set on the Midway at the World's Fair. The bill was first introduced two years ago by a young member of the The Vermont Farm Machine Co., Legislature who had just returned Bellows Falls, Vermont; Hosely & from the big show. It was then the since the advent of the Turkish dancers on the Midway of the Atlanta Erposition, the lawmakers, professing to be shocked, agreed to put the measure through. Only seven voted against it, and it is thought that it will go through the Senate and receive the signature of the Governor.

The following table shows the depart ure in temperature and precipitation for each month during the season:

, Month.	Departure Departure in Temp. in Precip.	
January	-1.9+1.89	
	12.21.83	
	+0.1+9.37	
	.+0.8+3.51	13
	-2.8+0.63	ł
		į,
	2.60.19	
	. +0.5	1
	. +4.54.00	

Rust in Small Grain.

The rust disease of wheat oats, barley and grasses generally, are caused by one or more of three species of microscopic fungi. The most commoon rust on grasses in this State is Pucinnia graminis, generally called "Mildew" on grasses, and "Black Rust" on cereals. Our most common rust fungus on small grain is Pucinnia Rubigovera, usually called "Red Rust." Pucinnia coronata, also called Red rust is the third. The last species is more common on oats than on any other and might be properly called oat rust. All three species belong to the class of parastie fungi called Heteracismal, that is to say, tungi which at different times in the cycle of their growth live as parasites upon two or more hosts. Grass mildew, Pucinnia graminis, begins its spring growth by attacking the young leaves of the Barberry, Mahonia, and possibly other shrubs. Upon these it produces small redish patches with elevated margins called "cluster cups." These cups are filled with the red Accidio spores of the fungus which wafted by the air or carried by insects, birds or other agent fall upon the leaves of grasses or cereal grains and there penetrate the leaves through the breathing spores. Once within the leaf the spore sends forth a net work of root-like tissue called Mycelum. Through this, it sucks up the sap that should go to nourish the seeds of the plant and these latter shrivel Very soon the fungus bursts through the epidermis of the leaf and appears upon the outside as the well known, elongated, narrow red spots, popularly called "Red rust." These are the uredo spores of the fungus and are able to reproduce themselves upon the same or other grass like plants and subsequently they produce the last form in the life cycle, the black, teleuto spores which form the narrow black lines seen on the leaves and stems of cereals and grasses in late summer and fall. These black spores are the winter or resting spores and will under favorable circumstances retain their vitality in the straw or even on the ground for a year or more. Eventually some of them alight upon the leaves of their alternate host and there produce again the cluster cups and Aecidio spores and these the uredo and teleuto spores. The three fungi which attack grasses and cereals do not all have the same alternate host. Pucinnia graminis has for alternate hosts, the barberry. mahonia and probably other shrubs.

7. Rotate crops so that some crop other than grasses or cereals will come on the land each two years out of three.

8. The use of fungicidal sprays on growing grain has not so far given satisfactory results. The best fungicides for this class of plants are: 1. Simple solution of Iron Sulphate. 2. Copper sucrate. Directions:-Apply in the finest possible spray as soon as the grain begins to flower-repeat every ten days until grain is in the dough. Then harvest it. For formulas for preparing these fungicides see bulletin No. 84 of this Station-Formulas 1 and 3 page 7 -Gerald McCarthy, N. C. Experiment Station.

Advanced Monthly Summary of Meteorological Reports for North Caro-

lins, September, 1895

The North Carolina State Weather Service, issues the following advanced summary of the weather for September, 1895, as compared with corresponding month of previous years:

TEMPERATURE .- The mean temperature for the month was 742 degrees, which is 4.0 degrees above the normal. The highest monthly mean was 784 at Newbern; lowest monthly mean 62.6 at Linville. The highest temperature was 104 on the 22d and 231, at Tarboro; lowest 32 on the 30th, at Blowing Rock and Highlands. The warmest Septem ber during past twenty-two years was in 1881, with mean 749 degrees, the next warmest is September, 1895. The coldest September was in 1875; mean 67.0 degrees.

PRECIPITATION. - Average for the month 1.25 inches, which is 3.40 inches below the normal. The greate-t amount was at Hatteras; least amount 0.05 at Kitty Hawk. The wettest September occurred in 1877. with an average of 10.13 inches. This September of 1895 was the dryest on record for past twenty-two years.

WIND.-Prevailing direction, South. west. The normal direction as deducted from many years observations is northeast. Average hourly velocity, 6.5 miles. Highest velocity, 48 miles an hour from the Northeast on the 30th at Kitty Hawk.

MISCELLANEOUS. - Thunderstorms occurred at various places on the 1st, 5th, 6th, 8th, 9th, 13th, 16th, 17th, 18th, 19th. Lunar halos on the 2d, Solar halos on 2d and 3d. Meteor observed at Settle on 22d. Frosts appeared in the western portion of the State on the 29th and 30th.

The North Carolina Agricultural Experiment Station During 1894

The above is a title of a work issued by the station. In connection with the volume, "North Carolina Weather During 1894," it includes all the finished work done by the station during 1894. The volume contains 605 pages, and a full table of contents and index make it easy to refer to any part of the subject matter. An interesting portion of the report gives the several benefits the station has been to the farmers of North Carolina. There are recorded 140 of these, and a more detailed summary might easily multiply them to a considerable degree. The report includes all the bulletins issued during 1894, from Nos 94 to 110 inclusive. With the full index, any subject treated in these bulletins can readily be found. The general subjects embraced in addition are the operations of the Fertilizer Control Station and the State Weather Service, which are integral parts of the Experiment Station. Each of these is described in detail. The above report is not sent to the

Questions and Replies.

The Station will be glad to extend its usefulness by answering as far as pos-sible questions on agricultural topics sent by any one in North Carolina who' may desire to ask for information. Address all questions to the North Carolina Agricultural Experiment Station, Raleigh, N. C. Replies will be written as early as possible by the member of the Station staff most competent to do so, and when, of general interest, they will also appear in these columns. The Station desires in this way to enlarge its sphere of usefulness and render immediate assistance to practical farmers.

Onions for Market.

Which is the best onion to grow for market in this section?-J. S. D. V., Brinkland, Bladen Co., N. C. [Answered by W. F. Massey, Horticul-

turist N. C. Experiment Station. It depends upon how you propose to sell your onions. If you wish an outon to sell early as a green bunch onion, I would advise you to plant in October sets of the Early Pearl, or of the white potato onion. If your object is to grow a mature crop of onions, that will keep for late sales, then I would sow in February seed of the Southport White Giobe, or the Opal (red). Or you may, if you have some glass sashes, sow seed of the Prizetaker in a frame under glass, in January, and transplant the young plants in March and get a crop of extra sized onions. But this variety must be sold as soon as ripe for they will not keep. The big yellow onions now seen at the stores are of this va-

The Hart quin Bag.

riety.

Can you give remedy for the cabbage beetle that is destroying my cabbages and turnips?-J. R. G., Durham, N. C.

[Answered by Gerald McCarthy, Entomologist.]

The insect you complain of is the Fenopin or Harlequin Bug, now becoming the worst pest of the cabbage family every where throughout the South. This pest seems proof against all available poisons. Hand picking is the only practical remedy for this insect. Use a shallow pan with a handle. About one-iourth fill this with water and on the water pour a nim of kerosene oil one-fourth inch thick. Place the pan under or at side of the plants and shake or jar the plants; the bugs will easily drop into it and be killed by the oil. Be careful that the oil does not spatter on the plants as it will barn them.

Stoddard, Rutland, Vermont; The subject of ridicule and derision, but Creamery Mfg. Co., Chicago, Ills; The De Laval Separator Co., 74 Cortlandt St., New York City; Cornish, Curtis & Green, Ft. Atkinson, Wisconsin.

In general every local association should build its own bouse, if it can not more cheaply adapt some, convenient building until it gets cows and milk enough to do a good profitable business.

It is well within bounds to assure any body of creamery promotors in North Carolina that they can start a creamery on a scale large enough to handle all the milk which can be brought to the factory, for from \$1000,-00 to \$1500.00.

The sooner some neat little plants can be established, the better provided they can be supplied with milk with which to operate. Canvas your neighborhood and get pledges to deliver a given amount of milk daily and make your business to correspond with what you can get pledged. Do not estimate beyond gallons delivered, and remember to caution your farmer neighbors not to count over 350 gallons of milk per cow per year, each gallon to weigh 8# pounds.

> F. E. EMERY, Agriculturist, N. C. Experiment Station.

Germetuer Is the Best.

Mr. C. P. McLain, Acworth, Ga., says: 'Several years ago my wife suffered from attacks of bilious colic and indigestion. She used different medicines and tried several doctors, but all without permanent benefit. She used Royal Germetuer some years ago, and it has given her more relief than all else. and she recommends it to the afflicted." Write to The Atlanta Chemical Co., Atlanta, Ga., for 48 page book giving full intormation, free. New package, large bottles, 108 doses, \$1. For sale by O. M. Royster.

First Gold Mining on Record Was in North Carolina.

Prof. David T. Day, the famous mineral expert and Chief of Division of Mining Statistics and Technology of the United States Geological Survey, in a letter to the New York World, published Sunday before last, speaks in the highest terms of the mineral exhibit of North Carolina at the Atlanta Exposition. According to Prof. Day the first mining on record in this country was that of the Indians in this State, who mined for mica. The first white mining is also credited to North Carolina, this being for gold.

You Can Believe

The testimonials published in behalf of Hood's Sarsaparilla. They are written by honest people, who have actu-ally found in their own experiece that Hood's Sarsaparilla purifies the blood, creates an appetite, strengthens, the system and absolutely and permanently cures all diseases caused by impure or deficient blood.

Hood's Pills for the liver and bowels act promptly, easily and effectively.

Rights of Missionaries.

The New York Sun says: "The mormon missionaries have as much right to propagate the religion of Mormonism in the State of North Carolina as the Presbyterian missionaries in China have to propagate the religion of Prebyterianism there. We should like to know the difference between the conduct of the Chinese mandarins and Vegetarians who drive out the Christian missionaries and that of the clergymen of North Carolina who have sent a written warning to the Mormon missionaries there to "retire from our community, and that at once." The Chinese have degraded the anti-missionary Viceroy, and chopped off the heads of a lot of the anti-missionary Vegetarians. What kind of punishment should be given by somebody to the Rev. M. D. Bynum and the Rev. H. J. Jennett, of New Hill, Wake county, N. C.?

The stories told in China against the Christian missionaries are even worse than those told in North Carolina against the Mormon missionaries."

Good advice: Never leave home on a journey without a bottle of Chamberlain's Colic, Cholera and Diarrhoes Remedy. For sale by O. M. Royster. 45 41 Druggist.

None of His Business.

"It was very embarrassing for a moment," said the salesman. "She came up to the counter and said she wanted to see some materials for a fancy ball costume.

Beets for stock Feed.

Will sugar beets be a good feed for hogs and milch cows?-H. W., Newton, N. C.

[Answered by F. E. Emery Agriculturist, N. C. Experiment Station,]

Yes, they are good but owing to expense in growing and harvesting they aro not much used for that purpose. Sugar beets grow wholly underground and the leaves spead on the surface. They are considerably covered with fine roots which hold much dirt from most soils and this should be washed off before feeding the roots which is another expense.

Prevention

better than cure. Tutt's Liver Pills will not only cure, but if taken in time will prevent Sick Headache, dyspepsia, biliousness, malaria, constipation, jaundice, torpid liver and kindred diseases. TUTT'S Liver PILLS ABSOLUTELY CURE.

"She described what she wanted and I showed her several pieces. Finally she said: "This one will do." "'How much would you like?" I asked beginning to unroll the bolt. "'Oh, about a yard and a half," says she. I thought I must be mistaken. to I asked her again and she said the same thing-a yard and a half. "Then when she saw that I was surprised she flared up and said: 'I forgot to tell you that I have got six yards of the material at home. "But she needn't have told me. It was none of my business."